Poster Abstracts

Poster sessions are scheduled on Friday, October 21 from 6:00 pm to 7:30 pm and on Saturday, October 22 from 5:30 pm to 7:00 pm. In addition to the 180 posters that will be displayed on poster boards, we received 50 alternate submissions. Many of the alternate submitters will be displaying letter-size copies of their posters on tables in the poster session room.

On the following list of abstracts the session and location are indicated before the title of each poster. The session is noted with an "F" for Friday or "S" for Saturday and the location is noted by a number or "A" for Alternate Table.

Examples: F21: Friday poster session, poster #21
SA: Saturday poster session, alternate table

The abstracts for all posters submitted to CDS follow. The poster abstracts are listed in alphabetical order by the last name of the first author.

A Socially Situated Advantage in Learning of Theory of Mind: A Comparison of American and Korean Children

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A total of 112 American and Korean children, 4 and 5 years of age, participated in a study to test the relationship of cultural characteristics (interdependent or independent), as measured by the children's Self-View Questionnaire, with performance on three false belief tasks: unexpected object transfer task, person internal transfer task, and person external transfer task. The main question was whether the interdependent characteristics would facilitate children's mental state understanding when false belief stories focus on person movement. As predicted, American and Korean children responded differently to the Self-View measure, with American children higher in Social Potency and lower in Traditionalism than Korean children, indicating that American children were less interdependent than Korean children. There were no significant differences in performance on the object transfer false belief task between children from the two cultures, but Korean children performed better on the two person-related transfer tasks. The results suggest that Korean children may have an advantage in the understanding of person-related transfer tasks because of their interdependent characteristics.

F1

The Process Of Strategy Generation: A Microgenetic Study

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How do children generate new problem-solving strategies? We propose that they do so when they begin to encode new problem features. New encodings, in turn, may arise from implicit learning of the problems' structure. Thus, exposure to problems engages implicit learning, which leads to new encodings, which enable construction of new strategies. This trajectory was tested in a microgenetic study of children learning mathematical equivalence over three weekly sessions. At sessions one and two, children copied ordinary addition problems (3+4+5+3=__), equivalence problems (3+4+5=3+__), or number strings (3,4,5,3), so as to have an opportunity to implicitly learn about the problems' structure. Encoding and strategy use for equivalence problems were assessed at each session. Children in the Equivalence group improved their encoding more than children in the other groups, and they were more likely to generate new, correct strategies. These data suggest that strategies are generated based on new encodings, which can arise from implicit learning.

S1

Young Children's Beliefs About The Effects Of Emotional And Physical States On Cognitive Performance

Jennifer Amsterlaw, Kristin Hansen Lagattuta, Andrew N. Meltzoff
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We present data from research investigating children's awareness of the effects of positive and negative internal states on thinking performance during cognitive tasks. In total, 84 kindergarteners, first-graders, and adults heard stories describing school children who experienced events that produced positive or negative emotions (e.g., losing a favorite toy and feeling sad) or positive or negative physical states (e.g., skipping breakfast and feeling hungry), and who then faced challenging cognitive tasks (e.g., spelling test, hard math problems). Participants predicted whether protagonists' task performance would be enhanced, impaired, or unaffected, and explained their responses. Neutral event stories were also included. Analyses focus on developmental differences in children's ability to predict and explain how different kinds of internal states influence cognitive performance. To date, results indicate that both kindergarteners and first-graders, like adults, can predict impairment and enhancement of cognitive functioning; however, kindergartners possess more limited knowledge about the causal mechanisms underlying these relationships.

F2

It's What's Inside That Counts: Preschoolers' Use Of Internal Features To Guide Knowledge Of Growth And Metamorphosis

Rachel Baker, Andrea Welder, Jeany Keates
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We examined 4-year-olds' (N=80) ability to generalize information about a young animal to an adult animal, depending on (1) size change (e.g., small to large caterpillar in the Growth condition) versus size and appearance change (e.g., butterfly in the Metamorphosis condition), and (2) whether insides were visible or not. Children were shown picture sets and told a novel property about a young animal (e.g., "drinks fep"). Then they were asked if it applied to the adult. Children in the Insides Available conditions attributed the property to the adult (M = 5.75) more frequently than children in the Insides Unavailable conditions (M = 2.43). Children in the Growth conditions attributed the property to the adult (M = 4.88) more frequently than children in the Metamorphosis conditions (M = 3.30). Results shed new light on preschoolers' ability to use "internal" cues to generalize properties of animals that grow and/or change in appearance.

S2

Preschoolers' Executive Processing Of Abstract Rules

Sara Baker, Ori Friedman, Alan M. Leslie
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Cognitive development in the preschool years is characterized by diminishing impulsivity in thought and action. Controlling urges and selecting the appropriate response are typical 'Executive Functions' (EF). Standard EF tasks for preschoolers use perceptually-based rules (responses are reliably paired with a perceptual stimulus throughout the trials) rather than abstract rules. We present a new task targeting abstract EF. In the first block, the rule was either congruent, or incongruent. In the second block, children either switched rules, or continued with the same rule. In terms of EF, two inhibitory efforts were required: pointing to the incongruent stimulus, and switching from one rule to another. We found that preschoolers performed significantly better on the trials requiring less inhibitory processing. Exploring the development of inhibitory processing is essential to current research in our laboratory, which strives to establish the developmental relation between inhibitory processing and domain-specific concepts of mental states.

F3

Theories, Evidence, And Preschoolers' Causal Learning

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This study investigates the interaction between preschoolers' initial theories and their ability to learn causal relations from patterns of data. Children observed ambiguous evidence in which two candidate causes co-occurred with an effect (e.g. A&B -> E, A&C -> E, A&D -> E). In one condition, all candidate causes were domain-appropriate (e.g. biological cause-biological effect); in another condition, the recurring candidate cause, A, was domain-inappropriate (e.g.

psychological cause-biological effect). When all causes were domain-appropriate, children were able to use the pattern of data to identify A as a cause. When the data crossed domains, children were less likely to endorse A. However, preschoolers were significantly more willing to accept psychogenic causes after seeing the evidence than at baseline. As predicted by formal inference models, this suggests both that children's theories affect their interpretation of data and that children can use evidence and formal learning mechanisms to revise their theories.

F4

Judgement of Numerical Equivalence and Numerical Categorization by Young Children with Disabilities

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Cardinal equivalence is the ability to understand that apples and oranges are equivalent numerically when there is three of each. Studies' results demonstrated that typically developing children do not notice equivalence in all possible set types and in all possible contexts all at once. Initially, children focus on numerically irrelevant but perceptually similar features in the sets to judge equivalence. But, by 4-years of age, children are able to focus on the numerical relations when judging equivalence between sets made up of both homogeneous and heterogeneous items. Therefore, there is a cognitive change from the reliance on surface similarity to the use of relational similarity to judge numerical equivalence. The aim of this study was to investigate whether young children with disabilities would have the ability to judge equivalence in homogeneous and heterogeneous sets, and whether training focusing on relational similarities would promotes conceptual changes in this population. The results indicated positive responses to both questions.

S3

Set-based Quantification In 15-month-old Infants

David Barner, Melissa Kibbe, Justin Wood, Susan Carey
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We investigated whether pre-linguistic infants lack the conceptual distinction between singular and plural sets prior to acquiring singular-plural morpho-syntax. Previous studies suggest that before 22-months of age, children fail to distinguish sets of 4 objects from a single object (Barner et al., under review; Feigenson & Carey, in press), while succeeding at comparisons like 3 vs. 2. However, by 22-months children successfully distinguish 4 from 1, precisely at the age that they begin producing plural nouns in their spoken language (Barner et al., under review). Using the manual-search paradigm, we presented objects as sets that moved together (rather than independently moving individuals) and found that 15-month-olds can distinguish 4 from 1, but not 4 from 2. Studies in progress are exploring whether infants can distinguish plural sets within their object-file range (i.e. sets of 3 or less), or whether singular-plural knowledge constitutes a wholly separate mode of mental representation.

FA

Domain-Specific Kind Representations in the Absence of Language: Experiments with Three Lemur Species

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Although much work has investigated how human infants and some primates represent and use kind information, we still know little about the evolution of these abilities. In four experiments, we extend this research to three distantly-related lemur species and examine the effect of domain identity on kind representations. In Experiments 1-3, subjects succeed at using property/kind information to individuate objects from different domains (i.e. food objects and animate objects), but fail to do so within domains (two food items or two animate objects). In Experiment 4, we replicate this effect using ambiguous stimuli. Despite the fact that the stimuli sets are perceptually identical across conditions, subjects successfully individuate across, but not within, domains. These results provide strong evidence that the ability to represent kinds is a graded capacity, and that, for some species, all kinds are not created equal.

F4

Children's Representations Of Social Groups

Andrew Scott Baron, Yarrow Dunham, Mahzarin R. Banaji
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Natural kind concepts are inductively rich relative to artifact concepts. Although the status of many objects as natural kinds or artifacts is well documented, little is known about the ontological status of social groups. According to Atran (1990), children will treat social categories as natural kinds to the extent that the putative differences between the groups resemble biological speciation. Surprisingly, there is little direct evidence of this hypothesis and therefore this study directly tested whether children will represent a novel social group as a natural kind if the group difference is defined along a biological (skin color) versus non-biological (hat color) property. Children ages 3-8 (N=124) were introduced to two novel groups that differed in skin color (red vs. purple, Experiment 1) or hat color (red vs. purple, Experiment 2). Following a short story in which one group behaved in an ostensibly anti-social manner, children completed several measures that required making judgments about the behaviors of new members of these groups (i.e., to make inductive inferences about the group). Across both experiments, participants consistently inferred that members of the "bad" group would perform bad actions and members of the "good" group would perform good actions, with the oldest age group showing the most pronounced pattern. That these children did not respond differently to the non-biological group suggests that reasoning via analogy to biological kinds is not the only route to representing social categories as natural kinds.

F5

Children's Pre-arithmetic Representations Of Multiplication And Division

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Recent studies have documented an evolutionarily primitive, early emerging representational system for number (the analogue magnitude system). Studies with non-human primates, human infants, and preschoolers have shown this system to support computations of numerical order, addition and subtraction involving whole number concepts prior to arithmetic training. Here we report the first data demonstrating that this system supports computations of halving and doubling. Five- and 6-year-old children were equally accurate in determining whether a set of dots could be the result of halving or doubling an initial set as they were at determining whether a line could be the result of halving or doubling an initial line. Controls for dot size, total dot area and dot density ensured that children were responding to numerical halving and doubling in the dot arrays. Thus, prior to formal instruction in multiplication, division, or rational number, halving and doubling are computations that can be deployed over both continuous and discrete quantities. The implications of this finding for how children construct an understanding of rational number will be discussed.

FA

From Everyday Behavior to Memory Strategies: A New Look at Children

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This paper examines memory strategies backwards. While traditional memory research centers around memory tasks and children's memory performance, this paper uses children's behavior as the starting point for discussion. From examples of behavior, memory-based explanations are provided, covering the range of memory phenomena. In this way, children's memory strategies are considered in a manner geared toward parents, practitioners, and others who work with children on a daily basis. Memory is used as a framework for understanding children's everyday behavior, focusing on the first eight (8) years of life. The author invites comments, ideas, and discussion on this topic.

F6

Children's Attention To Beliefs In (more) Realistic Persuasion Tasks

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How does children's developing appreciation of beliefs influence social interaction? One effect may be increased attention to beliefs during persuasion, but to date assessment tasks have involved puppets, not people, as conversation partners, and have required children to select, not invent, an argument, potentially underestimating children's reasoning. We interviewed 48 3- to 7-year-olds, asking each (on 8 tasks, forced-choice or open-ended questions) to persuade two individuals (puppets or people) with differing beliefs (e.g., puppy is dirty vs. bites) to attend to a stuffed animal (e.g., pet the puppy). Results from our within-participants, fully nested design showed that performance increased dramatically with age (4-71%), did not differ by question format, and was better with people than puppets only for the oldest group. We conclude that children's attention to beliefs in persuasion has not been underestimated; our findings accord with the notion that children's acquisition of belief understanding influences their persuasion strategies.

S4

Examining Young Children's Changing Theories About Santa Claus Through Parent-child Conversations

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Thirty 4- and 6-year-old children and their parents watched silent video clips taken from two animated Christmas movies. Parents were asked to interact with their children in the same way they would if reading a story at home. Children's statements about Santa Claus were coded into two types: 1) general statements about Santa Claus and things related to Santa Claus (e.g. "Santa lives way back north") and 2) statements that focused on aspects of Santa Claus that appear to violate real-world constraints (e.g., "reindeers can't fly"). Analyses revealed that younger children made significantly more general statements than older children. In contrast, older children made significantly more statements about apparent violations of real-world constraints than younger children. These findings give insight into the changing nature of young children's theories about Santa Claus.

S30

Correspondence Between Executive Function and Parent Report of Child Temperament

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Parent report has been used extensively in developmental research to supplement behavioral measures obtained in the laboratory. Rothbart and Bates (1998) suggest that parent-report measures provide a useful perspective on children that is difficult to obtain in the laboratory, and have established a modest degree of objective validity. However, little comprehensive data exists on the relation between parent report and laboratory measures. This study analyzed the relation of parent-report measures of temperament using the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) and behavioral measures of executive function. Data from 400 preschool children (M age = 3;11) across 6 studies from our laboratory were examined. Results suggested there is a small but significant correlation between behavioral measures of executive function and parent report. Furthermore, the pattern of correlation suggested a temperament profile that corresponds to high/low executive function capabilities.

A Matter of Trust? Preschoolers Use Information about an Actor's Prior Intentions during Novel Verb Learning

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Koenig, Clement, & Harris (2005) showed that children use accuracy of an actor's prior labeling (i.e. trust in testimony) during object word learning. When learning verbs, however children must also be able to take into account an actor's prior intention to perform an action as indicated by the actor's label of an impending action (e.g. "I'm going to meek."). Two experiments tested children's use of prior labeling of actions during verb learning. Experiment 1 replicated Koenig et al (2005) by showing that preschoolers will choose an action as the referent of a novel verb when that action is performed by an actor who had previously labeled her own familiar actions accurately during training. In Experiment 2, when actors labeled another actor's actions during training, there was no bias for choosing the action performed by the previously accurate labeler. The results suggest that children take into account both accuracy of testimony and prior intentions during verb learning, and that preschoolers understand that prior intentions are privileged mental states accessible only by the individual who holds them.

S5

Kindergartners' False Belief Understanding: The Role Of Language, Memory, And Emotion Understanding

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A number of investigations have explored the development of first order false belief (FB) understanding during the preschool years and relations between early FB understanding and factors such as language, memory, and emotion understanding. Less attention has been paid to the development of FB understanding beyond the preschool years. The purpose of the current study was to compare first and second order FB understanding of 22 first semester kindergartners and examine how children's performance on these tasks related to their linguistic and emotion understanding. Analyses revealed no significant difference between kindergartners' performance on the first and second order FB tasks. FB performance was significantly related to receptive vocabulary and memory for sentences, but not to their overall performance on the emotion understanding task. Implications regarding the role of language and memory in FB development beyond the preschool years will be discussed.

F7

Parent Styles Of Reminiscing With Their Own And Unfamiliar Children

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Memory researchers have established that the way that parents reminisce with their children about past events influences their children's narrative and memory skills. Parents' style of reminiscing is also stable over time and across siblings; thus it has been suggested that reminiscing style is primarily a characteristic of the parent, although it is associated with the quality of the parent-child relationship. To further investigate of the degree to which reminiscing style reflects parent versus parent-child relationship characteristics in this study, we examine the associations between parents' styles with their own preschool children and their styles with unrelated children. Parents participating in art activities with their child will reminisce about the event with an unrelated child who took part in the same activity, and about another shared event with their own child. Analyses will examine whether parents reminisce in the same manner with unrelated children as with their own children.

F8

Developmental Changes In Infants' Word-object Pairing And Their Ability To Discriminate Between Languages

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Fourteen-month- olds fail to use fine phonetic detail when they are required to pair objects with words (Stager& Werker, 1997). In contrast, 8-month-olds succeed at this task. It has been proposed that for 14-month-olds, who are at the cusp of word learning, it may be more beneficial to focus on forming a word-object association rather than attending to fine detail. Would such a pattern also be observed across languages? Specifically, when faced with a task where they can either distinguish between languages or form a word –object association or do both, what would monolingual English-learning 8- and 18-month-old infants do? Our results suggest that 8-month olds discriminate between English and Spanish, but fail to form a word-object association. In contrast, 18-month-olds dishabituate to a change in the word-object pairing but do not notice the change in language.

S6

Performing The Global-Local Task: Another Advantage For Bilinguals!

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In our previous studies involving nonverbal processing of conflicting stimuli, bilingual children have shown precocious development over their monolingual peers. The present study extends this research by using the global-local task. In two studies, monolingual and bilingual children, 5- to 7-years old, matched on relevant background measures, responded by a mouse press to either the larger (global) or smaller (local) figure in a composite stimulus. The stimuli consisted either of shapes (square, circle) or letters (H, S), and the global and local constituents were either the same (congruent) or conflicting (incongruent). In addition, neutral stimuli, consisting of Xs, and control stimuli, consisting of single constituents, were presented. In both studies, monolinguals and bilinguals produced the same RT for control stimuli but bilinguals responded more rapidly to composite stimuli, for both congruent and incongruent configurations. These results provide another demonstration of a bilingual advantage in nonverbal processing in conflicting situations.

FA

The Development of Ownership

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Young children have difficulty in reconciling their possessive impulses with the rules that govern ownership. How far do preschoolers understand the concept of ownership? We explored the development of an understanding of ownership among 3- and 4-year-olds. Children were presented with scenarios in which toys were transferred between characters by an act of stealing or gift giving. Four year olds performed significantly above chance: they realized that gift giving but not stealing implies a transfer of ownership whereas 3-year-olds were less systematic. The findings suggest that 4-year-olds who take other children's possessions do so knowingly but 3-year-olds may be less aware of the nature of their misdemeanor.

S7

Learning Nonobvious Object Properties From Picture Books

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Little is known of what content information young children learn from picture books. Recent findings indicate that children readily learn and generalize object labels from a picture book interaction. The present research extends these findings by examining whether children learn and generalize object properties from picture books to the real world. In a short picture book interaction, 20- to 25-month-olds were taught a nonobvious property of a familiar object. Children learned the object property and generalized the property to the real world object and to a differently colored exemplar of the object. Furthermore, children often attempted to elicit the property themselves by imitating an action depicted in the book. These findings provide further support that young children recognize a correspondence between depictions in picture books and the real world entities they represent; very young children can generalize information contained in picture books to the real world.

Children's Category Judgements: Use of Prior Knowledge and the Claims of Others

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Children's use of adult feedback in their category judgments was investigated in a study of 4-, 5- and 8-year-olds (total N = 50). Participants made initial category judgments and confidence ratings prior to feedback, immediately after feedback and after a delay. Feedback was presented by unfamiliar adults via video clips, with each adult appearing only once. Results systematically varied in terms of whether there was agreement or disagreement with the participant and as to whether high or low confidence was expressed. Results indicate that children in all age groups tended to reject adult feedback about three quarters of the time, which is inconsistent with arguments by Piaget (1955) and Dawkins (1993, 1995) suggesting that young children tend to blindly accept the judgments of adults. Results also indicate that when children were highly confident of their initial judgment, they were less likely to change their mind in the face of an adult's contradictory judgment. Finally, results reveal that adult confidence affected children's judgments, but only when theses judgments were made after a delay.

F9

Children's Understanding Of Simple And Conditional Probability

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Explicit tests of children's knowledge of probability have traditionally found competence by age nine. However, some recent evidence from studies of causal inference and statistical learning suggest that even infants reason about simple and conditional probability. In these two experiments, we placed traditional tests of children's probability knowledge in a context accessible and familiar to them. In Experiment 1, 3-, 4-, and 6-year-olds played a board game, in which a player moved along a path of multicolored segments. One color on the board appeared less frequently, so a move to that color was advantageous. Children were told that moves were determined by the spin of a spinner, which represented all of the colors on the board. Children chose between two spinners, which represented the target (advantageous) color in proportions that either conflicted or were equal. Children of all ages recognized the probability information in the game, and chose the spinner that represented the greater area of the target color. In Experiment 2, we examined preschoolers' understanding of conditional probability. Children saw the same board game and chose between a simple spinner, and a pair of spinners, on which the probability of reaching the target color was dependent on the spin of both spinners. Preliminary data suggest that these conditional probability problems are difficult for 4-year-olds, although they recognize the probability information in the game. These results suggest that preschoolers can reason about probability when the problem is placed in a familiar and engaging context.

F10

Family Narrative Interaction And The Development Of Adolescent Narratives

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To date, research examining the emergence of narrative skills from a socio-cultural perspective has primarily focused on reminiscing with young children. But because adolescence is when the "life narrative" begins to emerge, the ways in which families discuss and represent emotional experiences may also have a large impact on adolescent's developing narrative skills. Thus, 40 middle-class two-parent families with a preadolescent-child jointly discussed a negative and positive event that they experienced together. Two years later, children independently narrated a negative and positive event. Results revealed that fathers who expressed and explained emotion when discussing negative events with their family had daughters who expressed and explained emotion in their independent negative narratives, and mothers who expressed and explained emotion when discussing positive events with their family had sons who expressed and explained emotion in their independent positive narratives. Implications for theories of narrative development, identity development, and gender development in adolescence are discussed.

S8

Children's Emerging Theory Of Mind: Evidence From Epistemic Terms

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In the current research, we investigate children's understanding of the mental state terms 'remember', 'know', 'forget' and 'guess', taking the theoretical perspective that children reason that knowledge is acquired solely through perceptual access and that having knowledge leads one to correct actions based on that knowledge, termed the see-know heuristic. Seventy-five children, ages 5, 6 and 7, and thirty-three adults were asked if a story character's action of looking in one of two locations for a desired, hidden object was because of each of the aforementioned mental states. Findings for 'remember' support the use of the see-know heuristic in the 5 and 6 year-olds, while the 7 year-olds' answers were more adult-like. Previous research suggested that children understand 'guess' as being on the opposite end of a continuum of certainty of knowledge from 'know'. However, the current findings for 'know' and 'guess' in the 5 and 6-year-olds supports the use of the see-know heuristic, as children affirmed both these verbs more in conditions where the character was looking in the location that contained the object, compared to when the character was looking in the non-reality location. The 7-year-olds and adults correctly differentiated conditions of 'guess' and 'know'. The findings for 'forget' confirm previous research, with children showing little understanding of this verb until 7 years of age.

F11

The Effect Of Temporal Position Of A Salient Event On Impression Formation In Preschoolers

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In the present study, we examined the effect of the temporal position of a salient target event on impression formation in preschoolers. Seventy-two participants (24 3-, 4-, and 5-year-olds) were told a story in which a protagonist performed a single positive or negative target behavior toward another character. The position of the target behavior was varied such that it appeared in first, third, or fifth and final position among a series of neutral events. Participants were asked to make behavioral predictions and trait attributions about the protagonist. Results indicated that children's predictions and attributions were not affected by the temporal position of the target event. However, participants were more likely to make the target behavioral prediction after hearing about negative than positive behaviors. In addition, children were more likely to make the target trait attribution with age. Findings are discussed in terms of the processes involved in early personality understanding.

S9

Linkages Between Mother-Child Relationship Quality And Children's Memory

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To examine linkages between mother-child engagement during an activity and children's subsequent memory, a sample of 59, 3-year-old children and their mothers participated in either a camping or birdwatching event. In this particular project, the coding involved ratings of the quality of the interaction between the mother and child as the event unfolded. The eight scoring dimensions included maternal supportiveness, quality of maternal instruction, and maternal and child mood, child persistence, child verbal engagement, and dyadic affective and cognitive sharing. Analyses of the children's event recall that was assessed at 1-day and 3-week delays suggested that maternal instruction, child verbal engagement, and cognitive sharing during the activity were highly associated with remembering. Moreover, although child language skills (assessed via the Preschool Language Scale-3) mediated the links between children's verbal participation in the activity and their event recall, maternal instruction and cognitive sharing had direct effects on memory.

S10

The Role Of Event Plausibility In The Development Of Children's Recall And Suggestibility

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Developmental changes in the application of knowledge in remembering are incompletely documented. We examined the extent to which plausibility derived from prior knowledge moderates the relation between knowledge and memory performance at ages 6 and 9. Participants received about a novel animal and were later

read a story featuring the animal's plausible or implausible actions (as based on prior knowledge). Recall and suggestibility were tested one day or week later. As expected, question plausibility increased recall and decreased suggestibility, and age and delay predicted performance. Knowledge appears to have been activated to a greater extent in the older children, as they were more susceptible to plausible suggestion and less susceptible to implausible suggestion over time, whereas overall suggestibility increased in younger children. The results are consistent with the expectation that, with development, children can be expected to increasingly use prior knowledge to evaluate and modify new information.

Empirical Validation of the Triple-code Model of Numerical Processing Using fMRI

Rhonda Douglas Brown, Vincent J. Schmithorst
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The triple-code model of numerical processing, involving analog magnitude, auditory verbal, and visual Arabic codes of representation, was investigated for the complex mathematical task of mental addition and subtraction of fractions. Functional magnetic resonance imaging (fMRI) data from 15 normal adult subjects were processed using exploratory group Independent Component Analysis (ICA). Separate task-related components were found with activation in bilateral inferior parietal, left perisylvian, and ventral occipitotemporal areas. These results support the hypothesized triple-code model corresponding to the activated regions found in the individual components and indicate that the triple-code model may be a suitable framework for analyzing the neuropsychological bases of the performance of complex mathematical tasks.

S11

CINC: Causality-based Induction, Naming And Categorization

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To explain how children categorize and induce information about objects, previous models relied on stimuli similarity as a feature triggering inductive reasoning in children. This study tested a new theoretical model (CINC: Causality-based Induction, Naming and Categorization), which proposes that children rely on domain-specific, causal knowledge to induce relationships among objects. Our findings suggest that, in the absence of causal information, children (N=64) and adults (N=32) rely on stimuli similarity to categorize targets (Rsquared=.95). However, when presented with information about biological origins of the same stimuli, children and adults categorized targets based on origin information, not feature similarity (Rsquared=.99). This poster reports findings from our initial study and from a subsequent study that controlled for labels as a stimulus feature. These results establish that subjects rely on feature similarity in the absence of causal information and, when present, make use of causal information to guide inductive reasoning.

Relational Complexity and the Development of Hot Executive Functions

Katie Bunch, Glenda Andrews, Graeme Halford
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A distinction can be made between the cognitive functions associated with two different cortical regions. The dorsolateral prefrontal cortex (DL-PFC) is assessed using "cool" tasks that are abstract and decontextualised. The orbitofrontal cortex (OFC) is assessed using "hot" tasks that involve reward, changes in reinforcement and affect regulation. Complexity effects have been observed in "cool" domains but there has been limited research in hot domains. The OFC has been implicated in the performance of the Children's Gambling Task, Conditional Discrimination/Reversal Learning, and Future Oriented Reasoning. For each of these domains items at two levels of relational complexity (binary and ternary) were selected or developed and administered to 72, 3-, 4-, and 5-year-old children. For all tasks, significant Age x Complexity interactions were observed, reflecting stronger age effects on ternary-relational items. Significant correlations were also observed between task domains. These results replicate previous findings in cool domains. The ability to process complex relations in hot domains increases with age.

S13

The Impact Of Early Language On Memory: Deaf And Hearing Adults' Inclusion Of Internal States Language

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The present research explored the effects of early language experience on adults' memory reports by comparing the autobiographical reports of both hearing participants and deaf participants raised in hearing families. Although previous research has indicated that there is no difference in the age of earliest memory for these two groups, there is evidence to suggest that differences exist in the density of earliest memories. We were interested in whether the inclusion of internal states language (emotional, perceptual, mental, and physiological terms) varied across the two groups. Adult participants were invited to discuss 2 events that occurred before the age of 10 years, and 2 events from after age 10. We found that although hearing participants had longer narratives than deaf participants, after narrative length was controlled, deaf participants included more internal states in their narratives. Differences in the structure of ASL compared to spoken English may affect the density of internal states terms included in memory recollections.

F12

What Mechanisms Underlie Task Shifts - Directed Inhibition, Or Working Memory Plus Competition?

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Task switching requires some form of inhibition of previous behaviors and representations. This process may involve directed inhibition of previously relevant information. Alternatively, inhibition may emerge indirectly, with working memory representations providing top-down support for current task representations, which compete with prior task representations. We tested predictions from each account in 5- to 6-year-olds using a computerized card-sorting task. We measured the relationship between children's task-switching abilities and their response speed to non-conflict queries about stimuli relevant only to the current task. Directed inhibition accounts predict no relationship, because directed inhibition is required for switching tasks but not for responding to non-conflict queries. Working memory accounts predict a relationship, because robust working memory representations should improve both switching and responses to non-conflict queries. Consistent with working memory (indirect inhibition) accounts, children with better task switching abilities responded faster to non-conflict queries, even after factoring out age and processing speed.

F13

A Cross-Linguistic Comparison Of Numerical Input In Mandarin And English

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Children in Singapore, Hong Kong, and Taipei have consistently scored higher than their American counterparts on tests of mathematical skills in both the fourth and eighth grades. Although disparities between techniques of classroom instruction have been observed, differences in numerical ability have been observed between Chinese and English-speaking children as young as 3 years of age. In this study, we documented differences in Mandarin and English parental input to preschool-age children (prior to formal mathematical instruction). Ninety-seven Mandarin transcripts from the CHILDES database (mean age: 23.4 months) were age, gender, length, and context matched with English transcripts from the CHILDES database (mean age: 23.3 months). The number utterances within the transcripts were analyzed for total frequency, amount of number comparison, type of feedback, and number type, e.g., cardinal or ordinal, within each language. In addition, special cases in each language were noted, e.g., classifiers.

F14

Preschoolers' Reasoning About Toys: Why A Blue Car Is Not Always A Boy Toy

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Interaction with toys can be seen as the gateway to many aspects of children's cognitive development in early childhood. This study examined the reasoning of 47 two- to five-year-old boys' and girls' classifications of masculine, feminine, neutral, and ambiguous toy pictures. The preschoolers showed differential stereotyping by age groups and gender. Older children and boys held stronger gender stereotype preferences than younger children and girls. Boys were more likely to identify neutral and ambiguous toys as boy toys whereas girls did not differ in their classification of neutral toys. The most common reason for associating a neutral and masculine toy with a particular sex was gender association, whereas for ambiguous toys, preschoolers made decisions based on color and their interest in playing with the toy. No clear pattern emerged for feminine toys. Sequence effects and issues of equity also influenced choices.

S14

Korean- And English-speaking Children Use Comparison In Verb Learning

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Structural alignment in comparison could help guide children's attention to similarities and differences across contexts that are relevant to a new verb's meaning. Korean-speaking children (2 1/2-3 1/2 year olds) in Korea were shown either "near" comparisons (events that were very similar) or "far" comparisons (events that were not as similar to each other or target). They were then asked to enact the event using new objects. The prediction was that Korean-speaking children would differ from a similar sample of English-speaking children because Korean verbs are often much more specific than are English ones. These studies provide important cross-linguistic empirical evidence of a new mechanism that children could use to solve a central problem in verb acquisition.

S15

Learning Numbers From Different Kinds Of Picture Books

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Many different types of picture books are used to teach young children numbers. Thus, it is important to explore whether some types of picture books facilitate children's learning of numbers more than others. We compared how well 36-month olds learned three new numbers from two picture books - either with a plain number book or with a pop-up number book with manipulative features. The experimenter engaged the children in a brief book-reading interaction with one of the books. The children who had interacted with the plain book performed better on three tests of number knowledge than did those who interacted with the manipulative book. This suggests that the manipulative features, which are extraneous to the relevant material, may have distracted children from the numbers. The results suggest that when teaching children with picture books, it is important to attend to the different variations in book features.

Children's Perception of Time

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To date, studies have focused on attentional and psychophysical aspect of time representation. In the current study, we seek to explore our sense of time in relation to experiential stimuli. We have all felt time flying by when we have good time while we are also very familiar with the agony of a boring lecture appearing to last an eternity. Do positive or negative experiences affect a child's duration estimation? Would there be a developmental shift in estimating the duration more correctly despite the effects of these experiences? Four-, 6-, 8-year-olds and adults were presented with both a fun and a boring movie clip of the same length. The results of Study 1 indicated that all age groups judged that the fun movie was shorter than the Boring movie. Study 2 is ongoing to further investigate the mechanism in which participants' time perception becomes distorted in various conditions.

F15

Influence Of Language-Specific Input On Spatial Cognition: Categories Of Containment

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Recent research has shown that preverbal infants, regardless of their language environments, can make a distinction between tight-fit and loose-fit containment relations. This distinction is systematically made in Korean (kkita 'fit tightly' vs. nehta 'put something loosely in a container'), but not in English (i.e. in). The question is, whether the nonlinguistic sensitivity is influenced by the language-specific input as these infants learn the first language. Using a preferential-looking method, the study tested sensitivity to the distinction in young English- and Korean-learners at 18, 24, 29, and 36 months. Results showed that while English-learners weaken their sensitivity to the distinction by 29 months of age, Korean learners maintain high sensitivity to the distinction throughout the age periods tested. Language surveys of the English learners indicate that weakening of the nonlinguistic sensitivity occurs as the children use the relevant spatial term and increase their vocabulary level.

F16

Language Highlights Relational Structure

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Children's perception of similarity shifts from a focus on shared attributes (object similarity) to a focus on shared relations (relational similarity) (Gentner, 1988; Gentner & Rattermann, 1991). Gentner (2003) proposed that this relational shift is fostered by acquiring relational language. We investigate this possibility in a triads task with simple perceptual configurations. Each triad consists of a standard with two identical objects and two alternatives with a matching relation and a matching object, respectively. When asked to choose the more similar alternative, adults preferred relational similarity, whereas children of both age groups preferred object similarity. A

strong effect of language on highlighting common relations was found: 4.5-year-olds shift to choosing the relational similarity when exposed to the relational word 'double' describing the standard. Furthermore, all age groups showed elevated relational responding when the standard was named with a novel word ('truffet.') We suggest that children's acquisition of (initially unknown) relational words invites attention to relational structure.

S16

When Do Infants Know That Nonhuman Animates Are Goal-Directed Entities?

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An experiment using a generalized imitation version of Woodward's (1998) paradigm assessed 14-, 18-, and 22-month-olds' categorization of animals and vehicles as goal-directed. Infants viewed an experimenter move a toy animal or vehicle to one of two objects presented on the left and right side of a platform. The locations of the two objects were then switched, and infants were encouraged to imitate the action of the experimenter. Twenty-two-month-old infants moved animals to the same object that was the goal during modeling and not along the old path to the other object; however, they moved vehicles to both objects equally as often. Preliminary evidence suggests that infants at 14 and 18 months moved neither animals nor vehicles to the same object as in modeling more often than along the same path seen in modeling. These results suggest that it is not until between 18 and 22 months of age that infants categorize nonhuman animals, but not vehicles, as goal-directed entities.

FA

Generics and Labels: Two Complementary Influences of Language on Inductive Reasoning

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The decision to generalize a property of an object to another depends on two crucial factors: (1) whether the two objects belong to the same category and (2) the type of property that is being projected. We propose that labels facilitate inductive generalization by helping children identify the category an object belongs to, while generics flag those properties that generalize beyond the original instance. Labels should be particularly useful for atypical exemplars and other objects whose category is not easily recognized, while generics should be important for generalizing properties that might seem idiosyncratic and would not be projected widely otherwise. We presented preschool children with an induction task modeled on Gelman and Markman (1987) in which we varied (a) the type of property predicated (generalizable vs. idiosyncratic vs. nongeneralizable); (b) the category level of the probe items (same basic level category as the target vs. atypical vs. different category); (c) whether the target and probes were labeled; and (d) whether the property was predicated with a generic. Surprisingly, labels did not improve performance. As predicted, however, phrasing the property generically led to an increase in the number of projections for the idiosyncratic properties.

S17

Motor Planning In Infants When Reaching For Objects At Varying Distances

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Previous research has demonstrated that when infants' reach for an object, their reaching speeds are affected by what they intend to do with the object (Claxton et al., 2003). We examined whether such future intended actions would be reflected in the infant's reach kinematics when a ball was positioned at both a near distance (within arm's length) and a far distance (requiring a lean forward). Twelve-month old infants were encouraged to either throw a ball into a tub or fit it down a tube at each distance. Kinematic measures of the approach phase of the reach were obtained using a motion analysis system. In the near condition, 12-month old infants, reached for the ball faster if they were going to subsequently throw it as opposed to the precision action of fitting the ball down the tube. However, in the far condition, this discrepancy between the reaching speeds disappeared.

F17

Factors That Affect Comparison In The Formation Of Categories

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This study extends the finding that comparing two perceptually similar members of an object category facilitates children's ability to classify objects taxonomically while ignoring shallow perceptual properties. We investigated the role of two factors in eliciting this comparison effect: spatial juxtaposition and explicit encouragement to compare. Four-year-olds heard an experimenter label two standards that were perceptually similar members of a taxonomic category (e.g., an apple and a pear) with a novel word (e.g., "Blicket"). Whether the standards were aligned vertically or separated horizontally and whether the experimenter encouraged comparison ("See how these are the same kind?") varied by condition. All children were then asked to find another category member among a perceptually similar out-of-kind object (e.g., a balloon), a perceptually distinct category member (e.g., a banana) and a thematic distractor (e.g., a knife). Preliminary results indicate that both juxtaposition and encouragement to compare facilitate children's ability to classify objects taxonomically.

F18

Suppression Of Exploratory Behavior In Preverbal Infants Following Exposure To Event-modeling

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Preverbal infants' memory for structural aspects of the imitative game were studied. Memory for the "rules of the game" could lead 10 month-old infants' to first expect an event demonstration before engaging with the toys. This expectation could underlie a conscious suppression of exploratory behavior with novel toys in absence of prior event modeling. In the present study, 9- and 10-month old infants observed demonstrations of two-step action-sequences involving objects. After a 1- and 3-month delay, event-recall was tested on the basis of infants' play with familiar versus novel toys. Control infants who never witnessed structural aspects of the imitative game were compared with the experimental group. At the 1-month recall test both 9-and 10-month old infants in the experimental group showed signs of recall. Effects of age were apparent. At the 3-month delay, older infants showed greater production of action-sequences with both novel and familiar toys compared to their younger counterparts. Advances in event-memory and problem solving skills are discussed.

Afterschool Clubs As A Testbed For Cognitive Developmental Theorizing

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We conduct research on cognitive development in a specially designed afterschool activity that takes place in a Boys and Girls Club. The children attending this activity range from 6-12 years of age and come from a wide variety of family backgrounds. The

afterschool activity is also linked to an undergraduate social science course so that on a typical day, 15-20 children and 8-10 undergraduates, plus a local Club supervisor and a researcher interact around a variety of game-like tasks. The major source of are detailed fieldnotes written by the undergraduates supplemented by occasional videotaping. Despite the relatively uncontrolled nature of the interactions and the use of undergraduate fieldnotes as data, the data yield important evidence about the dynamics of learning and development. The purpose of the poster session is to evoke discussion of this a-typical approach to the study of cognitive development.

F19

Experience And The Development Of Folk Biological Reasoning

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Research with adults suggests that experience with living things influences inductive reasoning by increasing the frequency of non-taxonomic inferences, and increasing sensitivity to context. We investigated the impact of experience on the development of folk biological reasoning by examining differences between 212 urban and rural children ages 6-12 on two tasks. On a forced choice triad induction task pitting ecological versus taxonomic relations, experience had no impact on taxonomic reasoning; regardless of age or experience, children used taxonomic relations to guide inferences about insides. In contrast, when reasoning about disease, older children and children from more rural environments were more likely to make ecological inferences. In an open-ended induction task, rural but not urban children used varied relations among pairs of species to guide projections to other species. Together these results demonstrate specific effects of experience on ecological reasoning and suggest that taxonomic reasoning is relatively impervious to experience.

S18

Comparing Gender Stereotyping In Toddlers From Single- And Dual-Parent Households

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Fagot, Leinbach, and O'Boyle (1992) have shown that children learn gender stereotyping by observing their parents, and children from gender traditional households master gender stereotyping the youngest. The purpose of the current experiment is to compare the gender stereotypicality between single mothers and their dual-parent counterparts and to investigate whether toddlers from single-mother households show different gender stereotyping than toddlers from dual-parent households. The level of gender stereotypicality in mothers is determined by measuring participation in household activities. To measure gender stereotyping, toddlers determine the gender that is associated with typically male or female items, which have been calibrated with adults. It is predicted that single mothers will be less traditional in their gender stereotypical roles than their dual-parent counterparts because they may perform more traditionally male household activities. From this, it is predicted that toddlers from single-mother households will show less gender stereotyping than toddlers from dual-parent households.

S19

Beyond Size, Shape, And Texture: Conveying The Evaluative/Affective Meaning Of Adjectives In Child-Directed Language

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A primary task for some adjectives (e.g., splendid, terrible, beautiful)is to convey evaluative/affective meaning. This function has been little studied in the cognitive development literature because of the emphasis on common adjectives that describe physical attributes such as size, shape or texture, but that do not convey much evaluative information. This study examines "rare" adjectives (occurring < 5 times in 2.6 million words)produced by adults in the original 27 CHILDES corpora to ask whether adults provide information about evaluative meanings to the children to whom they are speaking. Results indicate that adults do provide evaluative information and that the information tends to be explicit for children younger than 4;0.That is, they do not simply use other positive words in the context surrounding a positive adjective, but they use words such as good, nice, wow or great, that even the youngest children are likely to understand.

F20

Electrophysiological Correlates Of The Emergence Of Self-Recognition

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This study is an investigation of the electrophysiological correlates of the development of self-recognition during the emergence of this ability in 15-month-old infants. Infant participants were first given the 'rouge task' as a behavioral measure of self-recognition, after which they passively viewed pictures of themselves and an unfamiliar peer while event-related-potentials (ERPs) were recorded. Behavioral performance on the rouge task was correlated with the pattern of brain response exhibited during the face processing task. Preliminary results suggest that infants who showed self-recognition as measured by 'passing' of the rouge task and infants who did not successfully pass the rouge task displayed distinctly different responses to the face processing task in specific components of the ERP. This difference was particularly evident in the P300 component of the ERP response. Implications for the brain development underlying the emergence of self-recognition are discussed.

SA

Development of Beliefs About Storybook Reality

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Two studies investigate how children perceive storybook characters and events. In Study 1, preschool children heard realistic, fantastical or religious stories, and their understanding of the reality of the events and characters was assessed. Results revealed that most children judged the characters as not real for all story types. Children who heard realistic stories claimed that the events could really happen more than did children who heard fantastical stories. Of the children who heard religious stories, older children made significantly more claims that the events could really happen than did younger children. In Study 2, children who heard both realistic and religious stories responded that the events really happened more than did children who heard fantastical stories. Children who heard religious stories also responded that the characters in the books could represent real people more than did children who heard realistic books. Findings are discussed with reference to the fantasy-reality distinction, religious cognition, and understanding of representational media.

Sleep Spindle Development as a Marker of Brain Maturation: Effective Indicator of Performance on Preference for Novelty Task?

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There is much to be understood about brain development, and the complex interplay between sleep and wake functioning. This study examined a potential marker of brain maturity, sleep spindle development, and its potential link to intellectual functioning, as

measured by the Fagan Test of Infant Intelligence (FTII) (Fagan & Shepherd, 1991). The participants were part of a prior research study, the SIDS Risk Study, who were administered nocturnal polysomnograms (sleep studies) and who had additionally participated in the administration of the FTII. This study established that there was a significant link between FTII scores and a few sleep spindle indices. Maternal depression, as measured by the Beck Depression Inventory (Beck, 1987), was also significantly correlated with sleep spindle densities. Future research should more closely examine how cocaine exposure can accelerate brain maturation and the impact that maternal depression has on infant sleep architecture.

S20

Encoding The Goal Of An Object-directed But Uncompleted Reaching Action In 6- And 9-month-old Infants

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The understanding of goal-directed behavior was investigated in 6- and 9-month-old infants using a preferential looking paradigm. On a tv monitor, participants saw an actor's reaching movement towards one of two objects. This reaching movement was only presented until the hand passed the midpoint between the starting position and the position of the goal object, then the video was cut. Subsequently, two final states of the reaching movement were presented simultaneously on two separate tv monitors: in the plausible final state, the hand grasped the object to which the reaching movement was geared, in the implausible final state, the hand grasped the other object. Results show a clear discrimination of the two final states' plausibilities: both, 6- and 9-month-olds looked significantly longer to the less plausible final state, indicating an understanding of the goal-directedness of an action without perceiving the achievement of the goal.

F21

Children's Recall Of Basic, Self-Conscious, And Self-Conscious Evaluative Emotions From Stories

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Six- to ten-year-old children's memory for basic, self-conscious and self-conscious evaluative emotions was assessed from stories. Emotion actions were better recalled than emotion labels and non-emotional actions. Gender differences were found as boys recalled less of the emotion when the story was about a female protagonist than when it was about a male protagonist. Overall, girls recalled more emotional information than boys, although boys and girls recalled equal amounts of non-emotional information. Negative emotions were better recalled than positive emotions, regardless of whether they were basic or advanced (self-conscious) emotions.

S21

Monolingual And Bilingual Children's Use Of The Shape Bias

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Through an object matching task, this study examined the shape bias in monolingual and bilingual 3- to 6-year-old children. Three different trials were used to assess children's use of the shape bias, each using different instructions including "name" instructions, "same kind" instructions and "goes with" instructions. Results showed that bilingual 5- to 6-year-old children were more likely to use the shape bias than monolinguals of the same age, whereas younger children did not show any consistent use of the strategy. The shape bias was more readily used with "goes with" instructions, regardless of language group. These results will be discussed in terms of recent theoretical accounts of the shape bias, including the attention-learning account and the shape-as-cue account.

S22

Linking Brain And Behavior: Associations Between Behavioral Recall And Electrophysiological Measures Of Memory

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We examined memory performance in thirteen 4-year-old children (8 female, 5 male) using a combination of behavioral and electrophysiological measures. This approach, which is becoming increasingly common in the infant literature, allows for a unique union of observable recall and underlying memory processes. At Session 1, children were shown three 9-item sequences consisting of novel objects and actions. Children were allowed to reconstruct the sequences immediately, which provided a measure of encoding. Following a 1-week delay, event-related potentials (ERPs) were recorded as children viewed photographs of objects used in the sequences at Session 1 and objects that were entirely novel. In addition, a measure of behavioral recall of the sequences was obtained. In this report we explore associations between encoding, behavioral recall, and ERP measures of recognition memory in order to relate the description of mnemonic behavior to sources of change in the underlying neural representation.

S23

Development Of Executive Functioning In Children From Low Income Families: Performance On The Tower Of London Task

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Children from low-income families are at an increased risk for delays in academic achievement and cognitive development. This study seeks to look at differences in the executive functioning skills of children from low-income families compared to their more affluent peers. Executive functions are underlying cognitive skills that are necessary for learning in academic development. Performance on the Tower of London (TOL) was measured in 110 kindergartners (49 low income & 61 high income). Preliminary analyses reveal that high-income children outperformed low-income children on both the proportion of problems solved and on measures of move efficiency. Results indicate that executive functioning skills are an important aspect of school readiness. Children from low income families may benefit from executive skills training to better prepare them for school entry. The development of executive functioning skills is discussed in terms of implications for early intervention programs.

S24

Three Methods For Investigating Children's Perceptions of School

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Three different methodologies investigated how children told others and showed others what their school was like. The urban elementary school was very diverse (approximately 1/3 each, Euro-American, African American, Hispanic, 69% free/reduced price for lunch). The 119 participants (17-kindergarten, 31-1st, 19-2nd, 32-3rd, 15-4th, and 5-5th graders) were 1) interviewed verbally about school and what they learned there; 2) instructed to take 3 photographs to show others what their school was like; and 3) asked to select from 12 photographs the one that best showed their school and what was most important to them. Teachers identified children as high, average, or low achievers for their grade. The three methods yielded different

but complementary information about the meaning of school and learning for children of different ages, racial/cultural groups, and levels of achievement. The results are discussed in terms of Carol Dweck's research on learning versus performance goals and the effects on achievement and motivation.

F22

Do 9-month-old Infants Expect Distinct Words To Refer To Kinds?

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This study used a looking time method. During familiarization, a box was opened to reveal two objects inside: either two identical objects or two different objects. The test trials followed the same procedure, using the same objects, as familiarization except that before the box was opened, the experimenter looked into the top of the box and described its contents with either two labels ("I see a wug!" and "I see a dak!") or the same label twice. Infants who heard two different word labels, looked longer at two identical objects revealed inside the box (the unexpected outcome) versus two different objects (the expected outcome). This pattern was reversed when infants heard a single label repeated twice: they looked longer at two different objects revealed versus two identical objects. These results suggest that infants at the beginning of word learning may expect distinct labels to refer to distinct kinds of objects.

F23

Perseveration Following A Temporal Delay In The Dimensional Change Card Sort Task

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This study investigated whether a temporal delay between trials would help preschool children resist perseveration in a sorting task. Three- and four-year-old children were administered the standard version of the Dimensional Change Card Sort task (DCCS). In the DCCS children must sort test cards to target cards first by one dimension in the pre-switch phase (e.g., shape) followed by a conflicting dimension in the post-switch phase (e.g., color). The present study instituted four temporal delay conditions following the first post-switch (A). In each condition (10-minute, 1 hour, 1 day, and 1 week delay), a second post-switch phase (B) was administered in which children sorted by the post-switch A dimension. The results showed that the majority of children who failed to switch at post-switch A also perseverated at post-switch B, even at the longer delay periods of one day and one week. These findings suggest an expansion of current theories of executive function development.

S25

Earliest Memories In Children With And Without Aspergers: Implications For The Development Of Autobiographical Memory

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Developmental theorists postulate that theory of mind (ToM) is central to the emergence of autobiographical memory. If so, children with Asperger Syndrome (AS), an autism spectrum disorder characterized by ToM deficits despite normal intellectual and language development, should differ from their typically developing peers in autobiographical memory. We compared the reports of first memories generated by 6- to 13-year-old males with established AS with those provided by typically developing boys. Preliminary results are based on approximately half (n=17) of the final AS sample. Children with AS reported fewer earliest memories involving play, described more repeated events cf. specific events, and were considerably more variable in the self-reported age of occurrence of the first memory. These initial findings support the centrality of ToM in the offset of infantile amnesia. On-going research will extend the sample and will explore the role of individual difference measures within the AS sample.

F24

The Role Of Gestures In Mother-child Communication

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Do mothers' gestures communicate information to their children? This study investigated whether gestures convey unique information, information redundant with speech, or no functionally useful information at all. We collected video data of mothers of 18- and 36-month-olds introducing their children to novel shapes. Clips from these interactions were then presented to college students in three conditions: speech and gestures, gesture only (no audio), and speech only (no video). In all three conditions, the shape labels were removed. Participants judged which of three target shapes the mothers requested in each clip. Participants successfully identified target shapes in all three conditions. Most interesting, in the gesture-only condition participants were successful on 75% of trials. Participants identified the target shapes more accurately based on messages from mothers of 36-month-olds than mothers of 18-month-olds. Findings suggest that mothers' gestures convey meaningful information. Furthermore, mothers' messages improve as their children become more competent in communication.

S26

CHILDREN'S AGE AND EXPERTISE AFFECT MOTHERS' VERBAL AND GESTURAL COMMUNICATIONS

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Little is known about whether and how mothers modify the functional aspects of speech and gestures in line with children's age and expertise. We examined mothers' verbalizations and gestures as they asked their 18- and 36-month-olds for known and unknown shapes. Based on maternal reports, we chose 3 known and 3 unknown shapes. Dyads were separated by a divider that obstructed view of each other's side of the table. Mothers' task was to get their children to hand them a target shape. Mothers' communications varied with children's age and knowledge of shapes. Overall, mothers of 18-month-olds relied on gestures, used objects' names and metaphors. Mothers of 36-month-olds relied primarily on shape names and elaborate descriptions. For known shapes, mothers used shape names, whereas for unknown they utilized iconic gestures, descriptions and metaphors. Findings suggest that maternal functional communication is influenced by children's developmental level and expertise on a task.

S27

The Dynamics Of Memory For Transient Cues In The A-not-B Task

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Dynamic Systems theory views the A-not-B task as a competition between motor memories which increase in strength with every reach, and the perceptual input during the visual cue. Here, we present a dynamic field model of infant perseverative reaching, which

posits that the impact of a specific visual cue depends on a complex interaction between its salience and the length of the delay period. In Experiment 1, we present a series of simulations from the model which demonstrate this complex interaction. In Experiment 2, we present data from 144 infants (betweens-subjects design with 8 conditions: 4 salience levels and 2 memory demands) that mirror some of the testing conditions of the simulations. Both the simulations and infant data revealed that the salience of the cue necessary to result in perseverative errors was dependent upon the memory demand. Thus, perseverative errors are the outcome of complex interactions between perceptual-motor properties.

F25

The Performance Of 2-year-old Children On A Relational Match-to-sample Task

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Children do not have much success reasoning relationally before the age of 5 (Gentner et al., 1995). However, most of the tasks used to gauge relational reasoning performance are rather complex and utilize complex relations (such as, feeds or chases, or alternately, relations of arity greater than 2; e.g., Kotovsky & Gentner, 1996). We used a modified relational match to sample (RMTS) task (Premack, 1983, Thompson & Oden, 2000) task to gauge the ability of 2-year old children to appreciate very simple (same/different) relations. We found that when novel linguistic labels were used, the objects involved in the relation where clearly differentiated, and the over-all quality of the relation was strong (e.g., two identical objects were involved in the same relation), even 2-year-old children performed very well on the task. However, none of these factors in isolation proved to be sufficient to lift very young children's performance above chance.

F26

Influence Of Informant Reliability On Children's Information Seeking

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Children can use past accuracy to establish whether the information an informant provides is likely to be correct (Koenig, Clement, & Harris, 2004). Here we examine whether children use informants' past accuracy to guide information-seeking behavior. Sixty participants (3;5-year-olds, 7;5-year-olds, and adults) were given on 8 trials the opportunity to question one of two informants two times. The informant they selected the first time provided either correct or incorrect information regarding a story card. The dependant measure was whether the validity of the informant's response affected children's second questioning opportunity. Although children correctly determined the accuracy of the informant on the first question, in contrast to adults, they did not use this information to direct subsequent information-seeking. The result suggests that children's assessment of the past accuracy of informants may not lead to efficient learning because of inefficient information searching strategies.

S28

Do Shape Cues Facilitate Infant Number Representation?

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Previous research indicates that infants use continuous quantities, such as area and contour length, to detect changes in small set sizes (Clearfield & Mix, 1999, 2001; Feigenson, Carey, & Spelke, 2002). Another line of research indicates that infants are sensitive to perceptual cues, such as size and shape, as early as 4 months of age (Wilcox & Baillargeon, 1999). The current study examines whether presenting infants with stimuli of distinct shapes encourages individuation of objects, leading infants towards sensitivity to number, even after controlling for continuous amount. We examine three different ages in an effort to understand when sensitivity to numerical quantity develops. Using a habituation paradigm similar to Clearfield & Mix (1999), we found that 8- and 11-month-old infants were sensitive to both number and contour length changes when habituated to two or three distinct shapes. Five-month-olds, however, did not show sensitivity to either changes in number or contour length.

S29

Back To The Beginning Of The Universe: Autobiographical Narratives Of A Young Boy With Autism

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This poster presents an analysis of the autobiographical narratives of a boy with autism, written by him from the time he was eight through his 10th year. The narratives recount a series of emotionally charged events. Each event was recounted between three and six times, consecutively. Though the basic sequence of each recounted event remained stable over retellings, cumulative addition of perspective, details, and mental state terms suggest that he used the retellings as a way to gain a cognitive and affective grasp of events. The journal entries contained a surprisingly rich use of narrative devices (sequence, repetition, opaque language, and detail) to reveal his interpretation of events. The narratives include an increasingly wide range of mental state terms (frequency and type) and show a deepening awareness of people's thoughts and intentions in relation to actions and places (over time he included and coordinated internal and external landscapes of remembered events). Implications for the role of narrative in the development of a theory of mind in both typical and atypical children is discussed.

SA

Neural Correlates of Performance on the Dimensional Change Card Sort

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Dense-array (128-channel) electroencephalography (EEG) was used to record event-related potentials (ERPs) from 21 children (3 to 5 years) during a computerized dimensional change card sort (DCCS), a widely used measure of executive function (EF) in children. On pre-switch trials, children nearly always responded correctly, whereas on post-switch trials 10 children perseverated (failed). ERP analyses focused on two medial frontal negativities, a response-locked (ERN-like) negativity occurring about 200 ms post response and maximal over central sites, and a stimulus-locked (N2-like) negativity occurring about 150 ms post stimulus and maximal over frontal sites. For pre-switch trials, ERN-like amplitude was greater for children who subsequently failed the DCCS; N2-like amplitude was greater for children who passed. The same pattern was obtained for post-switch trials. Results have implications for the neurocognitive mechanisms underlying the early development of EF.

F27

Three Is Not Always A Crowd: Exploring Joint Attention And Language In Dyadic And Triadic Contexts

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Joint attention within triadic (mother-preschooler-infant) and dyadic (mother-infant) contexts and its relation to young children's language

development were investigated. Thirty-two infants interacted in two 10 minute free-play sessions: one with their mother and one with their preschool-aged older siblings. Interactions were coded for joint attention episodes and infants' vocabulary size was assessed via maternal report. Findings revealed mothers spent more time engaged in joint attention with one of their children than with both of their children within the triadic context and that they spent less time engaged in joint attention with their infants in the triadic context relative to the dyadic context. Interestingly, coordinated joint attention was correlated with infants' language abilities in both the dyadic and triadic contexts. These findings suggest that the number of social partners influences the basic dynamics of joint attention and that the triadic context is a positive and important language learning environment.

F28

Toddlers' Developing Ideas About Others' Preferences

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Children are sensitive to the basic relationship between emotional expressions and specific desires by the second year of life (Phillips, Wellman, & Spelke, 2002; Repacholi & Gopnik, 1997). However, children need to use more complex reasoning to recognize an individual's general preference. We have been exploring two-year-olds' capacity to form an impression of others' preferences by having them interact with two adults, each of whom consistently likes a certain type of toy. Test questions first examine whether children recognize this preference, then how they use it to make choices between additional items from the adults, and how it might affect their developing social relationships with those adults. That is, do children develop stronger liking for a person who shares the child's own preferences? These findings will ultimately contribute to our knowledge of children's understanding of people as individuals with subjective attitudes and preferences.

F29

Children's Attributions Of Psychological And Biological Characteristics To Animate And Inanimate Objects

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Three to 6-year-old children's (n = 56) attribution of animate characteristics to animate and inanimate objects (e.g. monkey, table) was assessed using two methodologies. In a card-sort task, children sorted 20 objects into 2 categories: "more like a girl" or "more like a rock." In a direct-questions task, children were asked whether 5 objects possessed various psychological and biological characteristics. Children's tendency to erroneously attribute animate characteristics to inanimate objects was related across the two tasks. However, in the card-sort task, older children made their sorting decisions based on animacy and children were more likely to endorse biological characteristics rather than psychological characteristics for animate objects in the direct-questions task. We discuss our findings in terms of the impact of age, methodology, and characteristic type (e.g. psychological vs. biological) on children's animistic attributions.

Collaborative Scientific Reasoning: How Parents Facilitate Children's Transfer Of A Scientific-reasoning Strategy

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The study, exploring how children learn a scientific-reasoning strategy while engaged in parent-child activity, was designed to answer two research questions: 1) Can children learn and transfer a scientific-reasoning strategy when provided training situated within parent-child activity?; 2) How do parents support young children's learning and transfer of a scientific-reasoning strategy? Thirty parent-child dyads with 5- to 8-year-old children were provided training in a strategy for designing unconfounded experiments and were given opportunities to apply and transfer their learning while exploring materials in two domains in two sessions spaced one month apart. Children demonstrated that they could learn to use the strategy, however age-related differences were detected. Older children continued to improve in their use of the strategy at the second session, while younger children's performance decreased. I describe how parents and children collaborated to engage in joint scientific activity and how parents helped children build on prior knowledge.

S31

Development Of Executive Functions In Monolinguals And Bilingual Children: Separating Working Memory And Inhibitory Control

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In several studies, bilingual children and adults have been shown to outperform comparable monolinguals on tasks that involve executive control, often depending on inhibition and selective attention. However, these tasks also require high levels of working memory. Therefore, it is unclear which aspects of executive functioning develop precociously in bilingual children. The present study examines this question by comparing monolinguals and bilinguals for their performance on a range of executive function tasks. The results show that bilinguals and monolinguals perform the same on memory span tasks, but bilinguals outperform monolinguals for working memory tasks where an operation must be performed on the sequence and on tasks requiring inhibitory control. The results help to focus on the specific way in which bilingualism alters executive functioning.

F30

Differences Between African And American Infants' Object Categorization In Habituation And Object-examining Tasks

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Recent research has demonstrated that the stimuli and testing procedure influence infants' online categorization (Oakes & Madole, 2000). However, most infants tested are from Caucasian-American middle-class families. The present study investigated whether African and American infants' differential experience with the replicas and televised pictures used in categorization tasks influences their categorization of animals versus vehicles, and whether previous online experience with the stimuli in an object-examining task affects infants' subsequent performance in a habituation task, and vice-versa. Twelve African (Malawian) and 24 American 9-month-olds were tested in an object-examining task followed by a habituation task, or vice-versa. Malawian and American infants performed differently from each other in both the habituation and the object-examining tasks. Further, infants performed differently in the two categorization tasks, and previous experience with the stimuli in one task influenced their subsequent performance in the other. Possible reasons for these differences are discussed.

S32

Linking Desires And Intentions During Word Learning

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Saylor and Troseth (2004) recently demonstrated that preschoolers use information about others' desires to learn words. Children in S & T were warranted in using desires to make inferences about communicative intention. However, people often express desires that are not linked to subsequent intentions (e.g., desire to eat a cow). In current work, we ask whether 3-4-year-old children understand that desires and communicative intentions are not inextricably linked. Children were shown two equally interesting toys. A researcher then expressed a desire for one toy over the other. In a subsequent test phase, she provided verbal information that either highlighted the link between her desire and a referential intention (e.g., "I like the blik") or did not (e.g., "I have a blik"). 4-year-olds reliably learned words only in the presence of the desire-intention link, indicating they recognized that desires and intentions are not always coupled. Data collection with 3-year-olds is underway.

SA

Who Did It? Two-year-olds' Comprehension of Pronouns and Word Order in Grammatical and Ungrammatical Sentences

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Children, who only produce single-word phrases, comprehend word order in sentences such as "Big Bird's tickling Cookie Monster" (Golinkoff & Hirsh-Pasek, 1996). Yet, young children's comprehension of common transitive sentences containing subject or object pronouns (e.g., "Bob kisses her" and "He washes Ann") is unknown. Production of third-person pronouns is inconsistent until about 30 months of age (Fenson et al., 1994) and even 4-year-olds frequently err in this production (Rispoli, 1994, 1998). The present poster presents results demonstrating that 27-month-olds can easily be the taught proper names of characters that can be used in sentence comprehension and children this age comprehend both transitive sentences containing subject pronouns and those containing object pronouns. Lastly, these children can distinguish between syntactically acceptable and anomalous sentences, thus providing evidence of an early ability to give grammaticality judgments.

F31

Children's Understanding Of Authentic Objects

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For authentic objects, the historical path of the object is more important than its appearance or material nature (Gelman, 2003). The current study explores children's understanding of three types of authentic objects: objects that are original creations (as in artwork or inventions), objects that have been in contact with notable individuals (a baseball hit by a famous player), and objects that have a connection to one's own history (your favorite baby blanket). Children aged 3-6 were asked to consider pairs of photographs including one "authentic" object (e.g., the first bicycle) and an object matched for identity (e.g., a new bicycle). Children picked which object belongs in a museum and which object they would want to have. This study provides insight into how children think about the historical paths and personal significance of authentic objects and explores whether these objects hold the same meaning for children as they do for adults.

F32

Development Of Dynamic Imagery: Effects Of Sensory-motor And Visual Information

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Numerous studies pioneered by Piaget and collaborators have shown that children seem to have difficulties representing water as a horizontal surface, and imagining kinetic or dynamic physical events. However, dissociations have often been found between conceptual knowledge measured by abstract tasks, and more practical knowledge measured by action tasks. The aim of the present study was to compare children and adults' performance in a dynamic imagery task, and to investigate the effects of sensory-motor and visual information on imagery performance. Children aged 5, 7, and 9 years and adults were asked to tilt an empty glass, filled with imaginary water, so that the imagined water would reach the rim. Glass diameter and water level were varied on two levels. Participants tilted the glasses either manually or using a remote control, with or without visual information about the tilting movement. When manually tilting the glasses with visual control, tilting movements did not reflect erroneous conceptual beliefs – all age groups were able to consider both factors, water level and glass diameter, according to the physically correct rule. Therefore, tilting movements were most likely based on correct mental representations of the horizontal water level. Without visual control, only the water level was considered. Thus, visual information had a beneficial effect on performance. In the youngest age group however, visual information alone did not facilitate normative performance, but only in combination with manual tilting. These results indicate that motor activities and sensory-motor feedback are particularly important in imagery performance of younger children.

S33

Category-specific Knowledge Effects On Infants' Generalized Imitation Of Basic Animal Properties: A Training Study

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Infants' global-level imitative responses in the generalized imitation (GI) task often are attributed to global conceptual representations of object kind. The primary aim of this study was to examine specific knowledge effects in 15-month-old infants' generalized imitation following training with basic-level animal properties. Using picture books featuring toy animals and props (e.g., toy monkeys "climbing" on rocks), 16 infants were trained on properties associated with four animal categories. The GI task then was administered to assess patterns of generalized imitation for two familiarized properties and two novel properties across the same categories. Consistent with previous GI studies examining basic-level properties, infants made global-level responses on the novel properties. However, with as little as 1-2 minutes of training on each property, infants constrained their imitative responses to the basic level.

S34

Children's Use Of Non-Verbal Cues In Accepting Plausible And Implausible Claims

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Social referencing studies have emphasized infants' sensitivity to the emotional reactions of adults toward ambiguous situations that involve novel objects, people, or events. This study used a social referencing paradigm to examine preschoolers' sensitivity to adults' non-verbal cues of assent and dissent with respect to an informant's verbal claims. As predicted, both three- and five-year old children

more often accepted implausible claims about common animals when adult bystanders expressed assent, as opposed to dissent, toward the informant's claims. Additional analyses will examine the frequency of looks towards the live experimenter and children's explanation of bystander reactions to both plausible and implausible claims. Implications for our understanding of the way that young children use consensus to calibrate their trust in testimony will be discussed.

F33

Infants' Use Of Linguistic Information To Update Object Representations

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Understanding that words refer and provide information about absent objects enables children to communicate beyond what is perceptually present. Recent research has shown that infants appreciate references to absent objects at the beginning of their second year (Ganea, in press; Saylor, 2004). The current research explores infants' ability to use words as a source of information about objects and events which are not present. Eighteen- and 20-month-olds first learned a novel name (Lucy) for one of two animal toys. Then, when the toys were absent, they heard an experimenter attribute a new property to the target toy (e.g., "I am so sorry! I spilled paint on Lucy"). During test, children were shown three animals (target animal with paint on it, target animal with no paint, and control animal with paint) and they were asked to show Lucy. The majority of the 20-month-olds and half of the 18-month-olds chose the target animal with paint, indicating that they have used the new information to update their representation of the object.

Sleep Indices and Early Language Arts Achievement

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Measures from a sleep diary kept by kindergarten children, averaged across five Fall school nights, were correlated with language arts measures collected throughout the year. We hypothesized that differences in correlations would become more pronounced throughout the year as the sleepier children fell further behind. Although most correlations diminished over the academic year, poor oral expression continued to be associated with longer sleep latency throughout the year. Children with more awakenings, longer sleep latency, and who spent less time in bed took longer to meet state requirements in letter knowledge. Longer sleep latency was associated with poorer end-of-year writing and reading scores. The hypothesis was only partially supported, due, perhaps, to a concerted effort to bring every child up to grade level by the end of the year. Longer latencies were also associated with hyperactivity, cognitive problems, impulsivity, social problems, and DSM-IV criteria for ADHD.

F34

Children As Psychologists: The Development Of Folk Psychology In Korean Children

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This study was carried out to examine whether children had the naive psychological knowledge that the mental states are required to understand the intentional actions, whether their psychological knowledge was organized as a theory, and in what aspects the knowledge changed as children get older. Three- to 11-year-old Korean children were presented with two types of tasks. In action explanation tasks, children were presented with simple descriptions of two characters engaging in specific actions and then asked to explain the characters' action. In action prediction tasks, they were told stories depicting a character's desire and belief and then asked to predict the action of the character. Three-year-olds explained the action in terms of abstract construct such as emotion, intention, and desire, and they predicted the character's action on the basis of her/his desire and explicit belief but not on the basis of inferred false belief and traits. In addition when they were asked to explain one mental state, they explained in terms of other mental states, suggesting the coherence of their knowledge. The present results suggested that even 3-year-olds' psychological knowledge was organized as a theory, in that it was used as a causal device in explaining and predicting human actions, and it had abstractness and coherence. Older children's knowledge was different from 3-year-olds' in that older children explained the action in terms of more complicated mental states such as beliefs and traits. The nature of the developmental change in psychological knowledge was discussed.

F35

Priming Effects In Children's Reasoning About Aggression

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Two studies examined whether priming children with linguistic cues such as noun labels might affect their reasoning about aggression. In Study 1, preschoolers who heard the term "evildoer" were more likely to infer stability, resistance to intervention, and innate causation than were children who heard about a character who "does evil things whenever he can." In Study 2, elementary school-aged children displayed similar patterns of essentialist reasoning when they were presented with noun labels such as "bully". These studies contribute to a growing body of evidence suggesting that children use nouns as powerful cues regarding entitativity and the fundamental nature of things.

FA

Children's Impressions of Critical Speakers

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Children's impressions of ironic remarks can be quite different from those of adults (Dews et al., 1996; Harris & Pexman, 2003). We proposed that children's perceptions of ironic intent might be linked to a) politeness or face concerns for ironic criticism, and b) a tendency to identify with the targets of ironic remarks. This was tested by presenting 10-year-old children with ironic and literal statements in puppet shows that differed in terms of the parties present (speaker, target, and/or bystander). Children rated speakers' attitude and humour from each party's perspective. Children also indicated how they were similar to and different from each party. Children expressed disapproval for speakers who made ironic and literal criticisms and only identified with the targets of criticisms in puppet shows where the option of bystander was not available. These results show that 10-year-old children's impressions of ironic intent are closely linked to face concerns.

F36

Children's Ability To Use Time-lines To Recall The Order And Duration Of Single Actions

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This study examined the ability of children aged 4-8 to recall temporal information verbally and using a visual "time-line". Forty-five children participated in an activity (making a picture of the sky at night) with the researcher, followed by a series of recall tasks. Children were asked to recall location and duration information about autobiographical events that parents provided, as well as

actions from the activity. Results demonstrated that children more accurate when using the time-line than verbal recall. Although there were developmental increases in children's ability to provide temporal information (7-8 year olds were always more accurate than the 5-6 year olds, followed by the 4 year olds), the time-line assisted all of the children.

S35

How Do Illustrations Affect Parent Story-Reading Behavior And Preschooler's Story Recall?

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It is well-established that, among school-aged children and adults, memory for verbally-presented prose is enhanced by illustrations. Recent research suggests that young preschoolers may not show the same mnemonic benefits when provided story illustrations as older children. In this study, we investigate whether illustrations influence the way parents read stories to children, and the consequences for children's memories. The goal was to examine the effects of illustrations on parent-child interactions during storybook reading, and the effects of these interactions on children's story recall. Parents read an illustrated or non-illustrated story to their children, and children's story recall was assessed. We will code parent and child extratextual comments during the reading sessions, and compare the number and quality of comments between the Illustrated and Nonillustrated conditions. We also will compare children's story recall between conditions, and look at whether group differences are mediated by parent and child reading behaviors.

S36

The Intensity Of Religious Messages In Schools And The Effect On First Graders' Beliefs About Compliance With Adults

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Little research examines the role of religion in socialization. This study asked whether the intensity of religious messages in school have an effect on first graders' beliefs about compliance with adults? 48 first graders from an Orthodox Jewish school (high intensity), a Conservative Jewish school (moderate intensity), and a private school (little religious intensity) participated. Each participant was given a story about a child who is left alone in a room with compelling toys and asked not to touch those toys. Each participant was asked whether the story child complied with the adult (did not play with the toys). We found that the intensity of religious messages did correlate with compliance if verbal responses were analyzed. The nonverbal responses suggested that intensity did not correlate compliance. Moreover, some children appeared to be in "transitional" states with respect to their beliefs about compliance and thus, possibly "ripe" for absorbing social input. This suggests that strong religious messages may interact with a child's "readiness to learn" in the learning of social norms.

S37

An Examination Of Associations Among Physical Counterfactuals, Social Counterfactuals, And Theory Of Mind Performance

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A few studies have examined the degree to which counterfactual thinking accounts for variability in theory of mind performance (e.g., German & Nichols, 2003; Guajardo & Turley-Ames, 2004; Riggs, Peterson, Robinson, & Mitchell, 1999). Findings suggest that the relationship between counterfactual thinking and theory of mind understanding depends upon the nature of the counterfactual task. The present study had two purposes: 1) to examine the degree to which upward and downward counterfactuals predict theory of mind performance, and 2) to explore whether social counterfactuals account for more variance in theory of mind performance than do physical counterfactuals. Eighty-one 3- to 5-year-old children completed language, physical counterfactual, social counterfactual, and theory of mind tasks. Though children generated similar numbers of physical and social counterfactuals, generation of physical counterfactuals accounted for unique variance in theory of mind performance. More specifically, the generation of downward counterfactuals was important. The implications of these findings will be discussed.

F37

Socialization Of Memory Beyond The Narrative: What Children Learn From Their Parents During A Sort-recall Task

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Maternal reminiscing style has been identified as an important factor in the early development of autobiographical memory narratives (Nelson & Fivush, 2004). Through the initial scaffolding provided during memory conversations, children begin to internalize the narrative structure. Another memory skill that gradually emerges during the preschool years is strategic remembering. We investigated whether children internalize the strategies used by their mothers and apply them independently. Mothers' teaching strategies during a sort-recall task were examined when children were 40 and 52 months old. Children's encoding behavior was examined as they independently worked on the same task at 52 months. Results showed that sophistication of the strategy used by the mothers paralleled that of the children. For instance, mothers' repetition of the cards in taxonomic categories was highly correlated with children's use of associations during encoding. Results suggest that socialization of memory skills extend beyond autobiographical reminiscing.

S38

Information Processing And Emotion: Contributions Of Individual Differences To Emotional Stroop Performance

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A robust body of research examines processing of emotional information, yet the study of individual differences in such processing has only recently begun. For instance, attachment may influence the development of emotional processing through formation of working models of relationships that are carried throughout life. The current study examined processing speed for emotional and attachment stimuli and its relation to attachment. Adults completed an emotional Stroop, including items varied in valence and attachment relatedness, and self-report measures of attachment and personality. Results indicated for negative stimuli, reaction times were faster for attachment-related than nonattachment-related words, whereas for positive stimuli, attachment relatedness did not have an effect. Further, greater attachment avoidance predicted faster response times for positive attachment, positive nonattachment, and negative nonattachment words, even with personality variables controlled. These results highlight attachment as an independent contributor to

differential processing of emotional information, which has implications for developmental and cognitive outcomes.

F38

The Relation Of Executive Function To Memory For Sources Of Actions In 3-year-olds

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Memory for sources of actions develops rapidly between the ages of 3 and 4 years. Recent research has demonstrated that when preschool children are engaged in planning another person's actions they are more prone to committing "I did it" errors (Hala et al., 2005). In the research reported here we examine the relation of individual differences in executive function (EF) to the ability to inhibit this "I did it" bias on a source monitoring task. In our task, 3-year-old children collaborated with an experimenter to construct a model farm, each taking turns to place a toy farm piece in a location either they or the experimenter chose, depending on the condition. Children were also tested on a battery of EF measures. Results indicated a relation between EF performance and fewer "I did it" errors, especially in the more difficult condition where children were engaged in planning the placement of the experimenter's objects.

SA

Elaborative Talk During and After Events: The Influence of Conversational Style on Event Memory

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This report focuses on 30, 3- and 4-year-olds who took part in an experimental study designed to examine the influence of elaborative language exposure during and after a unique event on children's memory for the experience. Participants were randomly assigned to one of two conditions in which a researcher used either elaborative conversational techniques or empty language while engaging with each child in a pretend "camping adventure." One day later, the children in each group were randomly assigned to one of two memory conversation conditions involving a second researcher using elaborative or empty questions to elicit the children's recall of the event. After a 3-week delay, all children received a standard memory interview. Results indicate that children who experienced the event with a researcher using elaborative language and also engaged in an elaborative memory conversation following the event evidenced the best memory for details about the experience after 3 weeks.

S39

Recall Memory, Joint Attention And Later Cognitive Functioning

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We measured non-verbal recall memory (deferred imitation) at 9 months, joint attention at 14 months, and general cognitive ability at 50 months in a group of typically developing Swedish children (N=26). The aim was to explore the predictive value of joint attention and deferred imitation for later cognitive functioning as measured by the McCarthy Scales of Children's Abilities. Joint attention was examined through the Early Social Communication Scales and recall memory was assessed with the deferred imitation paradigm. The results revealed that children performing low on both joint attention and recall memory scored significantly lower on the McCarthy at 50 months, demonstrating a long-term stability of interest to both theory and practice.

S40

Preschoolers' Eye Movements Suggest That They Remember New Word-Referent Links Provided By Ignorant Speakers

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We developed an eye-tracking comprehension paradigm to investigate whether preschoolers show evidence of any memory for a new word-referent link that was provided by an ignorant speaker. Children (N = 36) were taught a novel label for a novel referent by either a knowledgeable or an ignorant speaker and their comprehension was tested using our eye-tracking paradigm. Results showed that 300-700 milliseconds after hearing a standard comprehension question (e.g., 'Show me the blicket') children in the ignorant speaker condition looked longer at the target object relative to a baseline control question in which they were asked to make a guess about the referent of a novel word that they had never heard before. After 700 milliseconds, however, this effect disappeared and children in the ignorant-speaker condition were unsystematic in their selection of the target object. These findings provide insight into the cognitive mechanisms that might enable children to avoid learning words from ignorant speakers.

F39

Would You Please Turn On Your Goal-attribution System?: Priming Goal Identification In Adults

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Current project aims at developing a new method for examining the nature of teleological interpretation of simple actions in adults and preschoolers. The method consist in priming reaction times in goal-identification task. Subjects watch simple animations and respond by touching figures directly on the touchscreen of the computer. It is hypothesized that after witnessing an event containing cues of goal-directedness and/or agency (e.g. a ball jumping over another ball) subjects will identify goals faster than after witnessing event containing no such cues (e.g. a ball launching another ball). The same cue loaded event should not lead to comparable gains in cause-identification times. Preliminary results from one study with adults suggest that this is the case. The project may provide a sensitive method for weighting the role of different perceptual cues. Also, it may be a source of converging evidence in favor of so called 'cue based' approach to goal attribution.

S41

Does Conversation Matter? Relations Between Expressive Language And Theory Of Mind

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The purpose of this study was to determine which type of language ability (e.g., mental state verbs, sentential complements, receptive vocabulary or mean length utterance) and which aspect of positive social interaction was more important for presence of theory of mind. Participants were 31 ethnically diverse children, ages 3- to 5-years-old. The only language variable with a social component (i.e., mean length utterance) appeared to be the most important to success on the theory of mind scale, and accounted for the variance in the correlations of the other measures of language ability with theory of mind. Therefore, the more a child was using expressive language to communicate with others, the more likely that child was to succeed on the measure of theory of mind. Qualitative analyses of the utterance data are currently being run to determine if whom the children were talking to (e.g., adults vs. children) influenced the

relations between expressive language and theory of mind.

S42

Aerobic Fitness And Neurocognitive Function In Preadolescent Children During Flanker Task Performance

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The relationship between aerobic fitness and executive control was investigated in high- and low-fit preadolescent children. Aerobic fitness was assessed using the PACER test of the Fitnessgram, and executive control was measured by neuroelectric and behavioral responses to congruent and incongruent conditions of a flanker task. Specifically, the P1 and P3 components of an event-related brain potential, reaction time (RT), and response accuracy were recorded from 25 high-fit (M=9.1 years) and 25 low-fit (M=9.4 years) children. Results indicated that high-fit children exhibited larger P1 amplitude at occipital scalp sites, and larger P3 amplitude at parietal scalp sites, when compared to low-fit children. Further, better task performance (i.e., greater response accuracy) was observed for high-fit compared to low-fit children, while no differences were observed for RT. Since group differences were observed across conditions of the flanker task, the findings suggest that fitness is globally related to cognitive functioning during preadolescent childhood.

S43

Contributions Of Language And Cognitive Control To The Development Of False Belief Understanding

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The developmental relationship between language, cognitive control, and mental state reasoning is extremely complex, leaving many unanswered questions. In the current study, we used a training paradigm to unpack the relative contributions of language and cognitive control to false belief understanding. In the linguistic training condition, children were exposed to perspective-shifting mental state discourse. In the cognitive control training condition, children completed dimensional change sorting tasks with contingent feedback. Both conditions resulted in better performance on posttests of false belief understanding relative to a no-training baseline condition. These findings suggest that experience with refocusing attention and coordinating multiple representations of stimuli, in the absence of corresponding changes to domain content knowledge, is sufficient for improved performance on false belief tasks. We propose that mental state language facilitates cognitive control by directing attention to multiple, often discrepant representations, thus encouraging a mindset effective for reasoning about false beliefs and the mind in general.

F40

Real-Time Dynamics Of Language Acquisition In Two-Year-Old Children And Connectionist Models

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Children's word-learning is often attributed to fast-mapping--quickly linking a novel name to a novel object following minimal exposure (e.g., Carey, 1978). However, fast-mapping and word-learning may represent distinct time scales of language acquisition. Toddlers were presented two familiar and one novel object and asked to "get the blicket." They correctly chose the target objects in this fast-mapping task, but did not retain these mappings after a five minute delay. Thus, a single fast-mapping trial is not sufficient for word-learning. These results were captured in a connectionist network. After learning a small vocabulary, the model succeeded at fast-mapping but did not show retention. Analyses of the connection weights indicated that little learning occurred during fast-mapping. However, over hundreds of fast-mapping trials, the model eventually learned the word/object pairs. Thus, while on any given trial, fast-mapping behavior may arise from in-the-moment problem solving, over the long-term it contributes to word-learning.

F41

Feedback To Toddlers' Verb Constructions: Rethinking The Role Of Caregiver Input

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Existing studies on the relation between caregiver input and children's construction development focus on caregiver input prior to children's production. No studies to date have examined the effect of caregivers' feedback after children's construction. The present study begins adding this important missing piece by examining caregivers' feedback to their 2 and 3 year-old children's verb constructions. Analyses draw upon videotaped naturalistic interactions of 12 caregiver-child dyads during play scenarios (see Smith & Budwig, 2005). Results examine: 1) caregivers' response forms and constructions; 2) verb overlap and anti-entrenchment in caregivers' responses; 3) caregivers' response functions. Discussion focuses on the distinct characteristics of caregivers' feedback from these two age-groups, showing why an examination of caregiver feedback after the child's production is important.

S44

The Role Of Language In Number-word Learning: A Cross-linguistic Study Between Mandarin And English

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To examine the role of linguistic cues in the acquisition of number-word meanings, this study compares children's numerical knowledge across two language groups, Mandarin and English. 140 preschoolers aged between 24 to 44 months from both populations were assessed with two tasks, "Give-a-number," and "Point-to-X." Preliminary results suggest that English-speaking children were more advanced than Mandarin-speaking children in numerical knowledge as measured by "Give-a-number" task. Matched by age, gender, and socio-economic status, more English-speaking children had learnt the first meanings of number words than Mandarin-speaking children. However, using a different task, "Point-to-X," the difference between Mandarin and English groups was no longer significant.

F42

What Counts As "By?" Young Children's Use Of Relative Distance To Judge Nearbyness

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Learning to communicate about location constitutes a significant milestone for young children. Nonetheless, very little is known about children's developing understanding of spatial terms. Our purpose was to examine how young children's understanding of the spatial preposition 'by' changes. In particular, we investigated how 3- and 4-year-old children and adults use relative distance to judge nearbyness. Participants judged whether several blocks were by a landmark. The relative distance between the blocks and the landmark varied. In Experiment 1, 4-year-olds and adults were more likely to judge objects at an intermediate distance as by the landmark when intervening objects were absent than when they were present. In Experiment 2, all ages were more likely to judge objects at a short distance as by the landmark when intervening objects were absent.

Reliance on relative distance to judge nearbyness becomes more systematic and applicable to larger spatial extents across development.

S45

Flexibility Of The Suffixation Preference In Infants

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Cross-linguistically, suffixation is more frequent than other types of inflections (Hawkins & Gilligan, 1988), and this suffixation preference holds true during initial language acquisition as well (Clark, 1998). Previous research in our lab with adults (Hupp, Sloutsky, & Culicover, 2004) suggests the suffixation-like preference is also present in nonlinguistic domains that have a temporal structure (e.g., visual sequences), and this preference is both flexible (e.g., switch to prefixation-like preference) and transferable across domains. This research suggests that the suffixation preference in language may stem from mechanisms of sequential processing that are not specific to language. The current research is investigating whether similar mechanisms are at work at the beginning of language acquisition. Preliminary findings suggest that infants do indeed show flexibility in this preference within the visual domain, and current research is addressing flexibility within other domains (e.g., language) and also the transferability across domains (e.g., visual to language).

A Short-Term Longitudinal Study on the Development of Coordinated Joint Attention

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The present study investigated development of the coordinated joint attention and explored mother's behavior that may be related to its development. Seventy-eight infant-mother dyads were longitudinally observed at 9, 12, 15 and 18 months of age. Observations were coded using a state-based coding system that included states of unengagement, person engagement, object engagement, on-looking, supported joint attention and coordinated joint attention. Pointing frequency of mothers and infants was also measured in order to investigate its relation to the development of coordinated joint attention. This study provides evidence for the two main conclusions. First, the amount of coordinated joint attention and supported joint attention increased, while other states declined or did not change with age. Second, development of coordinated joint attention was closely related to supported joint attention and mother's pointing behavior, suggesting that mothers indeed scaffold their infant's early attempt to coordinate their attention in a social context.

S46

Can Preschool Children Put Their Money Where Their Mouth Is? Comparison Of Rule Knowledge Vs. Performance On An EF Task

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Performance on a preschool gambling task (Bechara, 1994) was examined and then knowledge of "rules" was assessed to explore how rule knowledge influenced executive task performance in typically developing 3- to 6-year-olds. In this computerized preschool gambling task, participants pressed buttons to select one of two stimuli; a reward/cost followed each press. One stimulus resulted in consistently higher rewards/costs but to provide conflict between immediate and long-term rewards, the low reward/cost stimulus resulted in greater total reward. Participants were then asked "Which side was better?" to determine rule acquisition. Preliminary results suggest that 3 year-old children chose the low reward stimulus more often than older children. 3 year-olds' also verbalized the low reward stimulus more frequently and showed greater consistency between performance and rule knowledge. These counterintuitive results may reflect changing sensitivity to positive vs. negative outcomes: 3-year-olds may be more sensitive to loss while 4-year-old's focus on reward.

S47

Gender Differences In The Relations Between Autobiographical Memory And Depressive Symptoms Or Stressful Life Events

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A number of researchers have proposed that, over time, repeated negative experiences can lead to the development of an "overgeneral" style of autobiographical remembering for regulating affect (e.g., Williams, 1995). Such a style is also thought to be associated with depression. Because previous research has suggested that males and females might differ on a number of dimensions of autobiographical memory, including specificity (e.g., Pillemer et al., 2003) we were interested in whether the relations between autobiographical memory and depressive symptoms or stressful life events might differ between males and females. To test these hypotheses in the present study, depressive symptoms, stressful life events, and autobiographical memory performance were measured in male (n = 154) and female (n = 123)college undergraduates. Analyses will examine whether the relations among autobiographical memory, depressive symptoms, and stressful life events differ between male and female participants.

Scaffolding Preschooler's Theory Of Mind: Does Sibling Age Gap Matter?

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The aim of this study was to analyze whether siblings of varying ages play a role in scaffolding preschoolers' theory of mind development in a group of 49 children aged between 3 years, 0 months and 4 years, 2 months. Theory of mind ability was assessed with a battery of seven false-belief tasks derived from Wellman and Lui (2004) varying in difficulty. Results indicate that there was no significant relationship between the age of siblings and theory of mind development. A general pattern was found indicating that preschoolers' with older siblings closer in age (9 to 35 months) are more likely to influence theory of mind ability when compared to older siblings with a larger age gap (36-60 months, 61+ months). However, the pattern was not statistically significant. Further research into older sibling age gap and theory of mind scaffolding is encouraged.

SA

The Role of Labels and Syntax in Early Verb Learning

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Research has shown that grammar helps children to learn verbs, but we do not know why. Is it because sentences provide labels for objects, making it apparent that the new word is a verb labeling the action? Alternatively, is it the grammar that narrows the focus of verb meaning? Ninety-six 2.5- and 3-year-old children watched a video in which a woman performed a novel action with a familiar object. Children were randomly assigned to 3 conditions: bare ("Wow! Cool! Sabbing!"), label ("Jen! A crayon! Sabbing!"), or syntax ("It's Jen! It's a crayon! Jen is sabbing the crayon!"). Test trials revealed 2.5-year-olds failed to map a verb in the bare and label conditions, but succeeded in the syntax condition. However, by three years of age,

children mapped word to action without grammatical cues. Thus, grammar facilitates verb learning beyond merely labeling the elements present in the scene.

FA

Infants Match Numerosities Across the Visual and Auditory Modalities

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Recent studies suggest that nonverbal number representations of adult humans and nonhuman animals are independent of modality (Barth et al., 2003; Jordan et al., 2005). Attempts to investigate crossmodal numerical matching in infants, however, yielded mixed results. Using a paradigm that avoids previous stimulus confounds, we show that 7-month-olds preferentially attend to visual displays of adults numerically matching the number of adults they hear. Participants viewed two side-by-side videos of unfamiliar, adult females mouthing "look"; one showed 2 adults and one 3. Infants simultaneously heard 2 or 3 adults concurrently saying "look". Onset and offset of auditory and visual stimuli were equated. Infants looked significantly longer at the numerically matching display than at the nonmatching display [$t(19)=2.64$, $p < 0.02$]. They spent 59.2% of their total looking time looking to the match, which differed significantly from chance [$t(19)=2.09$, $p < 0.05$]. Thus, by 7 months, infants match numerosities across modalities.

F43

Inductive Inference, Artifact Kind Concepts, And Language

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Two experiments investigated the influence of object labels and perceptual similarity in 18-month-olds' inductive inferences within the domain of artifact kinds. In Experiment 1, infants learned kind-dependent functions of training objects (e.g., pressing together the sides of castanets to produce a sound), and were presented with test objects that varied in perceptual similarity. When objects were labeled with an adjective or no label, infants generalized functions to perceptually similar test objects, but when objects were labeled with a count noun, infants generalized to all test objects, regardless of perceptual similarity. In Experiment 2, a different pattern emerged with kind-independent functions (e.g., using castanets to ring a bell). Perceptual similarity continued to affect performance, but neither count noun nor adjective labels changed the pattern of inference. These results suggest that 18-month-olds differentiate count nouns from adjectives, and only count nouns refer to kinds, override perceptual similarity and guide inductive inferences about kind-dependent functions.

SA

Content Exchange False Belief Tasks is More Difficult than the Transfer Task

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Comparison of several content exchange type of false belief (FB) task and Sally-Ann type transfer task revealed that the number of objects involved in determines the difficulty of FB questions. The content exchange tasks are; 1) the picture of the original object shown on the box vs. plane box, 2) asking about the person response in front of the child or not. One hundred children, 4-5 year olds (50 boys and 50 girls, 59 months) participated. The transfer task was easier than any of the content exchange tasks ($p<.01$) and no significant differences among any of the content exchange tasks. The result suggest that 1) having all the items in front of the child in transfer task made the task easier, or 2) only using single item moved around made the task easier.

F44

Making The Connection Between Maps And The Larger Space

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3-year-olds attempted to retrieve a sticker under one of 10 coasters based on information provided on a map. Children were shown the item's location on the map when either standing in front of the search space or behind a curtain and had to move to the search space. In addition, the map either contained connecting lines to assist in depicting a meaningful figure (e.g. house) or these lines were absent. The presence of connecting lines did not assist performance. Unless provided the information on the map while in front of the search space, participants had considerable difficulty retrieving the sticker even though they then demonstrated good memory for where the item had been indicated on the map. Increased memory demands and/or having to move to the search array appear to easily disrupt the very young child's representational abilities but not their memory for information on the map.

FA

The Effects of Instruction on Preschooler's Ability to Resist Distraction

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The development of attention has become an important topic in child development, but little is known about when children's attention is affected by verbal instruction. Eighty-four 3- and 4-year-olds worked on four cognitive tasks while a continuous distractor played in the periphery. Children were assigned to one of three levels of instruction with respect to ignoring the distractor: frequent, moderate, or no instruction. The duration of looks to the distractor and to the task were measured. Overall, any level of instruction reduced the amount of attention to the distractor. For 4-year-olds, moderate levels of instruction were significantly more effective than frequent levels of instruction in sustaining attention to the task. Three-year-olds exhibited similar amounts of looking to the task across conditions. Attention therefore appears to come under instructional control between 3 and 4 years of age.

S48

How Mothers Encourage And Discourage Infants' Actions

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In studies examining infants' use of social information, mothers were directed to encourage and discourage infants' responses to ambiguous situations by restricting their messages to a single modality (frozen facial expressions of fear and happiness or scripted verbal messages). However, little is known about how mothers naturally encourage and discourage their infants' actions in a potentially risky motor task. We observed 48 mothers of 12- and 18-month-olds as they naturally encouraged and discouraged infants' actions on slopes, unconstrained to a single modality. Surprisingly, encouragement and discouragement were not exclusively positive or negative. Mothers displayed overall positive facial and vocal affect and conveyed their messages via verbalizations and gestures. Gestures occurred on 63% of trials and were accompanied by verbal messages. Most frequently mothers used generic verbalizations with specific gestures (e.g., verbalizing "No" while pointing). Instead of solely relying on affect, mothers guided infants' actions using verbal instructions and gestures.

S49

Getting There Faster: 12-, 18- And 24-month-old Infants' Use Of Function Words To Determine Reference

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Forty-eight monolingual infants of 12-, 18- and 24 months were tested in a preferential looking task on their ability to detect ungrammaticalities caused by manipulating a single function word in sentences. Infants heard grammatical sentences in which the determiner 'the' preceded a target noun as well as three ungrammatical conditions in which 'the' was either dropped, replaced by a nonsense function word, or replaced by an alternate English function word. The 18- and 24-month-old infants but not the 12-month-olds oriented faster and more accurately to a visual target following grammatical sentences. The results suggest that by 18 months of age, infants use their knowledge of determiners in establishing semantic reference and that this ability develops between 12 and 18 months.

S50

More Than A Matter Of Getting 'unstuck': Flexible Thinkers Use More Abstract Representations Than Perseverators

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Children's inability to think flexibly is often striking. In a simple card-sorting task, children often perseverate by continuing to sort cards by a previously correct but no longer appropriate rule. One account explains this behavior in terms of distinct memory representations: 'active' representations that allow flexible switching to a new behavior, develop later, and are more abstract, and 'latent' representations that support perseveration, develop earlier and are more stimulus-specific. This account predicts that switchers will be better than perseverators in generalizing their behavior to sorting novel cards. To test this prediction, 3.5 year olds first sorted cards by one rule (e.g. shape or color), were then asked to switch to another rule, and then were asked to apply the rule they were using to novel cards. Consistent with the active-latent representations account, switchers generalized their sorting behavior to novel cards more reliably than perseverators.

S51

The Effect Of Language On Children's Face Processing

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The present study investigates whether an early attention to the language someone speaks prefaces a later social and cognitive understanding of other humans. English-speaking three to five-year-old children were shown photos of faces, paired with voices in either English or Spanish. In part 1, children were told either a positive or a negative/neutral fact about one of the faces. Children were significantly more likely to pair the English face than the Spanish face with the positive fact. In part 2, children were given a face memory task where each face from part 1 was paired with a novel distracter. Children who demonstrated an English-positivity bias in part 1 showed better memory for the Spanish faces than the English faces in part 2. Possible conclusions include relating this finding to research with adults showing enhanced face memory for cheaters.

F45

Learning Words: A Test Of The Mechanistic Account Of Word Learning

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This study investigates how children recognize naming events. We test whether 18-month-olds can learn to recognize that novel, arbitrary cues reliably co-occur with and therefore index naming. In the experimental condition, an experimenter produced familiar object labels (e.g., "dog") accompanied by a novel physical cue (i.e., a dog is placed on a red tray). In the control condition, the experimenter varied whether labels occurred while the object was on versus off the tray during labeling. We then tested whether babies interpreted the tray as a naming cue. The experimenter placed one novel object on the tray and one off and produced a novel label (e.g., "Blicket!"). Babies' interpretation of the novel word was tested using a forced choice paradigm (e.g., "Which one is the blicket?") Babies in the experimental, but not control, condition mapped the word to the on-tray object, suggesting that they recognized that the red tray indexed naming.

S52

Previous Experience Influences Infants' Category Learning In The Laboratory

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Recent work suggests that infants' categories are a product of both what they experience in the laboratory and the knowledge they have acquired in everyday life. We examined the effect of 4-month-old infants' previous experience with dogs and/or cats on their learning of the adult-defined category of cat in a visual familiarization task. In general, whether or not infants have experience with pets at home influenced their learning in the laboratory. Specifically, only infants with pets at home remembered the individual cat exemplars. These results are consistent with recent theorizing about how infants' categorical representations change with experience, and provide understanding into how infants' categorization unfolds over time.

S53

Big, Small, Or Just Right? Children's Number Categories And Their Understanding Of Numerical Magnitude

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We examined relationships among kindergartners', first graders', and second graders' representations of numerical magnitude, ordinal knowledge, and qualitative number categories. Performance on the three tasks proved to be highly correlated. Between kindergarten and second grade, patterns of both numerical categorization and number line estimates progressed from primarily logarithmic to primarily linear. First and second graders' categorizations of numbers were sensitive to context -- for example, they classified 18 as a big number in the 0-20 context but as a small number in the 0-100 context -- whereas kindergartners tended to have more rigid categories -- they viewed 18 as a big number regardless of the numerical context. These and previous results suggest that a common representation of numbers shapes performance on many numerical tasks.

F46

Does Slow And Steady Win The Race?: Priming And Inhibition In Preschool Children

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It is well known that 4-year-olds have great difficulty inhibiting dominant responses, such as saying "night" to a sun card and "day" to a moon card, requiring several seconds to compute their responses (Diamond et al., 2002; Gerstadt et al., 1994). Unfortunately, young children frequently fail to take the time they need to respond correctly; when forced to take more time, their performance improves

significantly (Diamond et al., 2002). The current study examines the effect of a behavioral prime on 4-year-olds' performance on the Stroop-like day-night task. Children in the slow prime condition, who heard a story about a slow turtle prior to participating in the day-night task, demonstrated longer response latencies and better accuracy on the day-night task than children in the fast prime condition, who heard a story about a fast cheetah. Results from this study are discussed in terms of environmental priming, inhibitory control, and working memory.

S5A

The Difference between Monolingual and Bilingual Children in Executive Control of Attention Network Test

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According to Fan et al(2002), Three functions of attentional networks involve alerting, orienting and executive attention and their developmental differences evaluated by the Attention Network Test (ANT) using e-prime program. Bilingual children have been shown the advantage of 'control of processing' which refers to executive control over monolingual (Bialystok, 1999). This study investigated the difference of executive control between monolingual and bilingual children in Yanji, China. The subjects were 71 children 4 to 5 years of age, 38 of whom were Korean-Chinese bilingual and 33 were Chinese monolingual. Two groups were comparable in a working memory task($F=2.04$, $p> .05$). The result showed that bilinguals were better than monolinguals in alerting ($F=6.47$, $p<.05$) and executive function of ANT($F=9.73$, $p< .001$). This result replicates positive effects of bilinguals to their monolingual peers in their executive control (Yang & Lust, 2004).

S54

Geometric Encoding In Reorientation

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Research has shown that disoriented humans and animals use the geometric shape of the environment to reorient. For example, when subjects are shown an object being hidden in one corner of a rectangular room and are then disoriented, they search in the correct corner and the geometrically equivalent diagonal corner equally often, while tending to avoid the other two corners. Gouteux and Spelke found that disconnected wall panels induce geometric encoding, while line markings on the floor do not. We further explored the nature of the geometric encoding mechanism in reorientation, and found that disoriented 4-year-olds use the geometry of a rectangle formed by walls of heights 3 feet, 1 foot, and even 3/4 inch, but not by taped lines on the floor. These results suggest that neither barriers nor obstacles to locomotion are requisites for geometric encoding in reorientation. Whether it is triggered by visual representations or by cognitive boundary representations is open for further investigation.

S55

From World To Lab And Back: Relating Children's Understanding Of Thinking In Everyday And Experimental Contexts

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This study is a systematic comparison of children's 'thinking about thinking' in lab and everyday settings. We are working to make theoretical connections between experimental lab research on the development of metacognitive knowledge with ethnographic fieldwork focused on children's everyday cognition. Specifically, in one strand of research, Amsterlaw and Meltzoff have developed a lab-based metacognitive assessment for elementary school students. In the other, Lee and Bell have been documenting children's thinking and decision-making in everyday settings. We are exploring specific 'conceptual collisions' by juxtaposing the experimental, domain-general view against the naturalistic, domain- and context-specific perspective. We will present analyses of experimental data from an everyday cognition perspective in order to highlight possible real-world contexts and activities that might have influenced the development of rational thinking. We will detail research plans for further pursuing these issues through coordinated experimental and ethnographic research.

F47

Children's Biological Explanations And Predictions

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Recent work has shown that young children ask for and provide explanations about the world around them as they engage in causal learning. Research in the psychological domain has found that preschool children much more readily provide explanations than predictions (Bartsch & Wellman, 1989). We predict that this is generally true and is not confined to theory of mind reasoning because explanation is a form of postdiction. As a form of postdiction, explanation includes an additional piece of relevant information and is likely easier than prediction. In order to test this, we are examining the issue in the biological domain. Preschool children are given vignettes concerning contamination in which all the information is kept constant, and they are asked either to make a prediction, or to provide an explanation. We will examine the relative ease of predictions and explanations. The findings will also be of interest for providing more insight into the sorts of biological explanations young children come up with to explain contamination.

F48

The Impact Of Early Science Interests On Elementary School Children's Science Achievement

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Children with preschool individual interests in areas related to academia (e.g., science) may display higher achievement levels in these areas at the age of 8 than children with less-developed early interests in academic areas. The current study investigated this question with 116 children (66 boys) who were part of an ongoing longitudinal study. Children's science interests were tracked through bimonthly parental reports from ages 4-6 (preschool) and ages 6-8. Children with individual interests were defined as those involved in a science-related domain for more than 30% of the contacts. Children's subsequent science achievement (age 8) was determined by their performance on 22 selected items from the TIMSS (2003). Results indicated that females', but not males', number of preschool science interests were related to subsequent performance on the TIMSS, $r = .403$, $n = 50$, $p < .01$. In addition, girls with individual interests in science during preschool displayed higher science achievement scores ($M = 19.60$) than girls with less-developed early interests in science ($M = 17.27$), $t(48) = 2.34$, $p < .05$ at age 8. No differences were found for boys.

F49

Is The Third Time The Charm? Effects Of Multiple Experiences And Length Of Delay On Children's Recall

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Previous research has demonstrated that when 13- to 16-month-old children receive multiple experiences of an event in the laboratory, they evidence recall of individual actions up to 6 months later. However, in the real world, events vary in the number of times they are experienced and multiple exposures are often unavailable. The present study tested the length of delay that could be tolerated as a function of number of exposures and age at experience. Sixty 13-month-old and sixty 16-month-old children participated in an elicited imitation protocol. Children received 1, 2, or 3 exposures (within-subjects) to two-step causal event sequences over three sessions. After a 1, 2, or 3 month delay, children recalled the events. We expect that a greater number of exposures will benefit children's immediate recall and their ability to retain information over time. We also predict that younger children will demonstrate steeper gains from additional exposures.

S56

Object-Substance Construal

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Word learners often have to decide whether a novel label for an entity (wooden table) refers to the object (table) or the substance (wood). Comparing speakers of three languages, we asked how language and inherent features of the entities influence one's construal. Using a match-to-sample word-extension task, Experiment 1 replicated Imai and Gentner (1997), showing that classifier language speakers (Mandarin, Japanese) more often than English speakers preferred the substance over the object match. Experiment 1 additionally showed that the entities' solidity and shape-dependent function, but not shape complexity, influence construal. Experiment 2 tested the extent of the Mandarin/Japanese vs. English difference found in Experiment 1. Using Experiment 1 stimuli, adults rated how likely the entity is a kind of object or substance. The crosslinguistic differences then disappeared, but speakers were again influenced by solidity and shape-dependent function. These results support universality of the object-substance distinction and contribute to language acquisition and linguistic relativity debates.

F50

Executive Functioning And Children's Everyday Behaviors

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The poster will describe the findings of a study in which 3-, 4-, and 5-year-olds were given a battery of Executive Functioning (EF) tasks and their parents and teachers completed the BRIEF-P (Behavior Rating Inventory of Executive Function – Preschool Version; Gioia, Espy, & Isquith, 2004). The purpose of the study was to explore relation between EF tasks that emphasize specific components and the 5 subscales of the BRIEF-P (Working Memory, Planning/Organization, Inhibition, Shifting, and Emotional Control). The results will be interpreted in terms of predictions that the subscales of the BRIEF-P correlate significantly with EF tasks that differentially emphasize these components. In addition, developmental trends within each task and between each task and the BRIEF-P will be discussed. By examining the relations between EF and children's behavior as rated on a behavior rating scale the meaning of empirical measures of EF can be clarified, as well as the value of assessing the EFs of children via their everyday behaviors.

S57

Pleasant Grins And Scowling Chins - Evidence For Superior Detection Of Angry Faces In Preschool Children

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According to the theory of prepared learning, we may be prepared to quickly detect certain classes of threats that were recurrent throughout evolutionary history. Research with adults and children has shown faster detection of fear-relevant objects such as snakes over harmless objects. The prepared learning account would predict the same result for threatening facial expressions, since they are clear signs of hostility. Previous research has shown that adults do detect threatening facial expressions more quickly than non-threatening ones, but this phenomenon has yet to be examined in children. The current research examines 5-year-olds, presenting children and adults with 3 by 3 matrices of faces on a touch screen monitor. Participants were instructed to locate the target on the screen - either an angry face among happy/neutral faces, or the reverse. Both age groups detected the angry face more quickly than the non-threatening faces, providing support for the preparedness view.

F51

The Link Between Autobiographical Memory And Self-recognition In Children With Autism

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Children with autism face unique sociocognitive and linguistic difficulties that may stem in part from their atypical conception of self. Established deficits in autobiographical memory are hypothesized to be related to difficulty in passing a self-recognition task when a delayed (as opposed to live) image is presented. Typically developing 3 and 5 year olds, developmentally delayed children diagnosed with an autism spectrum disorder (ASD) and with a verbal mental age (VMA) of 5 years, and VMA-matched developmentally delayed children without an ASD will play an unusual picture-matching game with a partner, during which they are surreptitiously marked on the head. A second game will require them to toss beanbags into a bucket for a prize. Children will asked to recall the actors and intentions involved in the games, and will be shown a video image of themselves playing the games. Initial data on levels of self-referential behavior upon viewing this delayed image of the self will be discussed in light of children's recall accuracy in self-other discrimination and own intention-reporting.

F52

Developmental Differences In Context Processing And Cognitive Control

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Braver and his colleagues (e.g., Braver et al., 2001) have provided a theory of aging in which healthy older adults are portrayed as having a deficit in the ability to process context information. Such age-related declines in context processing are considered to impair cognitive control function in several domains including, attention, inhibition, and working memory. The current research attempts to adapt and extend Braver et al.'s theory of adult aging to child development by examining whether children improve in their ability to process context information as they grow older. The performance of three age groups (3rd grade, 6th grade, and college students) was compared on a continuous performance task (AX-CPT) that placed different demands on context processing. The results suggest that developmental improvements in the cognitive control functions of

attention, inhibition, and working memory are based upon age-related changes in a single, underlying context processing mechanism.

S58

Coding Geometric Information In Infancy

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The ability to use the geometry of enclosures to locate target objects has been well established (e.g., Hermer & Spelke, 1996). However, little is known about the developmental origins of this ability. To this end, 4.5- to 6.5-month-olds were shown an isosceles triangle (on a computer screen) containing a dot in one of the corners. The dot remained in the same position during habituation but alternated between this corner and a new corner during test. Importantly, the triangle appeared in different orientations. In Exp. 1 the triangle could rotate over 360 degrees. In Exp. 2 the orientations were limited to within 180 degrees. While infants discriminated between the unique location (i.e., corner with the smaller angle and two equal-sized sides) and the non-unique locations regardless of orientation, they only discriminated between the non-unique corners when the orientations were more limited. The implications for how infants code geometric information are discussed.

S59

Building A Memory: The Effects Of Repeated Exposure On Recognition Memory In Infancy

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The ability to recall information over the long term is maturing at the end of the first year of life. Nothing is known about the quality of the memory representations that are formed, however. To assess the specificity of memory representations, we presented 9-month-olds with novel multi-step sequences 1, 2, or 3 times before testing immediate recognition memory using event-related potentials (ERPs). During the recognition memory tests, infants saw still photographs of a familiar sequence, a perceptually distinct yet functionally identical analogue sequence, and a novel sequence. Trends in preliminary analyses indicate that infants who saw the sequences demonstrated once or twice processed familiar stimuli more slowly than infants who saw the demonstration three times. These data suggest that the quality of memory representations formed in infancy depends critically on the number of exposures to to-be-remembered information, with greater exposure resulting in faster processing of familiar stimuli.

SA

Arbitrary and Redundant Labels Facilitate the Learning of Novel Categories

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What role do verbal labels play in the formation and shaping of concepts? Previous attempts to answer this question have focused on the information conveyed by the labels (e.g., Waxman & Markow, 1995) rather than the effects of labels themselves as perceptually robust category markers. If verbal labels help humans acquire or use category information (Roberson, Davidoff and Braisby, 1999), one can ask whether it is easier to learn labeled categories compared to unlabeled ones. The present work uses a categorization task to show that the presence of labels facilitates the acquisition of unfamiliar categories and produces more stable category representations in normal English-speaking adults. The advantage for acquiring named categories was observed even though the labels did not convey any additional information (and so were entirely redundant to the categories) and all participants had equivalent experience categorizing the stimuli. This work provides empirical support for the idea of labels as conceptual anchor points (Clark, 1998).

F53

Metamemory Monitoring In The Rejection Of Novel, Imagined And Confabulated Events

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The present study investigated the effects of imagination and confabulation on rejection of common and bizarre false events. Forty-one 7-8-yr-olds, 44 9-10-yr-olds, and 43 undergraduates were asked to enact, imagine, or confabulate about common (e.g., jump rope) and bizarre actions (e.g., smell the wall). Two weeks later, participants performed an old/new recognition task. Distractors included imagined, confabulated, and novel bizarre and common actions. Across age groups, novel actions were rejected more confidently than imagined or confabulated actions (Imagined: M=1.55; Confabulated: M=1.50; New: M=1.71), indicating that different degrees of distractors' familiarity were reflected in metacognitive monitoring even in the younger group. In contrast only older children and adults were more confident when rejecting bizarre as compared to common actions (7-8-yrs-old: Bizarre, M=1.66; Common, M= 1.62; 9-10-yrs-old: Bizarre, M=1.66; Common, M= 1.58; Undergraduates: Bizarre, M=1.62; Common, M= 1.38) indicating that the metacognitive monitoring of event-specific features emerges later in childhood.

S60

Multitasking In 6- And 8-Year-Old Children

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'Multitasking' is the ability to organise multiple activities over a limited period of time. Although children are required to multitask in a school environment, no multitask tests have been designed for children under 8-years-old. Using our novel multitask test, we tested 6- and 8-year-old children (dependent variables: learning of task rules, multitask performance). In Experiment 1, 6-year-olds significantly under-performed 8-year-olds, however 6-year-olds learned task rules less well, thus did not have an equivalent representation of task requirements. In Experiment 2 children learned task rules to criterion, and multitask performance differences persisted after differences in rule learning had been eliminated. Experiment 3 explored the hypothesis that differences in single task performance account for differences in multitasking; however, 6- and 8-year-olds performed the single tasks at an equivalent level. Overall, results support developmental differences in the ability to organize multiple activities.

F54

An ERP Study Of Imageability And Noun/verb Processing In Children And Adults

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Children struggle to acquire new verbs until at least age five (Clark, 2003). This difficulty may lie in semantic properties underlying verb concepts such as imageability, rather than the grammatical classification of verb (Gillette, et al, 1999). How are imageability and grammatical class processed in relation to one another throughout development? To answer this question we present an ERP study in which 4-5-year-old children and adults heard and repeated 15 nouns and 15 verbs. Words each belonged to one of three imageability sub-categories: motor (high manipulation, high visual), e.g., toothbrush, touching; visual (low manipulation, high visual), e.g., mountain, melting; and abstract, (low manipulation, low visual), e.g., heaven, hating. Consequently, the processing of imageability and grammatical class could be investigated independently and in relation to one

another (Kellenbach, et al, 2002). A PCA with follow-up ANOVAs indicates that adults and children show differential, but not inconsistent, patterns of processing. Both display syntax differences around 400ms independent of imageability (adults: 456ms, children: 480ms). Around 800ms both groups show differences in imageability processing (adults: 816ms; children: 824ms), yet while children process this information independent of grammatical class, adults show an interaction between grammatical class and imageability. Further, adults process imageability independent of grammatical class around 232ms. No corresponding effect was found in children. Thus, both imageability and grammatical distinctions are made by adults and children when comprehending spoken words, but this information is processed somewhat differently by the different age groups. Findings are discussed in relation to conceptual and linguistic development.

S60

Lemurs (Lemur catta) Know What Others Can and Cannot See

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One of our species' most important cognitive achievements is the development of a theory of mind (ToM). Although much is known about the development of ToM abilities in human ontogeny, less is known about the evolution of these capacities. Here, we explore how explore how a distantly related primate – the ring-tailed lemur (Lemur catta) – reasons about the perceptions of others. We presented lemurs with the opportunity to enter an indoor enclosure to retrieve a food reward at the risk of being enclosed inside by a human experimenter. Lemurs selectively entered the enclosure more willingly when the experimenter could not see the entrance to the enclosure. Subjects showed more reluctance to enter when the experimenter was visually aware of their actions. These results suggest that even distantly related prosimian primates possess an essential component of theory of mind: the ability to recognize what others perceive based on visual attention.

S61

Does Learning First Appear In Gesture Or In Speech?

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Previous research suggests that gesture that accompanies speech can serve as an index of transitional and implicit knowledge that may determine a child's readiness to learn. Few have experimentally examined the exact role gesture plays in the learning process. This study examined both the production and comprehension of gesture during the learning of a particular math concept (7 + 6 + 5 = ____ + 5), to determine whether early input of learning is first manifested in speech, gesture, or combination of both. Our hypothesis was that gesture will manifest learning before speech will. 57 participants from both parochial and public schools watched video instruction that consisted of speech and matched gesture, speech only, and speech and beat gestures. Preliminary findings showed that, although there was very little learning in our pencil and paper analysis (11% improved), there was significant amount of learning in children's explanations when gestures were used (27 %. improved). Both theoretical and applied benefits of the results will be discussed.

F55

Redundancy Leads To Goal Neglect On The DCCS

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Individuals with low working memory capacity are more prone to goal neglect, or a failure to maintain a goal even though it is understood (Kane & Engle, 2003). Accordingly, the relatively low working memory capacity in young children may lend itself to goal neglect, even when they understand and demonstrate competence in achieving the goal. We examined the role of goal neglect in performance on the Dimensional Change Card Sort by including in the task "redundant" cards that could be sorted without attending to the rules, as well as the traditional "conflict" cards that encouraged awareness of the rules. Thirty-two 4- and 5-year-olds were administered two card sorts that differed on the proportion of redundant cards presented (25% vs. 75%). Children were more likely to neglect the goal when faced with a preponderance of redundant cards, suggesting that continuous attention to the rules is necessary for goal maintenance.

S62

Preadolescent Self Image And Family Narratives About Emotional Events

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Through storytelling, individuals integrate their experiences and feelings in ways that provide self understanding. Theorists argue that during adolescence narratives take on new meaning for the individual (Habermas & Bluck, 2000). Through cognitive advances, adolescents are able to organize memories of their past experiences into a life narrative, allowing for a more complex understanding of the self (Pillemer, 1998). In the present longitudinal study, the objective was to examine the relation between how families discuss and make sense of past emotional experiences and preadolescents' self-image. Narratives of positive and negative shared family experiences were collected from 24 families with one preadolescent (ages of 9-12). Two years later self-image measures were completed by the preadolescent. Families that discussed negative experiences in more emotionally open, collaborative and explanatory ways had preadolescents with higher self-esteem and self-image. Implications of family narrative patterns for adolescent self-image are discussed.

S63

A Meta Analysis: The Effects Of Training On Spatial Cognition In Children

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Traditionally, spatial cognition has been conceived as being fixed. More recently, researchers have demonstrated that it may be malleable. This meta-analysis examines the malleability of spatial skills in children of various ages. We examine whether spatial skills can be enhanced through particular types of training and how children of different ages respond to various attempts to improve spatial abilities. We have 170 published articles studying a variety of techniques all showing approximately equal improvement (2/3 of a standard deviation) with the exception of listening to music, which has a substantially reduced effect. On average, girls show more improvement than boys. However, this may be attributable to the fact that girls tend to begin at a different level than boys. After treatment, both boys and girls show substantial gain. Along with demonstrating the malleability of spatial cognition and gender differences, this meta-analysis also speaks to the theoretical nature of gender differences.

Dynamic Systems Account of Infants' Perseverative and Imitative Behavior

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The purpose of the present study was to investigate whether the dynamic systems account of infant perseverative responses formulated

by Thelen and colleagues has implications for understanding children's imitative behaviors. Eighty-four children ranging in age from 12-21 months participated. We used two sets of novel toys. The toys in each set were visually identical but differed in the actions needed to produce attractive noises. During familiarization, the experimenter repeatedly demonstrated a target action and then allowed children to explore the toy. Next, the experimenter demonstrated an alternative action on a visually identical toy and allowed children to explore. We observed whether children continued the familiar action (perseveration) or imitated the new action. Results showed that the younger groups perseverated, while the older children reliably imitated the target action. We suggest that children's responses reflect complex interactions of multiple motor histories that are dynamically organized across multiple time scales.

F56

Fine-Grained Analysis Of Motionese: Interactiveness In Infant- Versus Adult-Directed Action

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Mothers alter their actions when demonstrating objects to infants as compared to other adults, exhibiting more interactiveness, enthusiasm, partner proximity, repetitiveness, simplicity, and a broader range of motion when demonstrating to infants versus adults (Brand, Baldwin, & Ashburn, 2002). Such "motionese" may support infants' processing of action by enhancing their attention and highlighting meaningful action units. Each of the above action features, previously coded only at a global level, would benefit from a more fine-grained analysis. We investigated interactiveness by quantifying object exchanges, action units enacted between exchanges, and eye contact exhibited by 51 mothers demonstrating four novel objects to infants or adults. As predicted, we found more object exchanges, fewer action units per exchange, and more eye contact with infant relative to adult partners. These findings further clarify how adults may use interaction to capture infants' attention and support their processing of the continuous flow of human motion.

F57

Social Communication Skills And Verbal Repetitions In Late Talking Toddlers

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Previous studies have yielded inconsistent results concerning the social communication skills of late talking toddlers (Paul & Shiffer, 1991; Rescorla & Merrin, 1998). Social communication skills include child behaviors that direct, share and respond to the communicative intentions of conversational partners. According to social pragmatic theory, children should be better word learners if they are proficient in using social communication behaviors such as initiating joint attention and responding to the attentional directives of adults. There is replicated evidence that these skills are predictive of language outcomes in children with typical language development. In addition, few studies have examined the pragmatic functions served by immediate verbal repetitions in late talkers. The current study examined profiles of social communication skills and verbal repetitions in a group of 30 toddlers with delayed expressive language development and 30 typically developing toddlers matched for cognitive ability, SES and gender. Late talkers did not differ from TD children in their initiations or responses to the initiations of the examiner, but were more likely to use self repetitions to initiate joint attention and repetitions of the examiner in responding to prompted utterances.

F58

Young Children's Tower Of London Performance: Who Knew?

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Determining the course of change is possibly the most fundamental issue in the study of cognitive development. This study assessed the effects of repeated task presentation on 5-year olds' performance on an executive functioning task, the Tower of London. This task has been used to investigate aspects of problem solving, such as planning. Furthermore, the Tower of London requires a variety of planning approaches which allow for development to be examined. Participants (n=99) were given three sets of 10 problems ranging from relatively easy 3-move problems to relatively difficult 7-move problems. The data show that participants significantly improved across the three sets for proportion solved, move efficiency, length of goal path, and speed of performance. As difficulty increased children's planning capabilities were more than twice as high as been previously reported. These findings indicate that with repeated task exposure young children can perform at or near adult levels.

F59

Object Substitution Usage In 2.5-year-olds

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In the present study, 2.5-year-olds were asked to use various objects during an object substitution task. The objects were prototypical or non-prototypical to the identity they were being substituted for and were either used once or twice within the same scenario (e.x., a block was used as a bar of soap and a bib in the dinner scenario).). While various research indicates a symbolic relationship between the object and identity (Harris & Kavanaugh 1993), this study found 2.5-year-olds were capable of using a single object to substitute for multiple identities within the same scenario. These findings support the view that children were using the objects more "as if" during pretense than as a symbolic substitution and also does not support the influence of context on the relationship between object and identity.

F60

The Relations Between Counterfactual Reasoning, False Belief Understanding, And Working Memory In Preschoolers

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This study is concerned with the correlation between children's performance on tasks measuring counterfactual reasoning and false belief understanding, and whether the relation between these two measures is explained through common demands of working memory. One hundred and five children between the ages of 3 and 6 participated in the study. Performance on the working memory task was significantly correlated with both the false belief task and the counterfactual reasoning task. Children's performance on the false belief task was also significantly correlated with their performance on the counterfactual reasoning task. The relation between counterfactual reasoning and false belief understanding remained significant even after controlling for age and performance on the working memory task. The findings from the study support the proposal that counterfactual reasoning is a prerequisite for false belief understanding.

F61

Understanding Impartiality

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The present research examines how children begin to recognize that

people's judgments may be skewed by personal relationships, and how situational factors may make it more difficult to be impartial. Participants between the ages of 5 and 14 heard stories about potential judges in contests involving objective and subjective events. Participants used a rating scale to indicate how likely it was for each judge to pick the person who really deserved to win the contest. Like adults, 10-year-olds and 8-year-old females rated the judge with no personal connection (the "neutral judge") as being more likely to be objective than the judge with a personal connection (the "connected judge"). 6-year-olds and 8-year-old males showed the opposite pattern, preferring the connected judge to the neutral one. It was not until age 14 that children indicated that it was more problematic to have a connected judge in subjective situations than in objective ones.

F62

How Do You Take Your Root Beer Float? The Role Of Eye Movements During The Observation Of Means-End Sequences

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This study has been designed to investigate the role of eye movements during the observation of action sequences produced by an intentional agent. The literature indicates that adults fixations are directed ahead of the action rather than on the action itself. Participants were asked to watch a short video, on a television screen, of an actor making a root beer float. Eye movements were tracked with an ASL 504 Eye Tracking System. Analyses will compare child (4-year-olds) and adult anticipation of means-end sequence events to determine if a) actions are anticipated rather than followed by the viewer as determined by eye movements and b) if there is a potential developmental difference in gaze anticipation during goal-directed action sequences.

S64

I(OR) Before X(OR)? Preschool Children's Understanding Of AND And OR

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How do preschool children interpret logical connectives? There is no consensus about the initial concepts underlying connectives or how these concepts change over development. One example is whether children initially interpret OR as an inclusive (IOR; A or B or both) or as an exclusive (XOR; A or B not both). Though the IOR interpretation is logically correct, its acquisition may be problematic because there is conceptual overlap with the concept underlying AND (i.e., true when both states are present). Three experiments examined 3-, 4-, and 5-year-old children's concepts of AND & OR by measuring a child's productions (Exp. 1), interpretation of other's productions (Exp. 2), and interpretation of connective use from non-verbal actions (Exp. 3). The results suggest that children's concepts of AND & OR do not overlap (i.e., little evidence for IOR) and show age-related increases in XOR interpretations.

S65

Pay Attention To Detail: 16- And 20-month Old Children's Retention Of Episodic Features

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It is well established that there are age-related changes in long term memory. One possible source of this difference is the developing ability to recall the specific details of events. To date, the longest delay over which recall of specific features has been tested is 1 week. The current study aims to examine children's retention of specific features over a delay of 1 month, as well as to examine age-related changes in the retention of specific, episodic details. 16- and 20-month-olds were tested on immediate recognition of the props used to produce multi-step action sequences; recognition after 1 month also was tested. Children were also tested on immediate and delayed recall of event sequences, as well as on functionally equivalent but perceptually dissimilar events. Results suggest that there are age-related changes in the recognition of specific features which may relate to differences in recall.

S66

Parental Instruction During Childhood As A Predictor Of Adolescent Metacognition And Scientific Problem Solving

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Relations between parents' instructional behaviors during early childhood and their childrens' metacognition and cognitive management strategies during scientific problem-solving activities five years later were examined. During the summer before third grade, fifty-two children and their parents were visited in their homes. Parents provided assistance needed for their children to complete two difficult problem-solving tasks. During a second home visit, the summer prior to eighth grade, the children were interviewed about their thinking and independently completed two problem-solving tasks. Parents' instructional behaviors in the early years appear to serve as models of heuristics or problem-solving subroutines that are adopted and utilized by their children. The content and manner of parents' instruction were related directly to the adolescents' means-ends analysis, use of evidence or feedback obtained during problem-solving attempts, systematic approach to problem-solving, and evaluation. Elements of parental instruction also contributed to the adolescents' problem-solving indirectly via its influence on their metacognition.

F63

Sources Of Information That Children Use In Evaluative Categorization

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Children are constantly exposed to information about food. Their evaluative category decisions about the healthfulness of foods are likely influenced by the input that they receive from the world around them. If children are effective evaluative categorizers, they should recognize that some sources of information are more credible than others. This study explored the different information that children take into consideration when making evaluative category decisions about food. In this study, 4- to 6-year-olds were provided with information about the evaluative status of novel foods. Half of the children were told that the information was from external sources (e.g., parent, doctor) and the other half from internal sources related to foods (e.g., ingredients, taste). Results showed that children rely on both sources of information, but that children are also skeptical of particular sources depending upon the type of food in question.

F64

The Relationship Between Children's Executive Functioning And Communicative Competence

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Despite evidence of sensitivity to the knowledge state of others at an early age, research has suggested that children often do not use this information in referential communicative contexts. The present study investigated the hypothesis that children's executive function skills (in particular, inhibitory control skills) were related to their ability to communicate effectively. Five-year-old children were tested in an interactive communication task (wherein they were asked to pick up

an object from a display case) and were administered measures of working memory, inhibitory control, and cognitive flexibility. Results indicate that children's references (i.e., eye gazes, motions to pick up) towards an object hidden from an experimenter's view were negatively correlated with their performance on an inhibitory control task. These findings suggest that children's inhibitory control skills are related to their ability to inhibit their own perspective in order to take into account the perspective of their speaking partner.

S67

Investigating A Reciprocal Relationship Between Academic And Social Competence

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Although schooling is primarily thought of as a means to increase academic skills and knowledge, schools are also responsible for social growth and competence. Children must interact with peers and teachers making the development of interpersonal and communication skills necessary for success in the classroom environment. The current investigation evaluated the time-dependent nature of the development of social and academic competence with data from the NICHD Study of Early Child Care. The results provide evidence for a reciprocal relationship between the social and academic competence from preschool to the end of elementary school. It was also shown that children make more gains in academic and social competence in the early school years, and their development is influenced by demographic characteristics such as gender, ethnicity, family income, and mother's level of education.

F65

English Speakers' Attention To Non-lexicalized Spatial Relations

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The present research examines the contention that over time, speakers may lose sensitivity to those spatial relations that are not ordinarily distinguished in their native language. English speaking adults were asked to make similarity ratings for a series of scenes, which included both spatial relations that English speakers are obligated to identify (support and containment) and a spatial relation that English speakers are not obligated to identify (tightness-of-fit). Contrary to previous findings, participants did attend to tightness-of-fit, but only in situations where tight-fitting relations (as opposed to loose-fitting relations) were salient. Furthermore, there is some evidence that observing a tight-fit spatial relation increases attention to tightness-of-fit when observing subsequent loose-fit relations. Implications regarding language-driven conceptual change are discussed.

F66

Mother-Child Bookreading: An Experimental Analysis

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Recent conceptualizations of emergent literacy highlight the critical role of social interactions in becoming literate. As part of a larger longitudinal study, the present experimental investigation explored the links between maternal bookreading style and children's literacy development with 24 families (12 mothers experienced the training; mean age of children = 40.27 months). Results indicate the training effectively increased the use of elaborative comments such as predictions and associations for mothers in the experimental group. Unique to this presentation will be a discussion of analyses that indicate children in the experimental group outperformed children in the control group with respect to performance on literacy assessments such as Story Production (e.g., Reese and Cox, 1999; Haden et al., 1996). For example, children whose mothers received bookreading training significantly provided more elaborative stories over time. These findings suggest that improving mother-child bookreading interactions offers a promising route to enhancing children's development.

F67

Finding Common Ground: Preschoolers' Spontaneous Conversational Initiations With Peers

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In the absence of scaffolding provided by adults or a play situation, how will preschoolers attempt to begin conversations with each other? This study provides a unique, in-depth examination of preschoolers' "small talk." Bi-weekly, for 21 weeks, in a preschool class of 25 4-year-olds, children's conversations at a small snack table were videotaped and transcribed. 507 conversational initiations were identified and classified according to a detailed coding scheme. Of particular interest was whether 4-year-olds would appeal to their developing knowledge of mental states in their initiations. Analysis of the semantic content of initiations about people revealed that although 64% concerned non-mental aspects (e.g., actions, locations), 27% did concern mental states (e.g., perceptions, beliefs, preferences). The findings highlight that small talk is no small feat for preschoolers. Nevertheless, children made the most of their developing understanding of people and mental states in attempting to find common ground with peers.

S68

Perception Of Similarity Among Pairs Of Same- And Different-Race Faces

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Gentner et al. (e.g., 1997) have shown that adults favor abstract relation-matching over feature-matching strategies in judging which of two pairs of objects is more similar to a third pair. My study finds that the extent to which white college students favor a relation-matching strategy when judging similarity among upright same- and different-race pairs of Asian, black, and white faces depends on the faces' races. When inverted, Asian and white faces become more difficult to differentiate; this result challenges the notion that configural processing is not used for other-race faces, since a featural processing strategy for Asian faces would predict that perception of "Asian-specific features" would be tantamount upright and inverted. Preliminary testing with 9-yr-olds suggests that they perceive upright white and Asian faces in the way adults perceive inverted Asian and white faces. Hence racial processing of faces may not be adult-like until after age 9.

F68

A Connectionist Model Of Discovering Relations In Arithmetic

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A central issue in cognitive development is how children discover relations. Dixon, Deets, and Bangert (2001) showed that children (grade 8) represented a functional relationship of addition: the answer is larger than either operand, given positive integers. Surprisingly, children did not represent the analogous relationship for subtraction: the answer is smaller than the larger operand. College students represented the relation for both operations. We trained a connectionist model on answers to a set of addition problems. The model learned the answers, but also showed the functional

relationship (answer > operands) for a new problem set, which it could not answer correctly. We then trained the model with subtraction problems. The model first learned the answers, but did not show the functional relationship. With sufficient training, the relationship was learned, overcoming the interference effect from addition. The model results suggest that new relations in arithmetic are discovered through an associative system.

FA

Thematic Conceptual Biases and the Role of Language in Categorization in Adults on a Match-to-Sample Task

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Taxonomic categorization, grouping objects into structured categories, is a critical developmental achievement. Research with Match-to-Sample tasks that include thematic and taxonomic matches has found that preschoolers exhibit a thematic bias, although providing labels changes young children's biases. Older children tend to match taxonomically even without labels. However, using a similar task with adults in which they selected multiple matches, we found that they had a first-selection thematic bias just like very young children. To determine whether labeling shifted their categorization preferences, we employed a dual-task paradigm. Participants selected objects related to the target under verbal, nonverbal, or no suppression. Participants took longer to make their first selection in the verbal-suppression condition but their bias did not change. Together these results suggest either that the Match-to-Sample task is not a reliable measure of conceptual understanding or that the assumption of a thematic-to-taxonomic categorization shift during childhood may need to be revisited.

S69

Precursors To Mathematical Skill: The Relations Among Fine Motor Ability, Subitizing, And Early Math Skills

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The ability to subitize, quickly enumerate 1-3 items, is posited to be the foundation of all mathematical understanding (Butterworth, 1999). Fine motor ability is thought to play an important role in the development of counting, and both fine motor ability and counting speed are posited to affect arithmetic performance (Barnes et al., 2004; Geary & Hoard, 2005). In the current experiment, we examined the relations among fine motor ability, subitizing, counting, addition, and math achievement in primary school children. Children in grades 1-2 (n=123) participated as part of the Count Me In project. Children completed tasks of fine motor ability (finger tapping), subitizing (1-3 items), counting (4-6 items), addition, and completed a standardized test of math achievement (KeyMath). Linear regressions showed that subitizing and tapping both accounted for unique variance in counting speed. Counting speed accounted for unique variance in addition speed, addition accuracy, and KeyMath scores.

F69

Routes To Symbolization: Intentionality And Correspondence In Early Understanding Of Pictures

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In this research we investigated the extent and nature of the informational support that enables young children to understand pictures as symbols. We conducted a study using a hidden-object search task in which we varied the amount (complete and no instructions) and kind of information (intended function and picture-referent correspondence) provided to 2.5 year-old-children. The results show that information that emphasizes intentionality was critical for symbolic comprehension. Although information about correspondence was not enough in itself, children came to achieve an insight halfway through the task probably as a consequence of a comparison process. This study suggests that highlighting the heart of the symbolic relation, that is, its intended function, is a privileged route in children's appreciation of a picture-referent relation.

FA

When It Is Rolled It Clicks and When It Is Squeezed It Squeaks: What 10-month-old Infants Learn About Object Function

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Learning about object function often involves learning dynamic and intermodal features. Although recent research has found that 10-month-old infants can categorize on the basis of object function, it remains unclear what infants learn about object function. If an infant is presented with a purple object that clicks when it is rolled, for example, the infant may attend equally to the object appearance, action performed on the object, and the sound, or the infant may selectively attend to one or more of the features present. We examined what features of object function infants learn both in discrimination and category contexts. In both experiments, 10-month-old infants attended to changes in both the particular actions that were performed on an object and the sounds that accompanied those actions. Thus, it appears that when infants learn function in each context they are learning both the action and the resulting sound.

F70

Executive Functioning And Attention-Deficit/Hyperactivity Disorder: Does Heart Rate Show Evidence Of Planning?

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This study employed a paired-stimulus paradigm to compare task performance and phasic changes in heart rate among children (6 to 12 years) and young adults with Attention-Deficit/Hyperactivity Disorder (ADHD) and age-matched controls. A sample of 95 participants (39 ADHD and 56 controls) solved a planning task, the Tower of London, through 4 levels of difficulty. It was hypothesized that groups with ADHD would show greater heart rate acceleration and less final deceleration than would controls, and that these heart rate responses would change with age and difficulty level as well. Though heart rate and performance differences were found among age categories and difficulty levels, none were found between participants with ADHD and controls. The lack of ADHD differences does not support previous suggestions (Barkley, 1997; Culbertson, & Zillmer, 1998) that planning is one of the marked executive function deficits in ADHD.

S70

Children And Adults Show Identical Word-guessing Patterns In A Human Simulation Paradigm

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Seven-year-olds and adults watched Sesame Street video clips in which target words were replaced by beeps. In a simulation of cross-situational word learning, six exemplars of each target word were

presented, across several different scenes in which the word was spoken by different characters. After viewing each exemplar, participants were asked to guess the target word. In the 'full speech' condition, participants heard the complete audio track with the exception of the target words, which had been replaced by beeps. In the 'no speech' condition, participants heard no audio other than the beeps. As predicted, participants in the 'no speech' condition correctly guessed target nouns far more often than target verbs, a difference which disappeared in the 'full speech' condition. Adults and children showed identical patterns of performance. These findings support an information-based rather than a concept-based explanation for disproportionately low verb counts in young children's vocabularies.

F71

Rapid Vocabulary Acquisition In Young Children And Adults

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Young children are often deemed to be precocious at vocabulary acquisition, and it is repeatedly noted that they may learn upwards of nine words each day. However, it is unclear whether children are actually better than adults at learning new words. While Markson and Bloom (1997) demonstrated that both children and adults can learn a single novel word after limited exposure, the present studies challenged children and adults to learn nine new words after limited exposure. After being introduced to nine novel words, participants were tested on a free recall (Study 1) or recognition task (Study 2). In both studies, adults outperformed children. We interpret these findings as indicating that children are not better than adults at learning new words. Rather, adults may have a greater capacity to rapidly learn words, but fail to encounter as many novel words in everyday life.

Infants' inductive inference of motion from a computer-animated model

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Researchers have used the generalized imitation method to test infants' conceptual knowledge (Mandler & McDonough, 1996). However, it is unclear whether infants' response reflects conceptual knowledge or simply imitation of the human model. The present study sought to address this limitation by using computer-animations without a human model. Participants were 18-month-old infants. Two animate-like motion properties (e.g., going up the stairs and jumping over the wall) and two inanimate-like motion properties (e.g., driving over the triangular ramp and sliding through the U-shaped ramp) were modeled with computer animations. Results showed that infants demonstrated more actions using the target exemplar at generalization (M = 1.88) then using the distracter exemplar (M = 1.18). This suggests that 18-month-old infants are able to make inferences from computer-animated events, and are able to infer motion cues to the appropriate domain.

F72

Emotional Expression & Joint Attention: The Influence Of Affect On Language Learning

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Previous research suggests that neutral infants have more advanced expressive language abilities, compared to more emotionally expressive infants (Bloom & Capatides, 1987). Bloom (1993) hypothesized that infants who express more non-neutral affect (positive or negative) have less cognitive resources to devote to language learning. The present study tested Bloom's theory with 12- to 18-month-old infants. We predicted that neutral affect expression would be positively associated with expressive language as well as responding to joint attention (RJA) ability, a pivotal skill for learning words in infancy (Baldwin, 1993). Our results did not support Bloom's hypothesis in that neutral affect was not correlated with language. Neutral affect was negatively correlated with RJA; positive and negative affect were each positively correlated with RJA. Multiple regression revealed that positive and negative affect together significantly predicted RJA ability, whereas chronological age did not. Our findings add to the research on emotional expression and joint attention.

F73

The Effects of Rumors that Conflict with the Past: Testing the Boundary Conditions of Preschoolers' Suggestibility

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Research has shown that the circulation of a false rumor that fills a gap in an earlier experience can lead preschoolers to report witnessing nonexperienced events consistent with the rumor. The present study extends this work by exploring what happens when preschoolers (ages 3 and 5) encounter rumors that conflict with their experiences. One third of the children, those in the CMR group, overheard a rumor that conflicted with a past experience. A second third of the children, those in the non-CMR group, overheard a rumor that filled a gap. The remaining children in the Control group did not overhear a rumor. Results revealed that most of the non-CMR children reported witnessing events consistent with the rumor. However, while a substantial number of younger CMR children reported witnessing rumored events, the older CMR children were not as easily swayed by the rumor and tended to report events they actually witnessed.

F74

Executive Functioning In Children With Fetal Alcohol Spectrum Disorder

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We evaluated executive functioning (EF) in children (aged 8-16 years) diagnosed with Fetal Alcohol Spectrum Disorder (FASD). All participants were tested on the Delis-Kaplan Executive Function system (D-KEFS), which measures problem solving, concept formation, flexibility of thinking, verbal and nonverbal fluency, inhibition, planning and reasoning, abstract thinking, and deductive reasoning. Children with FASD displayed deficits on many aspects of EF and particularly on a test of verbal concept formation. The children did not show any deficits on two visual-spatial EF tasks. The children performed worse, relative to the norm, with age on tests of verbal inhibition, verbal fluency, and verbal abstract thinking. Thus, perhaps some verbal EF skills decrease with age in FASD. These results are important for understanding the pattern of executive functioning deficits children with FASD display and how these deficits are manifested throughout development, and has implications for diagnosis, instruction, and remediation in children with FASD.

SA

Memory for Location in a Scaling Task

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This study examined how scaling affects children's memory for where things are. Four- and 5-year-old children and adults saw a location marked on one mat and then attempted to reproduce that location on another mat that was either the same or a different size. Thus, all

subjects did a task involving memory without scaling and a task involving memory with scaling. To examine whether memory performance varied depending on whether participants scaled locations from small to large or large to small, participants either reproduced all locations on a large or a small mat. We found that when children reproduced locations on the large mat, placements differed on the two tasks. However, when children reproduced locations on the small mat, placements on the two tasks did not differ. Thus, children found it easier to scale locations from a large to a small space. This suggests that scaling performance is constrained by both the child's abilities and the physical structure of the space.

S71

The Development Of Social Cognition: Traits, Stereotypes, And Theory Of Mind

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The present study assessed children's abilities to make behavioral predictions and psychological inferences based on traits, stereotypes, and theory of mind, to detect any relationships in the developmental trajectories across the three domains. Seventy-nine children between the ages of 3 and 7 years participated in a number of standard tasks for the different areas of social cognition. Cluster analysis placed the cases into 4 separate clusters where the participants had varying capabilities on the tasks, ranging from cases in cluster 1 revealing no predictive ability based on the tasks, to cluster 4 participants performing significantly above chance on 5 of the 6 tasks. The findings suggest that children first learn to predict behaviors based on overt behavioral information, and then eventually learn to base their predictions on psychological inferences.

F75

"Soul-ly" Based: Children's Understanding Of The Brain, The Mind, And The Soul

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By seven years of age, children demonstrate a fairly solid understanding of the role that the mind and the brain play in identity. However, children raised in religious communities are also exposed to another aspect of identity, namely that people have souls. The concept of an immortal soul likely comes into play as children are exposed to complex ideas about the beginning and end of life. Two experiments were conducted to explore whether children who have been exposed to the concept of the soul differentiate the soul from the mind and the brain. In the first experiment, 4- to 12-year-old Lutheran children were asked about whether a religious ritual affects the mind, the brain, or the soul. The majority of the children claimed that only the soul was different after baptism. In a follow-up experiment, 6- to 12-year-old Roman Catholic children were tested more explicitly on what differentiates the soul from the mind and the brain. Children differentiated the soul from the mind and the brain along two dimensions: function and stability. In contrast to their responses about the mind and the brain, children did not claim that the soul was important for cognitive, non-cognitive, or biological functioning; instead they said that it was devoted to a variety of religious functions. In addition, older children indicated that the mind and the brain change and grow over time, but that souls are something that stay constant over the life course.

F76

Re-assessing The Truth Of Knowledge Gained From A Speaker Whose Reliability Is Subsequently Called Into Question

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In three experiments 3-4 year olds believed what they were told by a speaker who appeared to be reliable and well informed. The reliability of the speaker was subsequently called into question, either by the speaker himself who doubted the effectiveness of his information access, or by another protagonist who doubted the content of the speaker's utterance without reason. When doubts were raised immediately after the original utterance, children were more prepared to revise their belief when the speaker questioned his own information access. After a short delay, children failed to differentiate between the two doubting conditions, although they were still more likely to revise a belief gained from testimony than one gained by direct access. Children appeared to have access to source information which they could use with hindsight, but only for a short time. In addition, beliefs gained from testimony were more readily revised than beliefs gained directly.

F77

Children's Understanding Of Different Social Influences

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The poster presents a study that explored developmental differences in children's ability to appropriately differentiate between various reasons for conform and non-conform behaviour of a protagonist, that is, can differentiate between normative and informative social influences. This was investigated by presenting 8- and 10-year-olds an illustrated story in which a protagonist's behaviour is described in different social situations, in some of which he/she behaves conform and in some non-conform. Additionally, the age of the partner was varied (child vs. adult) and the kind of social influence (normative vs. informative). The results revealed different developmental pathways for children's understanding of conform and non-conform behaviour: While the vast majority of 8-year-olds did not expect the protagonist to behave conform for social reasons (normative social influence), many 10-year-olds did, especially the girls. If the conform behaviour of the protagonist stemmed from a lack of relevant knowledge (informative social influence), most of the children from both age groups expected compliance and also gave correct explanations. However, in these scenarios older children were able to take the credibility of the source of information into account for their prediction of the protagonist's behaviour. When the source of informational social influence was sure about the information provided, 10-year-olds predicted conform behaviour. When the source of informational social influence was not sure, 10-year-olds expected non conform behaviour and also gave the correct explanation (partner does not know him/herself). Eight-year-olds, in contrast, were not able to make this important distinction.

F78

Socialization Of Children's Coping Through Mother-Child Narratives About Stressful Events

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To investigate how mother-child narratives about various potentially stressful events related to children's coping and emotional well-being this study engaged 65 mothers and their 8-to 12-year-old children in a joint story construction task. Dyads co-created four stories about hypothetical stressful events as well as independently completed questionnaires pertaining to their coping style and psychological well-being. In addition to direct relations between mothers' and children's coping and well-being, the quality and content of the co-constructed stories were uniquely associated with children's coping and well-being. Dyads that produced stories about emotionally difficult events

that were elaborated, more emotionally coherent, and with more mention of ways to cope with the situations, had children who exhibited the optimal, flexible coping style. Results suggest mother-child conversations about stressful experiences to be a critical context for maternal socialization of children's coping.

F79

Mother-Child Conversational Exchanges and Children's Recall of Novel Events

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In the course of a longitudinal investigation of developmental pathways to skilled remembering, two cohorts of children (n = 80) have at 36-months of age participated with their mothers in a pretend camping or birdwatching adventure. The focus of this presentation will be to examine within the full sample how mother-child verbal engagement as an event unfolds links to children's 1-day and 3-week recall of the experiences. Moreover, this project features a very detailed examination of the different conversational forms used by mothers and children during events, as well as the sequence of contingent responding evidenced by dyads within bouts of joint talk. In particular, a set of analyses will be reported focusing on mothers' use of wh-questions during events that had and had not been answered by the children. The results will illustrate the strong association between mother wh-questioning, child response interaction patterns, and children's remembering.

SA

Specificity, Direction, and Unit-of-One: Piecing Together the Logic of Number Words

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This study examined children's developing understanding of how the cardinal number word list represents increasing set sizes. 58 monolingual English-speaking children, ages 2-7 to 4-1, were tested on a battery of tasks designed to measure their understanding of various aspects of number-word meaning. These included (a) specificity & uniqueness of number words (each number word uniquely denotes a specific set size); (b) direction of number word mapping (words coming later in the list denote larger set sizes); and (c) unit-of-one (moving one word forward in the list means increasing the set size by one item). Children were also tested on a series of tasks measuring their procedural skill with counting. Results indicated that all three of the conceptual pieces are understood after children induce the Cardinal Principle of counting, but not before.

Space in Hand: Gesture and the Development of Spatial Representation

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We explored the relationship between spatial representation and gesture production in 8- and 10-year-old children and adults. Participants learned the layout of a room with six large boxes, each home to a different animal. They were then asked to give a description of the animals' locations to a naïve listener and to construct a model of the space with squares representing the animals. We analyzed the usage of speech and gesture in descriptions to convey spatial information. Spatial gesture production increased with age and model performance demonstrating knowledge of fixed locations also increased with age. In additional studies we found that preventing gesture hinders adult model performance while encouraging gesture aids 8-year-olds' performance. We suggest that gesture, like diagrams, facilitates spatial reasoning by allowing people to externalize and think about multiple relations among locations.

"See the Zab Car and the Neep Tog?" Infant's Use of Adjectival Constructions to Learn New Words

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Can infants use syntactic location when learning new words, and, if so, how flexible are they? We will examine whether infants understand adjectival constructions and use this knowledge when learning new nouns and adjectives, even if those constructions are presented in an order that conflicts with their native language (e.g. car red). After being familiarized with a series of phrases consisting of a novel word and three familiar words (e.g. zab car, zab dog, zab ball) and their corresponding referents,14- to 26-month-olds will be tested, in a preferential looking procedure, on their interpretation of the phrase "see the neep tog." We expect infants will show varying success at determining the correct referents, but that even minimal exposure to a novel word order will be sufficient. Further studies will examine whether bilingual Spanish children are better at this task than monolingual children, because Spanish has a reversed order.

S72

Relations Between Children's Recall Of Picture And Prop Sequences

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The purpose of the study was to explore whether children's performance on recalling picture sequences is related to their performance on recalling sequences enacted with props. Previous research has failed to find a link between 3-year-old performances on picture and prop sequencing when the sequence lengths were 9-step for both sequence types. We varied the length of the picture sequences to examine whether relations with performance on 9-step prop sequences emerged when children were tested using shorter picture sequences. Eighteen 5-year-old children participated. An experimenter demonstrated 5-, 7-, and 9-step picture sequences and 9-step prop sequences using elicited imitation. Children were invited to recreate the sequence immediately after modeling. We found relations between children's performance on 5- and 7- step picture and 9-step prop sequences, suggesting that memory ability on sequencing performance is generalized across modality when pictures sequences are of developmentally appropriate lengths.

The Effect of Labeling Complex Actions with a Novel Verb on Children's Imitative Behavior

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Children assume that if a speaker takes the time to label an act, the act must be intentional and have meaning. Previous research indicates that young children are more likely to assume an ambiguous act is intentional when that act has been labeled by a novel verb. The current study tested children's ability to infer an actor's intentions, when the event being labeled is complex and contains an arbitrary component. Forty two- and three-year-olds were shown four three-step action sequences containing two enabling acts interrupted by an arbitrary act. Children were assigned to a verb label condition or no label condition. Children were then given the opportunity to perform the action sequence. Older children were significantly more likely than younger children to include the arbitrary act regardless of condition. The effect of condition was present in the expected

direction but only approached significance.

S73

Concrete Models As Teaching Aids In Early Mathematics: A Cognitive Theory Perspective

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Concrete models used to teach elementary school mathematics are commonly referred to as math "manipulatives". Their purpose is to take students beyond the mechanical learning of algorithms and heuristics to a deeper understanding of symbolic procedures and underlying concepts, to help them to develop mathematical intuition and to use mathematical procedures and rules appropriately. Commercial math manipulatives have been popular since the 1960s but there remains the need to establish a theoretical basis for their use (Kieren, 1971). Several cognitive theories of children's symbolic ability and their representation of mathematical information converge on a framework for the effective use of math manipulatives. As the result of a comprehensive literature review, I will discuss guidelines for what concrete models are likely to be effective, why they should improve understanding and how to use them.

S74

Manipulating Symbolism: Influencing Young Children's Performance On Arithmetic Equivalence Problems

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Grade 2 children do very poorly when presented with arithmetic equivalence problems such as 3 + 4 + 2 = 5 + __ in a typical, symbolic format, and their responses indicate a misunderstanding of the equal sign ("="). We know from previous research that students can solve equivalence problems presented without symbols (using blocks), suggesting they understand arithmetic equivalence but switch to inappropriate strategies in the presence of symbols, but how much symbolic content is required before students failed has never been assessed. In this study we manipulated the degree of symbolism by using a novel format that had only some of the characteristics of typical arithmetic problems. We found that children who solved problems in the novel format had higher accuracy on subsequent symbolic problems than children who began with the symbolic problems, suggesting that experience with semi-symbolic problems improves performance markedly on typical equivalence problems.

S75

Infant Sensitivity To Associated Object Cues

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The current study extends a recent naturalistic investigation which revealed that, starting at 14 months, parents often refer to present associated objects when labeling absent objects for their infants. A Split-Screen Preferential Looking Paradigm is used to determine whether infants from 14-22 months may be sensitive to this type of input. Infants hear a label for an absent referent while looking at a display of two objects, only one of which is associated with the absent referent. Looking times to the two displays are compared. Preliminary data outlines developmental and individual differences in infants' responses to the associated displays. Further analyses examine whether infants' responses relate to parents' perceptions of the strength of object associations as well as to parents' perceptions of their infants' abilities to comprehend such associations.

FA

Infants' Search for Objects Hidden in the Dark vs. the Light

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Why do infants search for an object hidden by darkness before they search for an object hidden by a visible occluder? According to a means-end deficit approach, it is easier to execute a direct reach in the dark than the means-end action of moving an occluder to get an object. However, according to a graded representations approach, global darkness interferes less with infants' representation than a visible occluder does. This approach predicts that infants will search more for an object hidden in the dark than one hidden in the light, even when no means-end action is necessary. Six-mo-old infants received events in the light and the dark in which objects were accessible with a direct reach and either hidden in milk or visible in water. Contrary to predictions, infants in the light reached more for hidden objects than infants in the dark did. Potential explanations and theoretical implications are discussed.

F80

Vocabulary Size And Strength Of Thematic Relationships Predict 20-month-olds' Word Comprehension

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Toddlers' comprehension of words was investigated as a function of individual differences in size of receptive vocabulary and the strength of thematic relationships between paired objects. Seventy-two 20-month-old toddlers manipulated pairs of objects whose labels were known, partially known, or unknown. Half of the toddlers were presented with paired objects that shared strong thematic relationships (e.g., horse & saddle) and the other half saw pairs that shared weak thematic relationships (e.g., horse & screwdriver). One object was labeled at test. Toddlers demonstrated comprehension by: 1) handing the labeled object to the experimenter or parent; 2) pointing to the labeled object; or 3) holding up the labeled object for the parent or experimenter to see. Results indicated that children with larger receptive vocabularies were more likely to comprehend words as a function of level of knowledge, and that stronger rather than weaker thematic relationships between the paired objects improved comprehension for toddlers with smaller receptive vocabularies.

F81

Acquisition Of The Space-Time Metaphor

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Languages, including English, systematically apply the same vocabulary to the domains of both space and time. The purpose of the current study was to explore how children acquire the space-time metaphor. Our main goal was to understand whether the acquisition process is primarily a linguistic or a cognitive phenomenon. 24 five-year-old children were run on three tasks. First, children were taught novel words for familiar spatiotemporal relations of extent (long/short), linear ordering (before/after, front/back), and distance (far/near). Half the children were taught the novel word in the spatial and half in the temporal domain. Children were then tested in both the teaching domain and the transfer domain. Children were also tested on their linguistic competence with the real English equivalents of the nonsense words and on analogical reasoning. First, space appears to be the base of the metaphor for children, as for

adults. Children found it easier to learn the novel words for spatial relations than for temporal ones; moreover, children found it easier to transfer their knowledge into the spatial domain than into the temporal one. Second, we found that no single coherent metaphor covers all three relations tested (extent, ordering, and distance); each relation showed unique patterns of acquisition and transfer. Third, we found that transfer across domains was predicted by the direction of transfer, not by analogical reasoning nor linguistic competence. Together, these results suggest that the space-time metaphor arises from the inherent structure of spatial and temporal concepts, not primarily through language use.

S76

Young Children's Reasoning About Race And Gender As Social Categories

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Three experiments probed the nature of children's early reasoning about race and gender as social categories. Experiment 1 tested whether three- and four-year-old children use race and gender as factors in determining who might be friends with whom. Experiments 2 and 3 tested whether children will generalize a newly learned fact about one individual to another based on their race and gender. Children used race and gender to reason about likely friendships, but did not seem to use these categories to make inferences about shared interests and preferences. Our results suggest that relationships among individuals (i.e. friendships) are more central to children's thinking about race and gender as categories than shared properties (i.e. shared interests and preferences).

FA

Spatial Recall Biases Predict Position Discrimination Performance across Development

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Research in spatial working memory has established a developmental transition in recall performance: when remembering a location over a short delay, young children respond closer to the midline symmetry axis of a task space, whereas older children and adults respond further from midline. A model of spatial working memory—the Dynamic Field Theory (DFT)—has been proposed to account for these changes in spatial memory performance (Schutte & Spencer, 2005). More recent work has demonstrated that the DFT generalizes across tasks. Simmering, Spencer, & Schöner (2005) tested predictions of the DFT that relate spatial recall performance to position discrimination. The DFT predicted that position discrimination would be enhanced near midline and depend on the direction of the first and second stimulus presentation relative to midline. The current study found a comparable relationship between spatial recall and position discrimination earlier in development, thereby generalizing the DFT across ages and tasks.

S77

The Effect Of Long-chain Polyunsaturated Fatty Acids On Cognitive Outcomes In Children

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Long-chain polyunsaturated fatty acids (LCPUFA) are highly concentrated in the brain and deficiencies are believed to impact on cognitive abilities. 182 children aged 7-12 with learning and behavioural difficulties associated with Attention Deficit Hyperactivity Disorder were recruited for a randomised, placebo-controlled, double-blind study, with 145 children completing the 15-week intervention. Cognitive assessment batteries found significant improvements in the LCPUFA group compared with placebo on the ability to control and switch attention following supplementation, $F(1, 135) = 9.547$, $p = .002$, and on WISC Vocabulary scores, $F(1, 135) = 9.199$, $p = .003$, with medium effect sizes; and no significant treatment effects on measures of memory, executive function, and processing speed. Parent ratings of cognitive problems/inattention also showed significant treatment effects, $F(1, 111) = 10.453$, $p = .002$. Interdisciplinary research is required to further explore and establish the specific roles of LCPUFA in cognitive functioning.

In Between Failing And Passing: What Eye Movements Can Tell Us About The Dimensional Change Card Sort

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In the Dimensional Change Card Sort (DCCS; Zelazo et al., 1996), children sort bivalent cards, first by color or shape, and then by the other dimension. Their behavior has long been discussed in all-or-none terms: 3-year-olds fail to sort by the second dimension, perseverating on the first, whereas 4-year-olds succeed. Research investigating linguistic categorical perception shows that even though verbal output suggest discrete decisions, eye movements show a more probabilistic response (McMurray et al., 2003). Similarly, the current study shows that children close to 4 years of age who are about to, or have just, mastered the DCCS produce more vacillating eye movements between the two sorting options. In contrast, young 3-year-olds who are not close to mastering the task, and old 4-year-olds who succeed easily, show fewer vacillations. This U-shaped curve suggests that at the point of transition, children have partially active representations of the correct and incorrect responses.

F82

Children's Developing Knowledge Of Causal And Internal Properties

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Three experiments investigated children's knowledge of the relationship between an artifact's internal and causal properties. Experiment 1 demonstrated that 3-year-olds would not use an object's causal properties as a guide to their internal properties, and shows a developmental difference between 3- and 4-year-old data (Yoachim, Sobel, Gopnik, & Meltzoff, 2005). Experiment 2 found a similar developmental difference when both age groups were provided with causal language and name information about the objects. Experiment 3 demonstrated that 4-year-olds, but not 3-year-olds recognized that an object's internal properties were responsible for their causal properties. When asked to make interventions to elicit the causal properties, younger children simply imitated the experimenter's actions, while older children relied on their inferences about the internal properties of the objects. Taken together, these data suggest that young preschoolers' conceptions of internal properties of artifacts are still developing, and might be related to children's developing causal inference abilities.

S79

Measuring Length: The Long And Short Of It

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The ability of kindergarteners and second graders to measure length using conventional and non-conventional measuring tools (a ruler or a row of circles) was assessed. The left edge of a crayon was either aligned with, or indented, relative to the left edge of the measuring tool. Performance was very good on the aligned and misaligned circles and on the aligned ruler items, and significantly better than on

the misaligned ruler items. In follow-up work, we removed the numbers from the ruler, which did not affect performance. We also added numbers to the circles, which had a negative but not substantial effect. Thus, difficulties with the misaligned ruler were not due simply to "reading off" the number corresponding to the right edge of the crayon. Results will be discussed with respect to the cognitive processes involved in the quantification of spatial extent.

S80

The Value of Simplicity for Shape Generalization

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Object recognition has been found to be a product of category learning experiences (Smith, 2003). In any learning situation, one must retain and disregard parts of the experience. In learning to recognize objects, young children must parse out relevant shape information and exclude other object features. Studies from development (DeLoache, 1995), cognition (Goldstone & Sakamoto, 2003; Bassok & Holyoak, 1993), and education (Uttal, Liu, & DeLoache, 1995) suggest that novices in particular are easily misled and distracted by irrelevant information. In two experiments, we have tried to streamline shape learning by simplifying the learning situation. Children were taught object categories with either simple objects varying only on relevant shape information or complex objects with multiple sources of variation. We found that children were able to generalize according to shape better with simple objects rather than complex ones. Our results suggest that the developmental time course of category generalization depends on the complexity of the learning instances.

Assessing Anxious Self-Talk in Youth: The Negative Affectivity Self-Statement Questionnaire - Anxiety Scale

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The present study investigated the development and utility of the Negative Affectivity Self-Statement Questionnaire – Anxiety Subscale (NASSQ-A) in identifying anxious youth. Participants in the initial anxiety-disordered (AD) sample were 68 children with a principal or co-principal diagnosis of generalized anxiety disorder (GAD) or social phobia (SP), and participants in the non anxiety-disordered (NAD) sample were 37 children with no anxiety or mood disorder. Findings were then cross-validated on an additional sample of 138 children with a principal or co-principal diagnosis of GAD or SP. Thirty-three negative self-statements were found to separate anxious from non-anxious participants, and these items were combined to form the NASSQ-A. Children with GAD did not significantly differ from those with SP on any of the 33 NASSQ-A items. The NASSQ-A was found to have excellent internal consistency, good test-retest reliability, concurrent and discriminant validity, and incremental validity. Using Receiver Operating Characteristics (ROC) analyses, a NASSQ-A cutoff score of 49 was determined to be optimal for identifying anxiety-disordered youth. Findings are discussed with regard to existing literature on self-talk in anxiety disorders and the assessment of self-statements.

F83

Voice Familiarity Affects 4-Month-Olds' Categorization Of Infant-Directed Speech

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This study examined the effect of voice familiarity on 4-month-old infants' categorization of approving and comforting infant-directed speech (IDS). Infants (n=34) were familiarized with a female voice and then tested for categorization of approving and comforting IDS spoken by that voice. Categorization was assessed using a habituation procedure in which either comforting or approving IDS was presented contingent on fixation of a visual stimulus. Following habituation, four test trials occurred, consisting of two novel stimuli from the familiarization category and two novel stimuli from the unfamiliar category. Infants discriminated the novel IDS category from the IDS habituation category (M diff = 4.623, SE = 1.69, $p = 0.010$), but they did not increase looking to novel within-category test stimuli (Trial Type main effect, $F(2, 64) = 5.108$, $p = 0.009$). This finding suggests that voice familiarity, which facilitates adults' and infants' phonetic processing, also affects infants' processing of IDS.

S81

Mothers and Children's Understanding and Memory for Arguments

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Data from two mother-child negotiation studies show that both mothers and children are strongly biased in favor of their own position. They each have more knowledge about their own position than the other's position. The amount of knowledge each has about the other's position, however, varies and predicts the outcome of the negotiation. The more knowledge an arguer has about the other's position, the more likely the negotiation ends in a compromise. The less knowledge, the more likely the argument ends in a win. Those arguers who have little or no knowledge of the other's position end in a loss or standoff. Outcomes are also related to memory for the entire negotiation. Compromisers have the worst source memory (who said what), compared to winners and losers. Compromisers and losers, however, have the best memory for what was said, compared to winners and those who end in a standoff. Overall, losers have the best memory. Those who end in a standoff have the worst memory. Compromisers and winners are in-between, but for different reasons.

F84

Two Roads Diverged In The Classroom, But Did It Make A Difference? Path Independence In Learning & Transfer

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We describe an investigation of the 'path independence learning hypothesis' which states that once children achieve mastery on a procedure, the type of instruction leading to that mastery is irrelevant. The study is a major extension of an earlier report that supported this hypothesis, and which generated an unexpected amount of attention from the education community. Seventy-four elementary school students were taught how to design unconfounded experiments via either explicit training or exploratory learning. Learning and transfer were assessed on a variety of measures at several time points, from immediate to a 3 month delay. Preliminary results on the relative effectiveness of the two types of instruction are consistent with earlier findings: explicit training is more effective than exploratory learning for mastering the basic procedure. However, the more interesting question being examined currently is whether these two approaches yield qualitatively different long term retention and transfer.

S78

The Role of Agency Attribution in Cognitive Imitation

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In a series of studies on cognitive imitation, Subiaul (2004) gave naïve human children and adult monkeys the opportunity to learn the

order of arbitrary pictures by observing a 'model' in a social feedback condition (SO), or by attending to feedback from the computer alone (CO). Whereas adult monkeys did not learn from computer feedback alone, 3-year old human children did. One hypothesis is that while the monkeys failed to attribute animacy/agency to the computer model, the children did, and, as a result, their performance was enhanced in the CO condition. Here, we contrasted the performance of 3 year olds, who are beginning to form representations of agency, in conditions that described the computer as being an animate agent (AA), inanimate, mechanical object (MA), or provided no description (NA). Preliminary results indicate that the children learn best in the AA condition.

SA

Age and Question Type Predict Reasoning Pattern when Answering Questions about Adaptive Change

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Children and adults' open-ended responses to how or why questions about the existence of animate (e.g., butterfly wings) and artificial (e.g., chair legs) parts were examined in a between-subjects design. Participants included 85, 8- to 12-year-olds, and 60 parents. A coding scheme that included themes from five reasoning patterns (Intentional, Functional, Essentialist, and Naturalistic: Evolutionist and Non-Evolutionist) was used to code participants' responses. For the artificial parts, how questions elicited intentional/agentic causes ("a person made it") and why questions functional causes ("to hold things up"), in all age-groups. When answering how questions for animate parts, children offered non-evolutionist naturalistic causes ("they grew them") and adults responded with intentional and functional causes ("God designed" them "to fly"). However, when answering why questions, all participants endorsed functional causes. It is hypothesized that this difference results from adults' use of ultimate cause explanations for how questions, while children offer proximate cause mechanisms.

F85

Implications Of Generic Language For Children's Categories

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Generic noun phrases (e.g., 'Dogs bark') refer to categories rather than individuals. This study investigates the conceptual implications of generic language for preschool children. Children see picture sets of common objects: a target picture (e.g., an apple) and a shape,taxonomic, and thematic match (balloon, grapes, and knife, respectively). In the standard label condition, children hear a novel word for the target picture ('This is a fep'). In the generic property condition, children hear a novel word plus a property using a generic sentence ('This is a fep. Feps have blicks inside'). In the non-generic property condition, children hear a novel word plus a property using a non-generic sentence ('This is a fep. This fep has blicks inside'). Children are asked to extend the novel word ('Can you find another fep?') to one of three choice pictures. We hypothesize that generic language affects children's interpretation and extension of category names.

F86

What Does A Commonsense Psychology Mean For Infants?

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A review of the literature on early social cognitive abilities suggests that the purpose of early development is in preparation and adaptive for latter adult functioning, in that the elements of an adult commonsense psychology are present in infancy. However, another perspective of development is that certain characteristics serve an adaptive function for specific times early on, rather than serving as preparation for later periods in life (Bjorklund & Pellegrini, 2002). From this latter view, one can say that infants do possess a commonsense psychology, one that is sufficient and adaptive for their level of social cognitive development. Commonsense psychology in infancy then includes three milestones: ability to discern goal structure in an agent's action in response to the environment, ability to conceptualize the mental lives of others and the artifacts they produce (e.g. gesturing, tools, language), and the role of the self in reference to the behavior of others.

S82

The Effect Of Stimulus Familiarity On Infants' Facial Processing

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This study explored ten-month-old infants' categorization of one positive (happy) and one negative (disgust) expression when viewing dynamic female faces. Categorization was assessed using an infant-controlled habituation procedure that presented 3 faces in repetition for no more than 20 trials. Subsequently, 2 within-category and 2 between-category test trials were presented. Infants (n=32) were separated into 2 groups: those who habituated in fewer than 10 trials, and those who habituated in more than 10 trials. Preliminary analyses indicate that infants who experienced 10 or more habituation trials responded to within category trials while the infants who experienced fewer than 10 trials responded to the between category trials. These results suggest that differing levels of familiarity with the stimuli during habituation affected infants' discrimination of novel faces versus noves expressions presented on the test trials.

S83

Keeping Track: Children And Parents' Record-keeping During Experimentation With Different Car Wheels At A Museum Exhibit

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Museum exhibits often encourage children to informally experiment by providing the opportunity to test out several objects. However, formal scientific inquiry typically requires the use of recording devices to aid the students' memory and to structure the data collected. In the current research project we explore how providing a place for children to post the results of their experimentation with cars that have different shaped wheels influences children's engagement in the task. For this poster presentation, we will describe how parents and children's interactions incorporated the record-keeping task into their interaction with the exhibit through a series of case studies.

FA

Readiness to Learn from Symbols: Individual Differences in Children's Experience with Representational Artifacts

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Experience with a variety of symbolic artifacts has been proposed as a mechanism underlying early symbolic development. The current research involved data from 120 children who participated in symbolic object retrieval tasks and parents' responses to a questionnaire regarding their children's naturalistic experience with symbolic artifacts (e.g., photographs, video, picture books) and

activities (e.g., writing and drawing). In separate hierarchical regression analyses, children's retrieval scores on video and picture versions of the symbolic object retrieval task were regressed onto measures obtained from the parent questionnaire. In several of the regressions, the block of predictor variables (involving children's exposure to live video and their experience with picture books and graphic representation) was significant, even after accounting for the effects of control variables (child's productive vocabulary and birth order, and parent education and occupation level). The results provide further support for the role of experience in children's early detection and use of symbolic relations.

SA

Real Versus Pretend: The Development of Children's Ability to Evaluate Evidence to Infer the Reality Status of a Novel Entity

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The purpose of the current research is to determine whether children can infer the reality status of novel entities from the evidence they leave behind. Thirty-two 4- and 6-year-olds were told that scientists transport newly discovered animals in boxes to the laboratory, and that some of the animals on the scientist's list are real and some are pretend. Children were asked to determine a novel animal's reality status based on the evidence that it left behind in the transportation box. Some boxes contained confirming evidence; others contained irrelevant or no evidence. 6-year-olds, but not 4-year-olds, were able to confidently judge the animals as real when they left behind confirming evidence. We conclude that children can use evidence to infer whether a novel entity is real or pretend, and that this ability develops significantly between the ages of 4 and 6.

S12

Relations Between Mothers' And Children's Contributions To Conversations About A Devastating Tornado

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Mother-child dyads who had experienced a devastating tornado talked about the storm and about two affectively more positive or neutral events at each of two time points: 4 months and again 10 months after the storm. The conversations were analyzed to determine whether mothers' and/or children's contributions differed as a function of event type and whether there were concurrent and/or cross-lagged relations between mothers' and children's contributions to the conversations. For both members of the dyads, contributions were similar (and correlated) across event types. Maternal narrative style was found to relate to children's levels of participation and to the specific content that children contributed to the conversations, both concurrently and over time; cross-lagged relations were more numerous and more robust for the tornado relative to the non-tornado-related events. The implications of the patterns for socialization models of autobiographical memory development are discussed.

S84

The Cognitive Representation Of Pretense

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While the typical developmental course of pretending is well-charted, exactly how people represent pretend situations is not. Theories of how people pretend specify that people must mentally separate real from pretend in order to avoid the possibility that pretend experiences become converted into real-world knowledge. For example, it would be a problem if children thought they could actually eat a block after pretending it was a cookie. This study is an investigation of whether and how adults and 9-year-old children keep real and pretend separate. Participants watch a video of a person pretending and then complete a computerized word association task. Results suggest that participants inhibit their representation of the object they see the person pretending with (compared to a control group). Further, their representation of what the person is pretending is made more accessible. In addition, our results suggest that pretend and real representations are not kept entirely separated.

F87

Influencing Young Minds: Early Reasoning About Persuasive Communication

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Preschool children's ability to understand persuasion and to make credibility judgments was investigated in two ways: making judgments based on speakers with differing authority and motivations, and creating their own listener-relevant persuasive messages. 4- to 5-year-olds heard stories in which children on the playground versus children on television described a new toy and participants had to choose which toy they preferred. Then they were asked to persuade a shy child and a child who was afraid to swim to come to their swim party. By 5 years of age, children trusted judgments of peers more than those of characters on TV. Further, both 4- and 5-year-olds were able to create persuasive messages, but 5-year-olds were better able to adapt their messages based on information about the individual they were persuading. These results suggest that by age 4, children already have some understanding of persuasive communication, and that these abilities improve during the preschool years.

S85

Exceptional Jigsaw Puzzle Ability In Prader-Willi Syndrome: Visual-Spatial Skills Or Different Strategies?

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Prader-Willi Syndrome (PWS) is a genetic disorder involving mild to moderate mental retardation. Dykens (2002) revealed that children with PWS excel at jigsaw puzzles, assembling more than twice as many pieces as chronological age controls. The current study examined whether strong visual-spatial abilities or another advantage underlie this exceptional skill. On every measure given, spatial scores for typically developing (TD), mental age controls were higher or equivalent to those for the group with PWS, ruling against this factor. The use of three types of puzzles (traditional jigsaw, blank jigsaw, non-interlocking) allowed an investigation of strategies employed by the two groups. Individuals with PWS placed 3x as many pieces in the blank puzzle as the TD controls. Overall results indicate that individuals with PWS are using different strategies to solve puzzles, strategies that are, in certain cases, better suited to the task. Reasons for the existence of strategy differences are discussed.

Young Children's Recognition of Learning Events in Themselves and Others

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The current study examined children's abilities to recognize a learning event both in themselves and in other children. Children aged 4, 5, and 6-7 years learned a new behavior or fact and watched another child (via videotape) learning a new behavior or fact. After watching each situation the child was asked to identify whether the new fact or behavior was "learned today" or had been known for a

"long time". On average, children were found to improve in accuracy on both tasks with age. Results were interpreted as evidence that children's difficulties in recognizing learning events are more complex than suggested by previous research. Possible explanations for discrepancies are discussed and potential theoretical explanations are examined.

S86

Effects Of Novelty On Event Individuation

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Identifying event boundaries – that is, what counts as an individual event – is important for event understanding, and verb acquisition. Previous work on event individuation found that children can use linguistic cues to guide their individuation by 3 years, but are generally biased towards individuating in terms of spatio-temporal units (Wagner & Carey 2003). The current studies examine the role that novelty plays in children's event individuation. Two kinds of novelty are examined: situational novelty (i.e. novel events: a girl knocking over books with her head), which mimics children's lesser experience with some events; and linguistic novelty (i.e. nonsense verbs), which mimics a word learning situation (children must infer the meaning of a novel word). How do these kinds of novelty interact with children's spatio-temporal individuation bias, and with their ability to consider syntactic cues to individuation? Preliminary results (based on 32 five-year old children) suggest that linguistic novelty especially promotes the spatio-temporal individuation bias, and that linguistic cues in general depend on understanding both the event and the verb used to describe it.

S87

Earliest Recollections Of Self And Others In Euro-American And Taiwanese Young Adults

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This study examined the age and content of earliest childhood memories of self and others. European American and Taiwanese participants (N = 111) retrieved their earliest memories in response to cue words of self, mother, family, friend, and surroundings. Memory for mother was dated earlier than memory for self, and memories for mother, family, and friend were more socially-oriented in content than memories for self or surroundings. In addition, Euro-Americans recalled memories from an earlier age than did Taiwanese in response to all cue words. Euro-Americans were also more likely to report memories of specific events and focused more on their own roles and autonomy than did Taiwanese who often described routine events and emphasized the roles of others. These findings have important implications for the phenomenon of infantile amnesia and the memory-self interplay.

F88

Scale Errors Occur Outside Of The Lab: Real-World Examples From Parents

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Young children occasionally make scale errors: they attempt to fit their bodies into miniature objects that are far too small for them (DeLoache, Uttal, & Rosengren, 2004). For example, a child might try to sit in a doll-sized chair. The original impetus for this work came from informal observations and anecdotal accounts by parents and researchers. The current study further investigates the spontaneous occurrence of scale errors within real-world settings. We developed a survey for parents to ask them if they have seen their children make scale errors. To date, more than 50 parents have reported seeing a scale error before. These errors involve objects similar to those of previously reported scale errors (e.g., toy cars, doll clothes). Similar to the prior research, the reported errors tend to be made by 18-24-month-olds. Thus, children occasionally make spontaneous scale errors in the course of their everyday lives that are similar to those errors that have been observed in the lab.

F89

Enduring Instructional Effects On Equivalence Problems

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Although children comprehend the principle that two expressions can appear differently but can have the same quantitative value and they are competent in addition and subtraction, the overwhelming majority of elementary students fail equivalence problems (e.g., a + b + c = __ + c). In this study, 200 children were given one of three types of principle-based instruction to test the effectiveness of each method and whether the effects would be maintained over a 2 week interval. Students improved significantly following instruction, with Grade 4 students improving more than Grade 2 students. The degree of the effect did not vary with instructional method. These effects were maintained over a 2 week interval.

S88

Exploring The Relationship Between Children's Emotion And False Belief Understanding

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Recent research offers conflicting evidence regarding the relationship between children's emotion and false belief understanding. Some studies find no relationship between the two, but others report that false belief understanding precedes ability to understand belief-based emotions. In the present study 40 4- to 6-year-old children will complete seven emotion understanding measures designed to tap their ability to recognize facial expressions, identify external causes of emotions, understand (false) beliefs and desires in emotion, and comprehend real versus pretend emotions. Children's level of emotion understanding (of happy, sad, mad, scared, and surprised) will be compared with their performance on a pair of belief tasks (true and false) designed to eliminate a confound in traditional tasks that allows false positive assessments of children's understanding of belief.

S89

Learning To Tell Stories In The Preschool Years

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Previous research has revealed a connection between the comments parents make while reminiscing and their children's narratives for personally experienced events. The present research expands the literature by focusing on the connection between parental reminiscing and children's production of fictional narratives. Four- and five-year-olds and their parents reminisced about events from the recent past and then with an experimenter the children produced narratives based on wordless picture books. The results revealed that the overall quality of the children's fictional narratives and their use of internal states, causal, and temporal language was predictable from the types of content and questions parents provided. These results indicate that children learn general storytelling skills from adult models, and that the dynamics of the partnership change as the skill of the child changes.

F90

Response Inhibition In Preschoolers: Is There A Difference Between Word And Deed?

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Are there relations between inhibitory control of different response modalities? Children between 3 and 6 years (N=80) completed a battery of executive function tasks including several measures of response inhibition. In the Big-Little Stroop (Kochanska, 1996, 2000), children viewed large pictures composed of congruent or incongruent smaller pictures; their task was to name the small pictures. In a computerized Go-No Go (adapted from Simpson & Riggs, 2003), children pressed a button to "catch" fish, but inhibited responding to sharks. In Trails-Preschool (Espy, 2001), children stamped pictures on a storybook page; after stamping dogs on several pages, they had to inhibit stamping the dogs and instead stamp bones. Preliminary analyses revealed substantial age differences in performance on all tasks. Correlations between indices of performance on the three tasks were significant, even when age was controlled, suggesting that common processes underlie preschoolers' inhibitory control of verbal and non-verbal responses.

Variation in Children's Imitation Due to Their Experiences with a Task

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I argue that children vary how they imitate depending on the situation. These studies test the hypothesis that children's prior experiences with a task can influence their imitation. Specifically, when children have difficulties performing a task with their own means, they may be more likely to imitate the precise actions a model uses to successfully attain the goal. Three-year-olds were given either an easy or a difficult experience completing a straightforward task, such as opening a drawer. Then they saw a model complete the same task using a distinct action or set of actions. Whether or not the children included the model's actions on a later attempt at the same task was analyzed. The results of these studies show that children were more likely to include the precise actions of a model in their reproductions when they had evidence that their own means were not effective for completing the goal.

S90

Development Of Shared Attention From 3 To 11 Months Of Age In Naturalistic Infant-Parent Interactions

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Attention-sharing is critical for infant learning and social inference. Infant-parent interactions are finely structured, but we do not know how infants learn specific joint attention skills like gaze-following from these interactions. To address this, we obtained quasi-naturalistic observational data of play interactions between infants from 3 to 11 months and their parents. Researchers visited families' homes and collected 15 minutes of high-resolution digital video. Dyads (n = 24) engaged in "showing" interactions, (i.e., drawing infants' attention to objects). Synchronized video files were coded for infants' and parent's direction and target of gaze, and parents' manual actions (e.g., pointing, holding objects). Infants and parents shared attention about 1/3 of the time. Parents use many strategies to recruit infants' attention. With younger infants, parents imposed objects in infant's visual field. Infants were sensitive to object movement and parents' hands, and only followed gaze if parent's made redundant manual actions. Infants might learn to follow gaze by noticing contingencies between gaze shifts and object/hand motion.

Affective Decision Making for Self and Other

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The current study examined the role of perspective on preschoolers' affective decision making. Ninety-six children between 3 and 4-years of age were asked to perform the Less is More task (Carlson, Davis, & Leach, 2005), which requires children to choose an array of less treats (e.g., 2)in order to get more (e.g., 6). Half the children in the study were instructed to make choices for themselves (Self condition), and half the children were asked to choose for the experimenter (Other condition). Performance was measured by the number of advantageous choices (i.e., choosing the smaller amount). Age-related improvements were found for boys only. Girls made more advantageous choices when performing for Self versus for Other. The results are discussed in relation to previous work with affective decision making, and some speculations about the role of perspective and emotion in theories of executive function are made.