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Assessing Auditory Comprehension in Teens with Autism
using the *Porch Index of Communicative Ability in Children*

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Program in Communication Disorders

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Abstract

The purpose of this project was to investigate the feasibility of using the *Porch Index of Communicative Ability in Children (PICAC)*, a test designed for children between the ages of 3 and 12 years of age, to assess auditory comprehension in teens with autism. Archival data was used to compare the performance of an 18-year-old male with autism spectrum disorder (ASD) to that of a six year old male with developmental apraxia and an eight year old male with developmental dyslexia. The qualitative 16 point scoring system of the PICAC and analysis of extraneous behavior were compared across individuals. While numerical scores were similar extraneous behaviors differed. These results suggest that the material and PICAC procedures capture the impact of various disorders on school-like tasks for individuals beyond the age range of the test but that additional coding is necessary to quantify behaviors, e.g., excess verbiage, sound effects, ritualistic behavior, and ticks, associated with autism spectrum disorder.

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Assessing Auditory Comprehension in Teens with Autism using the *Porch Index of Communicative Ability in Children*

For many people with autism communication is difficult or nearly impossible. Family members, teachers and even peers may, during the course of conversation, wonder if the person with autism (PWA) is even able to comprehend language. Many also wonder if the abnormal and sometimes uncooperative behavior of PWA is caused by frustration due to lack of language comprehension and ineffective means of communication. While language may be used and understood differently depending on the age of the child with autism, it is clearly an area of development that is impacted to some degree by many children with this cognitive-communicative disorder, and it is clearly a life-long disability.

Signs of communication difficulties begin to emerge at a very young age. When tested on all three language measures receptive language ability was proven to be more impaired than expressive language abilities for preschoolers with autism (Hudry, Leadbitter, Temple, & Slonims, 2010). Studies have found significantly lower abilities in narrative discourse comprehension for children with autism but not in oral receptive vocabulary or reception of grammar (Asberg, 2010). These language delays could possibly be linked to behavioral problems. “Subclinical autistic traits at 14–15 months predict later behavioural problems and delays in cognitive and language functioning rather than later ASD-diagnoses” (Moricke, Swinkels, Becker, & Buitelaar, 2010, p. 659). Such language and communicative differences in children with autism impact success in formal schooling. The *Porch Index of Communicative Ability in Children (PICAC)* is a basic test of listening, speaking, reading and writing that has been used to replicate procedures associated with formal schooling (Hagstrom & Thomas, 2007). While the qualitative 15-point scoring system of this test is the same as that used in the *Porch*

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Index of Communicative Ability (Porch, 1973), some of the subtests and materials differ from the children's version.

The purpose of this project was to investigate the feasibility of using the *Porch Index of Communicative Ability in Children (PICAC)*, a test designed for children between the ages of 3 and 12 years of age, to assess auditory comprehension in teens with autism.

Review of the Literature

Autism Defined

One in every 110 children is born with Autism Spectrum Disorders (Autism Speaks Inc., 2011). Although it is a relatively common disorder, not many people fully understand what autism entails. Autism Spectrum Disorders (ASD) “is a lifelong neurodevelopmental disorder that is diagnosed by observable behaviors rather than specific biomarkers” (Defensor, Pearson, Pobbe, Bolivar, Blanchard, & Blanchard, 2011, p.302). Autism may range from moderate to severe, and the severity of the disorder positively correlates with the prevalence of its symptoms. “The diagnostic symptoms of autism form a triad of behavioral deficits consisting of abnormal social interactions, impaired communication and repetitive and stereotyped patterns of behavior” (Defensor et al., 2011, p.302). There are no anatomical characteristics of autism visible to the naked eye, however, “Neuropathologies such as increased gross brain volume and reduction in size of the corpus callosum are frequently associated with the disorder” (Defensor et al., 2011, p.302). Autism hinders many aspects of communication. While the use of language, known as pragmatics, is most notably impacted many children have additional language complications. It can result in impairments of receptive and expressive language skills, the ability to comprehend language and speech, and poorly organized speech, all of which is accompanied by behavioral issues.

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Receptive Language vs. Expressive Language

Children with autism are developmentally delayed in many areas. Language skills are greatly impacted by autism, specifically expressive and receptive language. In typical childhood development receptive language develops before expressive language; therefore, children understand words before they can use them. When preschoolers were given language tests “As expected, on average, the language ability of the children with autism was lower than typical age norms, albeit with substantial individual variability” (Hudry et al., 2010, p.681).

When communicating with an individual with autism it is often unclear whether they cannot understand what is being spoken or if they cannot properly communicate an appropriate response. This issue raises the question: Does autism mainly impair receptive or expressive language? Hudry and his colleagues (2010) concluded that while “children with autism spectrum disorders (ASD) generally show impairments in both the comprehension and the production of language” (p. 681) receptive language was more impaired in preschoolers with autism than expressive language. Ray-Subramanian, Huai, and Weismer (2011) came to the same conclusions when testing toddlers as did Weismer, Lord and Esler (2010) who stated “toddlers with autism had relatively more severe receptive than expressive language delays” (p. 1259).

The developmental delays associated with autism as well as the language deficits outlined above are not evidenced in children on the upper range of the disorder. Specifically, high functioning children with autism are able to communicate grammatically however they do not use this language appropriately (Ochs, Kremer, Solomon, & Sirota, 2001). Ochs' description of the “pragmatic deficits” exhibited by children at this level calls into question for many whether there is a specific language problem or if the problem is comprehension of the social context

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within which language resided. And if the problem is with comprehension of the social context of language, it must be asked how this can be differentiated from behavior problems.

Behavior Problems vs. Comprehension Problems

Behavioral problems often go hand-in-hand with autism. Individuals with autism are more likely to show signs of psychopathy, anxiety, and depression (Snow, & Lecavalier, 2011) even if their language skills are seemingly age appropriate. These behavior problems make typical communication difficult if not totally impossible for people with autism. However, the question persists: are these communication difficulties due to behavior problems or lack of comprehension?

People with autism may suffer communicatively because of difficulties “processing contextual cues during social conversations” (Grynszpan, Martin, & Nadel, 2011, p.243). Processing facial expressions is an example of a social cue that people with autism have trouble distinguishing. Another factor in comprehension is IQ;

“autism frequently is paired with intellectual retardation, there are no limitations to the Intellectual Quotient (IQ) of people with autism spectrum disorders” (Grynszpan et al., 2011, p. 242). Despite preserved intellectual abilities and often well-developed vocabulary, individuals with high-functioning autism spectrum disorders (HFASD) exhibit profound communicative and social difficulties” (Grynszpan et al., 2011, p. 243).

Another communicative issue that complicates behavior is the tendency of individuals with autism to take everything literally. This is why people with autism are considered to have a primary deficit in *pragmatics*. Essentially, they fail to use whatever language they do have to communicate effectively in social contexts. Their pragmatic failure is evidenced in numerous everyday uses of language that are based on the assumption that listeners understand the

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relationship between words and situations as well as real and make-believe worlds. Thus, "people with [autism] often fail to form appropriate pragmatic inferences necessary for understanding irony, lies, jokes, metaphors, and deception. They have a tendency to interpret speech literally, rather than in reference to a context" (Grynszpan et al., 2011, p. 243).

Contexts of Communication and Behavior

Environment is one of the greatest factors impacting behavior. Each environment has different communicative demands and expectations. For example, in a school setting children are expected to follow specific rules and guidelines set by their teacher, however there is also a huge social factor with their peers. "Children with autism are predisposed to social isolation by virtue of their disability" (Ochs, Kremer, Solomon, & Sirota, 2001, p. 399). This isolation and misunderstanding by their peers could cause individuals with autism to act out or break rules in school. On the other hand, being exposed to a model of normal behavior and social interaction in a highly structured context, like school, could allow individuals with autism to learn and develop more appropriate social behavior. This hypothesis was the bases of a longitudinal study of children conducted by Ochs and her colleagues that involved home and school settings. Their findings suggest that inclusion and connection in differences in environments do impact the social language use.

While the Ochs et al. (2001) study established that language use even for children with autism is dynamic rather than static, it is only a beginning in understanding the context of behavior. A home environment is much more relaxed than a school environment. There are still rules and demands at home but there is less pressure of failure, punishment, and embarrassment. Another factor of behavior at home is the possibility of hired help or assistance for the child with autism. Also different family dynamics such as siblings, age of parents, number of parents living

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in the home, and parenting styles account for differences in demands of each child. This study seeks to use such information as well as that from studying of language deficits experienced by individuals with autism to determine the feasibility of using the PICAC to reexamine auditory comprehension.

Key Points of the Literature Review

- People with autism have language impairments which are often associated with difficulties in auditory comprehension.
- These skill deficits impact social communication and can result in behavioral issues.
- Home and school environments have different behavioral and communicational demands.
- Success depends on assistance that varies between home and formal schools.
- It is important to recognize the difference in what will be called in this study contextual auditory comprehension.

Questions of the Study

1. Can teens with Autism Spectrum Disorder take the *Porch Index of Communicative Ability in Children* (PICAC)?
2. Is the PICAC an instrument that captures the impact of ASD on formal school-like tasks?
3. How did ASD characteristics appear throughout the test?

Methodology

Participants

Data from three individuals were used to answer the questions of this study. Participants included Joe, an 18-and-a-half-year-old boy with high-functioning ASD; Kris an eight-year-old boy with dyslexia who was about to transition into third grade; and Robby a six-years-old boy

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with developmental apraxia just starting first grade. The two younger children were selected from archival data because they were within the age range for which the PICAC had been developed and normed, and because the behavioral differences across the receptive and expressive subtests varied secondary to their disorder types, both of which might also be associated with autism.

Materials and Procedures

The material of this study was the *Porch Index of Communicative Ability in Children (PICAC)* (Porch, 1974). This is a formal test of listening and speaking that depends for completion upon auditory comprehension of standardized instructions. This test provides qualitative data about the forms of assistance needed to accomplish school-like directions. Verbal, gestural, auditory, reading, and graphic skills are tested using ten common items. The multidimensional scoring of the test instrument is used to provide qualitative data about the forms of assistance needed to accomplish school-like tasks. Audio and/or video recorded data were used to transcribe the Auditory and Verbal subtests of the PICAC.

Analysis

The PICAC uses a 16-point numerical scale to qualitatively capture functioning in listening, speaking, reading and writing tasks. All responses 8-16 are correct while those 0-7 are incorrect. The numerical value assigned indicates if an answer is correct (15) but delayed (13) or self-corrected (10), or correct only after the instructions were repeated (9) or simplified (8). Incorrect answers range from those that are related (7) to simple wrong (6) to unintelligible (4) or just attending (2). The analysis consisted of comparing the numerical results of the auditory and verbal subtests of the PICAC across the three participants. In addition, descriptions of the kinds

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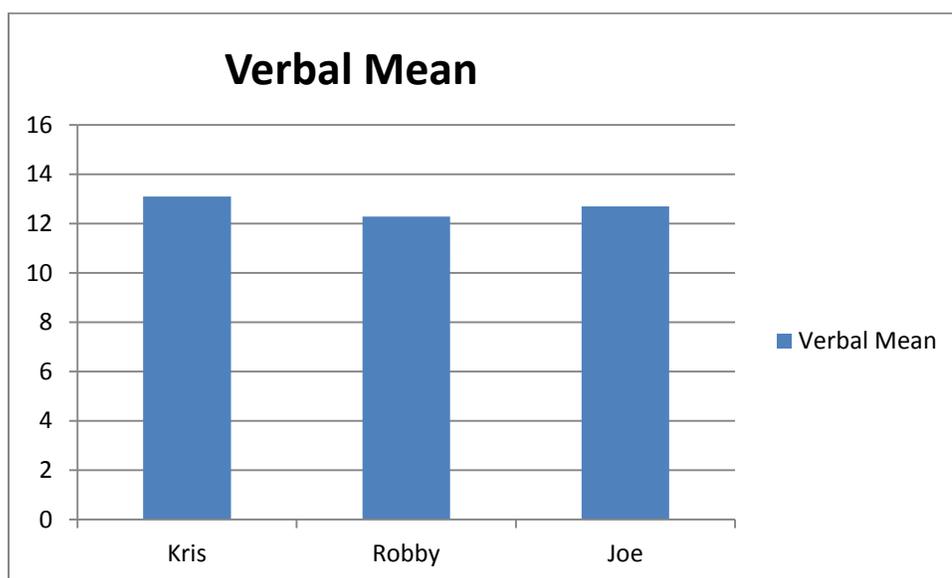
of behavior that led to these numerical results were compared for the three different diagnoses.

Results

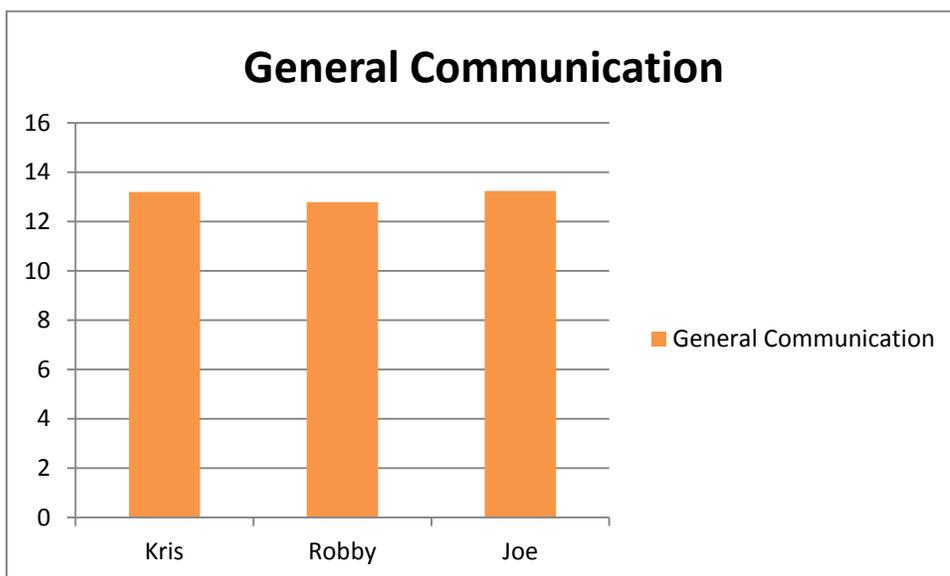
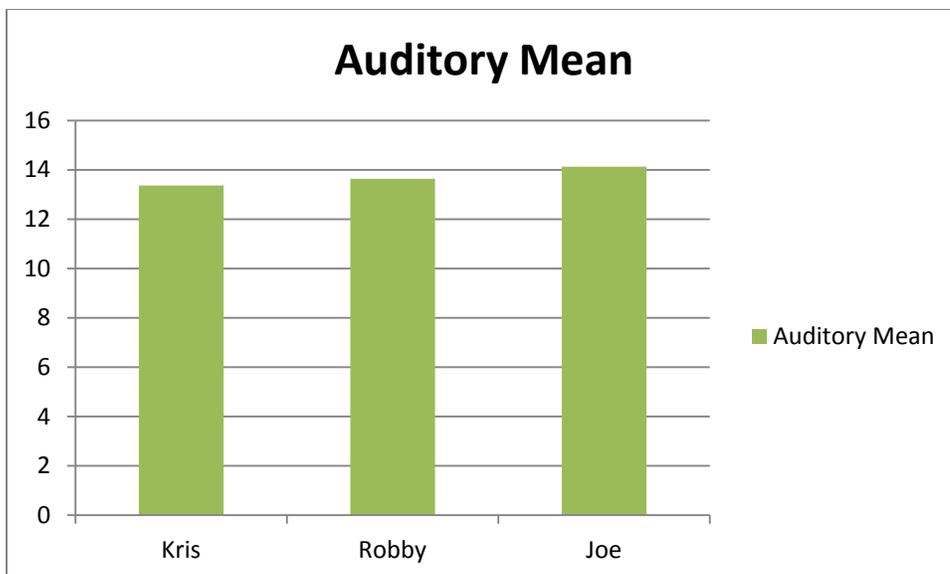
Question One

The first question of this study asked if the PICAC could be used with teens with autism above the age range of the test. Joe was able to successfully complete the test with scores similar to Kris and Robby's. Kris had the highest verbal score of 13.1. Joe was second with 12.7 and Robby scored the lowest with 12.28. Joe had the highest auditory score of 14.3. Robby was second with an average of 13.63 and Kris scored the lowest at 13.37.

Clearly all participants' scores were very close in both verbal and auditory subtests. Their general communication was determined by averaging verbal and auditory scores. These scores were also extremely close. Joe scored the highest with 13.24; Kris was second with an average of 13.20; and Robby scored the lowest with an average of 12.79. This suggests that Joe, an individual with high-functioning ASD, was able to successfully complete the PICAC.



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*Question Two*

The second question of this study asked if the PICAC is an instrument that captures the impact of ASD on formal school-like tasks. Looking strictly at scores, Joe performed just as well as (and in some areas better than) the other participants. The scoring of the PICAC did not suggest that Joe had any more difficulty performing school-like tasks than Kris or Robby. However, ASD is apparent when comparing the transcriptions of the three participants.

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Therefore, how ASD appears in the classroom and during formal school-like tasks cannot be determined from PICAC scores alone.

Question Three

The third question of the study sought to determine how ASD appeared throughout the test. Joe showed autistic characteristics such as verbiage, sound effects, ritualistic behavior (i.e., doing series of three), and ticks throughout the PICAC. Verbiage was manifesting in subtests I and IV. Subtest I asked participants to tell what you do, in complete sentences, with each of the ten objects. Joe gave multi-sentences answers when asked about objects and added short narratives about some of the items. In addition, he gave information about personal experiences with certain items. For example:

“The spoon, lets you scoop things up. It’s able to hold things like juices or soups, in case you want to hold them with a utensil. You can’t use the fork since it’ll just fall out. Learned that the hard way one time, don’t ask me what happened.”

This kind of verbiage, associated with ADS, is off-track in formal school discourse suggesting a lack of awareness of what the situation called for.

Subtest IV asked participants to describe the color, shape, and what each object is made out of. Joe would generalize and explain not only the item in front of him but also other items: “Pencil, it is, this one is yellow. Some come in orange as well and many other colors.” His subtest IV was significantly longer and more detailed than Kris and Robby’s. Neither Kris nor Robby added personal experiences or stories to their descriptions in subtests. The talk used by Joe was consistent with that associated with autism in the literature.

Joe was also the only participant that used sound effects when asked to point to objects. In subtest V the tester would name the function of an object, such as “writing and erasing”, and

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the participant was asked to point to the correct object. Joe made one sound effect while pointing to each object. Test X asked participants to do sequencing tasks, like “pick up the scissors after you touch the comb.” After performing each task Joe made three sound effects. His ritual use of segments of three also appeared in subtest XII and graphic test H. Subtest XII asked for participants to point to objects after they were named by the administer. Joe touched the objects during the first two commands; then he asked if he was supposed to touch or point to the objects. The directions were repeated, asking him to point to the objects, and he touched the next items but then began pointing. So he made his errors in a sequence of threes. He also did this during the graphics portion of the test; when asked to copy a picture of scissors he made three errors and crossed them out and then drew the scissors correctly.

“Ticks” were also present in Joe’s graphics section. It seemed as he was checking off his work with little lines after each sentence or drawing. These “ticks” could be Joe’s way of signifying that he is done with a task.

The qualitative differences associated with autism were pervasive throughout the test. While they may have lowered the numerical score from 15 (correct) to 13 (delayed) or 10 (self-correct), these scores did not capture or convey the relationship of them specifically to autistic behaviors.

Discussion

The purpose of this project was to investigate the feasibility of using the *Porch Index of Communicative Ability in Children (PICAC)* (Porch, 1974), a test designed for children between the ages of 3 and 12 years of age, to assess auditory comprehension in teens with autism. As can be seen from the results, it does appear that the materials and procedures of the PICAC are meaningful for individuals beyond the test age ceiling of 12 years. The impact of the need for

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different levels of assistance, such as repeating or simplifying directions, is captured with the qualitative PICAC scoring system. However, the nature of behaviors specific to autism spectrum disorder is not captured by this scoring system.

The literature reviewed for this project indicated that children on the autism spectrum have difficulty to varying degrees with language, and that receptive language (auditory comprehension) is frequently impacted to a greater degree than expressive language (Hudry, 2010). High functioning children with autism are able to communicate grammatically, however they often use this language inappropriately (Ochs, Kremer, Solomon, & Sirota, 2001). Language associated with formal schooling is a particular kind of discourse that requires individuals to 'see' beyond the words spoken by teachers in order to comprehend what is being asked and required for correct responses. Failure to understand how to limit what is said, how this is said, and to whom it is said can interfere with school success as much as a lack of factual knowledge. Therefore, when assessing the toll of ASD behavior might have on school success it is critical that assessment not depend on factual knowledge but rather capture the pragmatics associated with comprehension.

The PICAC was designed as a test of basic communication that requires individuals to listen to school like instructions and perform actions including speaking, reading and writing using familiar objects (Hagstrom & Thomas, 2006). Therefore, it seemed feasible that this test might capture the difficulty that children with autism can have with auditory comprehension particularly as this applies to school discourse. As can be seen from the results of this study, the age range of the test does not appear to rule out its use with older individuals. This might in part be the case because the qualitative scoring system using in the PICAC is that same as that used in the adult version (PICA). A major difference between these two versions of the test in the

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inclusion of auditory directions such as, "in a complete sentence tell me...", that is particular to the way teachers talk to children. The Hagstrom and Thomas (2004) study details the ways in which the PICAC instructions mimic those found in formal school situations. This difference is significant for the feasibility of using the test and its scoring system to identify the ways that autistic behavior may impact participation in formal schooling. The results of this study show that children, including teens, with a range of diagnoses can achieve similar scores on the subtests of the PICAC. These scores may reflect what level of assistance was needed, i.e., repetition and/or simplification of instructions, in order to succeed; however, the PICAC scoring system does not capture the nature of the behaviors that lead to delays in responding, the ways that an individual with autism might perseverate on tasks or infuse self-routines into responses. These kinds of behaviors would receive the same numerical score as when children with learning differences have to have instructions repeated because of memory or organization problems. The overall functional impact may be the same; however the discursive affect of behavior reflective of autism and the impact of this on a class situation would be much different. Therefore, it would appear that while the PICAC is feasible, additional levels of coding may be needed for the test to contribute functional outcome data for individuals with autism.

Limitations of the Study and Future Directions

This was a feasibility study. As such, the PICAC had never been used specifically with individuals older than the test age range or to particularly look at the communication associated with autism. The use of archival material and only one teen with autism limits what can be made of the results. They do suggest future directions. Specifically, a data collection with a wider range of individuals with autism is needed; however this effort would be wasted prior to the development of the additional level of coding. Therefore, the next step in using the PICAC

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would be to develop such a coding system and validate it with a range of individuals with autism. The test would then need to be given to a range of individuals with and without autism to see if the impact of autism behavior can be effectively codified.

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APPENDIX A

Transcriptions PICAC Tests I, IV, V, VI, VIII, X, XII, XIII

Joe Craynskeypensbrush; 18 years; ASD; Quiet Room, Storming Outside**TEST I:**

Comb: The comb, you brush your hair with it.

Crayon: The crayon, you use it to write colorful stuff with.

Fork: The fork, this is what you use to eat whenever you need something that can't be handled with a spoon, something that needs to stick on to your utensil.

Key: This is a key. A very nice key. This allows you to open doors. And I know I have to use this a lot.

Pencil: The pencil, lets you write things just like the crayon only it's not as colorful as the crayon.

Penny: The penny, one of the many many different types of coins and dollars in the world. This lets you pay for stuff.

Ring: The ring, well it's nice jewelry. But for women, not for men.

Scissors: Scissors, need to cut some paper up. It'll cut paper neatly. Be careful though and don't run around the pool with them, you'll be really sorry you did.

Spoon: The spoon, lets you scoop things up. It's able to hold things like juices or soups, in case you want to hold them with a utensil. You can't use the fork since it'll just fall out. Learned that the hard way one time, don't ask me what happened.

Toothbrush: The toothbrush, it lets you brush your teeth which I gotta do a little more often, sorry about that.

And that's what you do with all ten of these different objects.

TEST IV:

Pencil: Pencil, it is, this one is yellow. Some come in orange as well and many other colors. Its shape is a triangle on top of a rectangle. It's made out of wood, which comes from trees.

Ring: A ring. It is a circle. It is also gold with a different color type gem on the top depending on the type ring. The ba.. it is made out of different materials such as gold and gems. Real or fake I do not know.

Spoon: The spoon. It is (interruption) The spoon. Many spoons come in different types silvers or whites or you know. Its basic shape is an oval with a with a type of line attached to it. A straight line if you know what I mean. It is made out of plastic this one is, but it's also made out of different materials including metal.

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Crayon: The crayon. It a crayon comes out, is made out of different colors and comes, and is made out of well materials used for making multicolored crayons. I'm not sure what it's called but I believe it's pigment. And the wrapper is made out of paper. The shape is a triangle with a rectangle or straight line on it, like the pencil.

Key: The key. The key is made out of several shapes. Of course the shape would have to be a straight line to open doors. Possibly a pointy end on the end as well. Keys also come in many different colors. Keys are made out of different things. The one I hold is made out of either plastic or metal.

Penny: The coin, or a penny. Coins are made out of obviously metal or solid ya know materials. They come in many different colors including bronze silver and gold. And their basic shape is usually circle or squares or triangles.

Scissors: The scissors. The color of it is usually silver, with a different type color on the circles part. There are two circles with two lines with pointy ends that help it, ya know, cut stuff and keep your fingers nice and comfy. It's usually made out of metal materials. I'm not sure what the circles part is made out of but it feels smooth.

Comb: The comb. Combs come in many different colors. But only, but the shape is what really matters. It's basically a rectangle with little holes on the side, that are like, ya know, lines to brush through your hair. Combs are made of many different things, the one I am holding is probably made out of plastic.

Toothbrush: The toothbrush. The toothbrush is it can come in many different colors. The shape of the brush however is straight lined with a bushy rectangle or little pieces coming out of it you know. Also, I believe that the one I'm holding is made out of plastic with a few little hairs on it that are you know brushes. I think most toothbrushes can be made out of pretty much any material that you can think of except maybe, well almost any. In any case, most toothbrushes are made out of different materials.

Fork: The fork. The fork is the same shape as the spoon only the end has pointy lines with triangles instead of an oval. This one is white but like the spoon it can be any color like silver or even gold, I've seen a few gold spoons and forks and gold knives, I don't know. And uhh, also like the spoon it can come be out of any material. The one I'm holding is plastic.

TEST V:

Three "sound effects" with a point after every object.

TEST VI:

Pencil: the pencil

Ring: the ring

Spoon: the spoon

Crayon: the crayon

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Key: the key

Penny: the coin or the penny, money

Scissors: the scissors

Comb: the hairbrush

Toothbrush: the fork, not the fork, the toothbrush, sorry. This is a fork, this is a toothbrush.

Fork: the fork

TEST VIII:

Pencil: pencil

Ring: ring

Spoon: spoon haha I did not say fork

Crayon: crayon

Key: walk a door? (repeat) key

Penny: penny

Scissors: with scissors, scissors. A scissors? What?

Comb: hairbrush

Toothbrush: (delay) toothbrush

Fork: (delay) fork

TEST X:

Made “sound effects” and said that this test is a little harder.

TEST XII:

After the first two he asked if he needed to point or touch. Directions were repeated and he touched the next item and then began to point for the rest of the test. Talked about brush and fork together making a toothbrush.

TEST XIII:

Pencil: Lend me six pencils.

Ring: Your ring is pri

Spoon: This spoon is isn't lost.

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Crayon: Girl's crayons are green.

Key: This key doesn't work.

Penny: Pennies will be spent.

Scissors: Stir soup with scissors.

Comb: Which judge has a comb, comb?

Toothbrush: The toothbrush was thin.

Fork: Should forks be shiny?

Kris; 8 years old; Dyslexic; Quiet Room

TEST I:

Comb your hair.

You can color.

Eat.

(repeat)

Comb: You comb your hair when, if your hair's sticking up you can comb your hair with this.

Crayon: You can color with a crayon on a piece of paper.

Fork: You can eat with a fork when you order something.

Key: And you can lock and lock doors with um a key, so people won't get in your house.

Pencil: You write in school with this, so um, the teachers know how you're doing.

Penny: A penny you could spend, well you can't really spend it but, you could throw it in um uh a little fountain, and um you could make a wish.

Ring: And this you could put on your um (pause) finger so you can look good.

Scissors: You can cut with this with piece of paper. You can cut shapes and stuff.

Spoon: You can eat with this when you like um buy something.

Toothbrush: You can brush your teeth when your teeth are dirty, with a toothbrush.

TEST IV:

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Pencil: It's um yellow. It's shaped like a pipe except right here. And what was the other one? Oh yeah, and it's made out of wood.

Ring: This is a ring. It is gold and green. Um it's made out of, uh, metal. (repeat) It's shaped like a circle. It's made out of metal, I don't know what it's made out of.

Spoon: This is a spoon. It's white and it's shaped and it's made out of plastic and it's shaped like like a slingshot.

Crayon: This is a crayon. It's made out of wax. And it's shaped like a pipe. And it's red and white.

Key: This is a key, you can lock doors with it and it's green. It's shaped like um, like a little saw. And it's made out of, is this a real key? It's made out of um steel.

Penny: This is a penny. It's shaped like a circle. It's made out of um, mmm metal uh, you can spend stuff with it. And uh what was the other one? (repeat) It's color, gold. And it's shaped like a circle and its made out of metal.

Scissors: These are scissors. They're shaped like, like a duck talking. And they're made out, this part is made out of um metal and uh that's all. (repeat) It's colored like metal.

Comb: This is a comb. It's black. And um it's shaped like doors, like you could get hit by. And um, that's all. (repeat) It's made out of uh wax.

Toothbrush: That is a toothbrush. It's blue. It's made out of um, plas, no, um plastic. Something like that but uh, but I would say it's uh, hard wax, very hard wax and that's all. (repeat) It's shaped like a gun (sound effects).

Fork: This is a fork. It's shaped like um like um thorns? It could be like a shovel too. And um it's made out of wax and it's white.

TEST V:

All correct 15

TEST VI:

Pencil: pencil

Ring: ring

Spoon: and spoon

Crayon: crayon

Key: uh key

Auditory Comprehension

Penny: penny

Scissors: scissors

Comb: comb

Toothbrush: toothbrush

Fork: fork

TEST VIII:

Pencil: car, racecar

Ring: ring

Spoon: spoon

Crayon: crayon

Key: key

Penny: penny

Scissors: scissors

Comb: comb

Toothbrush: toothbrush

Fork: fork

TEST X:

Completed every task except two (pencil and scissors) which were incomplete.

TEST XII:

Look at score sheet. By end he gets frustrated and points with elbow.

Test XIII:

Pencil: Lend me six pencils

Ring: Your ring is pretty.

Spoon: This spoon isn't lost.

Crayon: Girl's crayons are green.

Auditory Comprehension

Key: This key doesn't work.

Penny: Pennies will be spent.

Scissors: Stir soup with scissors.

Comb: Which judge has a comb?

Toothbrush: The toothbrush was thin.

Fork: Should forks be shiny?

Robby; 6 years old; Developmental Apraxia; Quiet Room

TEST I:

Spoon: You eat with a spoon with with um cereal.

Toothbrush: You brush your teeth with a toothbrush.

Scissors: You cut you cut scissors with um paper.

Key: You use it with the door.

Pencil: You use a pencil for paper

Fork: You use a fork to eat dinner.

Crayon: You you you use a crayon to um write on paper.

Comb: You use a brush to brush your hair.

Penny: You need a penny to pay dollars.

Ring: You need a ring when you get married.

TEST IV:

Pencil: Orange. It's made out of wood. And it's made out of plastic. It's made out of wood.
(repeat) It's a line. It's an L.

Ring: A circle. It's turquoise. It's made out of made out of... gold.

Spoon: It's made out of plastic and it's made out of white material and it's white (repeat) It's a circle and a line.

Crayon: It's red and white and it's. And it's a wood in it. And it's and you color with it. And it's red and all the other stuff. And it's hard. (repeat) It's made of clay and it's red and it's a line.

Auditory Comprehension

Key: It's green. And it's a line and it's scribble scabble and... and it's green and it's a circle and a line (repeat) it's made out of gold it's made out of green it's made out of green and it's hard and it's...

Penny: It's brown and it's circle and it's made out of brown and it's hard. And it makes noise.

Scissors: Scissors are made out of silver and red and it's hard. And it's and you cut with scissors on paper. (repeat) It's circle and a line. And it's made out of silver and red

Comb: It's a brush and it's a line and you brush your hair. Then uhh, you brush your hair with it. When you get bugs in your hair you go like brush. And it's black and it's hard and it's a line (repeat) It's made of hard, it's black.

Toothbrush: Toothbrush, blue, hard, white, and you brush your teeth with it and it takes all the germs out and it has pointy things, then there's small ones and you brush your teeth with it (repeat) It's made out of hard.

Fork: It's white, and it's plastic and it's hard and it's a straight like an L like an I and.

TEST V:

Look at score sheet.

TEST VI:

Pencil: Pencil

Ring: Ring

Spoon: spoon

Crayon: crayon

Key: key

Penny: penny

Scissors: scissors

Comb: brush

Toothbrush: toothbrush

Fork: fork

TEST VIII:

Pencil: (repeat) pencil

Auditory Comprehension

Ring: ring

Spoon: spoon

Crayon: crayon

Key: key

Penny: money

Scissors: scissors

Comb: brush

Toothbrush: toothbrush

Fork: fork

TEST X:

Three incomplete (pencil, spoon, key) the rest complete.

TEST XII:

Look at score sheet, all correct except one delay (key) and added a key on the pencil.

TEST XIII:

Pencil: lend me six pencils

Ring: your ring is pretty

Spoon: this spoon is not lost

Crayon: girls crayons are green

Key: This key doesn't work

Penny: Pennies will spent

Scissors: Stir soup with scissors

Comb: Which judge has a comb

Toothbrush: The toothbrush was thin

Fork: Should forks be shiny