Behavior

Bruce Bower reports from Atlanta at the annual meeting of the American Psychological Association

Retardation: The eyes have it

A simple test of infant visual memory and intelligence shows promise as a tool to identify mentally retarded children by 7 months of age, according to psychologist Joseph F. Fagan of Case Western Reserve University in Cleveland.

Mental retardation often is not diagnosed until a child reaches between 4 and 6 years of age. The new technique allows much earlier interventions with mentally retarded children, Fagan says. If it were used to screen a large national sample of infants considered "at risk" for later developmental problems, some of the causes of mental retardation might be illuminated, he adds.

Fagan's test of infant intelligence is based on prior observations that most babies look longer at new images than at familiar ones. The ability to remember and discriminate between images reflects fundamental abilities measured by IQ tests later in life, he maintains. The Fagan test first presents infants with one of a pair of images on slides, either faces or abstract patterns. Both images are then shown. Observers record the amount of time youngsters look at familiar and novel slides.

Several independent research teams have linked healthy infants' novelty preference on the Fagan test to higher IQ scores between ages 2 and 7. Fagan and his colleagues gave the test to 128 infants between 3 months and 7 months of age. The youngsters were suspected to be at risk for later mental retardation as a result of premature birth, slowed physical growth or other medical problems. Scores on the visual recognition test identified 101 of 104 infants who scored in the normal range on a standard IQ test at age 3. Of 24 infants predicted to be at risk for mental difficulties, half had IQs in the retarded range at age 3.

The test should not be used with infants in general, Fagan says, but only with those considered at risk.

Despite the impressive results so far, psychologist Robert B. McCall of the University of Pittsburgh notes the test incorrectly predicted mental retardation in half the cases reported by Fagan. Further work, McCall adds, should chart the youngsters' IQs during the school years.

Sales pitches: The lies have it

Have I got a deal for you. A steal, really. Act now and you can have this little beauty for a song. Trust me, you'll love it.

You've heard it before—the siren song of a salesperson on the prowl. And you can tell, by an arch of the seller's eyebrows, a stammer, a nervous shuffle, when you are being lied to, right? Not quite.

In sales situations, the seller is unlikely to give away deceptive intentions with nonverbal cues, report psychologists Peter J. DePaulo of the University of Missouri in St. Louis and Bella M. DePaulo of the University of Virginia in Charlottesville. The researchers videotaped simulated sales pitches by 14 people — 10 experienced retail salespersons and four automobile customers who had bargained over the price of at least three trade-ins. Sellers made pitches for products and cars they liked and disliked. Videotapes were then judged by 107 college students, some of whom were told to pay attention to body movements and speech patterns linked to deception in nonsales situations.

Judges, even those given special instructions, could not tell when sellers were being truthful or deceptive, report the investigators. Nonverbal cues associated with lying were picked up by the judges, they explain, but these cues did not correlate with sellers' lies. Their conclusion: Experienced sellers, confident in their ability to deceive and with no qualms about doing so, may not inadvertently give away their lies with nonverbal cues.

Kanzi extends his speech reach . . .

While the ability of common chimpanzees to understand language is not as clear as some researchers originally contended (SN: 5/10/80, p.298), another species — the pygmy chimpanzee — can learn to comprehend English words and short sentences without specific training, says psychologist Duane Rumbaugh of Georgia State University in Atlanta.

He and colleague Sue Savage-Rumbaugh are directing research with a pygmy chimp named Kanzi. The chimp consistently identifies objects in his surroundings or engages in behaviors corresponding to 149 of 194 words presented so far, says Rumbaugh. Kanzi hears the words through headphones so his caregivers are not aware of which word is being tested. He also demonstrates understanding of simple sentences of at least three words. If, for example, a caregiver says, "I hid the surprise by my foot," he immediately approaches the speaker and lifts her foot.

Kanzi's use of symbols on a keyboard to make requests is not as extensive as his language comprehension, Rumbaugh says, but he does practice simple grammatical ordering rules for putting pairs of symbols together in novel ways. For instance, actions usually precede objects in Kanzi's requests; he presses symbols for "KEEPAWAY BALLOON" when he wants to tease a caregiver with a balloon and start a playful fight.

Kanzi picked up some grammatical ordering rules from the experimenters, says Rumbaugh, but developed other ordering patterns on his own.

"The pygmy chimpanzee species can understand substantial amounts of speech," Rumbaugh maintains. "This was unanticipated and came about with no specific training."

. . . and Sheba's days are numbered

Rumbaugh and other researchers also have reported basic calculation skills in common chimps possibly linked to the human capacity for counting (SN: 5/23/87, p.334). One such skill involves combining separate piles of chocolate chips to determine which of two pairs of piles nets the greater amount.

Psychologist Sarah T. Boysen of Ohio State University in Columbus now reports that Sheba, a chimpanzee in her laboratory, counts and adds small arrays of objects or Arabic numbers.

The chimp first learned to select a round placard with a corresponding number of metal disks attached in response to a presentation of one, two or three food items. Sheba then learned to do the same thing with placards containing the Arabic numbers 1, 2 and 3. When shown individual numbers on a video screen, she was usually able to select the corresponding number on a placard, says Boysen, indicating comprehension of the number symbols. Upon presentation of one, two or three common household items, Sheba demonstrated the same number-labeling skill. Placards with the numbers 0 and 4 were then added to Sheba's repertoire.

The chimp was then exposed to two counting tasks. She was first required to move among three sites in a lab room — a section of tree stump, a food bin and a plastic dishpan — and select the correct Arabic symbol for the total number of oranges (1, 2, 3 or 4) placed at the sites. In the next test, oranges were replaced with placards containing Arabic numbers 0 through 4. On each trial, two of the three sites were "baited" with oranges or an Arabic number, for which a sum was chosen.

Sheba chooses the correct sum about 80 percent of the time on both tasks, says Boysen. The chimp's performance compares favorably with rudimentary counting strategies observed among preschool children, she notes. A study is now underway to determine if Sheba uses "motor tags," such as pointing at, touching or moving items to be counted, in a consistent way to come up with correct responses.