



Research

Fall 2018

News and Notes About
Scientific Research on ASD
and Other Developmental and
Behavioral Disorders



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Autism Education and Research

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Transitioning into Adulthood

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With the prevalence of autism now being estimated as just under 2% of the population, there has been increasing attention paid to meeting the needs of persons with an autism spectrum disorder (ASD) diagnosis as they transition into adulthood. Each year approximately 50,000 teenagers with ASD turn 18 in the United States (Shattuck et al., 2012). In April of 2018, *Pediatrics* published a supplemental special issue on transition into adulthood for children with ASD. Adulthood is known to produce many challenges for all persons with special needs and this is no different for people with autism. It has been estimated that only 36% of persons with ASD access post-secondary education while fewer than 60% earn an income outside of the home (Roux et al., 2015).

One of the articles in the special issue was a survey of experiences related to the transition into adulthood of persons with ASD (Kuo et al., 2018). Interviews were conducted with caregivers, service providers, and an individual with autism. The purpose of the survey was to identify areas of need in terms of resources necessary for transition and research to address some of the barriers to successful transition. Though surveys generally lack empirical rigor they are oftentimes helpful in emerging areas to assess

what we do and do not know. Some of the themes that were noted were that there was a general lack of research with adults with ASD; that the earlier transition planning begins the better the outcome of transition seems to be; that active involvement of caregivers and service providers tends to produce better outcomes; that having the person with autism access and raise awareness in the community improves outcomes; and, that better systems for providing vocational experiences, job support, and accessing the health care system are needed.

It is certainly important to focus on the pressing needs of children with autism when they are accessing educational and clinical services. Immediate challenges often are present such as developing communication skills and addressing severe problem behavior. The needs of children with autism in educational settings tend to go well beyond the needs of a typically developing child and include teaching and supporting social behavior. In addition, accessing the community and developing the life skills to be as independent as possible are critically important. As the child ages these life skills become more complex but their prominence increases as well. Many typically developing children access vocational training during secondary education.

This should certainly be considered a priority for children with ASD as well. A clear focus on sampling jobs, working with teachers who target vocational skills, and developing the life skills necessary for adulthood in the community should be a high priority and likely correlate with better outcomes during the transition to adulthood.

Kuo, A., Crapnell, T., Lau, L., Anderson, K.A., & Shattuck, P.T. (2018). Stakeholder perspectives on research and practice in autism and transition. [Pediatrics, 141, e20164300F.](#)

Roux, A.M., Shattuck, P., Paul, T., Rast, J.E., Rava, J.A., Anderson, K.A. (2015). [National Autism Indicators Report: Transition Into Young Adulthood.](#) Philadelphia, PA: Life Course Outcomes Research Program, A.J. Drexel Autism Institute, Drexel University.

Shattuck, P.T., Roux, A.M., Hudson, L.E., Taylor, J.L., Maenner, M.J., Trani, J.F. (2012). [Services for adults with an autism spectrum disorder.](#) *Canadian Journal of Psychiatry, 57*, 284-291.

current
research

Dr. Chata Dickson and Christian Yensen are recruiting participants for a project to teach students to cooperate with medical and hygiene procedures. They are investigating a strategy for gradually increasing the duration and intensity of the activity so that students learn to participate in an appointment without experiencing the fear or stress that has led them to refuse in the past. This research is an example of the work NECC conducts to develop evidence-based content for the ACE. Next steps in this project will be to translate effective practice into lesson plans, to beta-test these lesson plans and modify instructions or procedures as needed, and, finally, to verify that they'll be effective with ACE users.

Current Research on Identifying Variables Maintaining Problem Behavior

Eileen Roscoe, PhD, BCBA-D, LABA
Director of Behavior Analytic Research, NECC



Much problem behavior is communicative in nature. For a child who has difficulty speaking, problem behavior is often an easier and more effective way of producing a desired outcome. The first step in the treatment process is determining what the individual is communicating with his/her problem behavior, and researchers have identified some effective ways of doing that. This process is referred to as *functional assessment*.

The field of applied behavior analysis has acknowledged the importance of conducting a pre-treatment functional assessment, and it is currently a required part of the treatment process as mandated by the Individuals with Disabilities Education Act (IDEA 2004). There are three types of functional assessments, and they differ in terms of how they are conducted and the types of information they provide.

1. **Indirect assessments** include interviews or questionnaires and are helpful for gathering information for subsequent assessments and for establishing a rapport with caregivers.
2. **Descriptive assessments** involve direct observation of behavior in the school or home to see what happens naturally. They can be helpful for gathering information concerning problem behavior and the context in which it occurs. Although indirect and descriptive assessments can provide information about behavior and correlations, they cannot accurately determine the cause of problem behavior.
3. Only **functional analysis**, which involves systematically arranging different situations, can identify the cause of problem behavior. This might entail setting up circumstances, for

example, in which a child might be asked to complete a task, turn off a movie, or tolerate a brief period of diverted attention. The child's behavior then tells you which of situation is problematic and lets clinicians know where to focus communication training.

Although a pre-treatment functional assessment is required, the specific type clinicians use most frequently is unclear. To determine practitioners' perception and use of the three different functional assessment types, Roscoe, Phillips, Kelly, Farber, and Dube (2015) conducted a survey in agencies that serve individuals with intellectual disabilities in Massachusetts. From the 205 respondents who completed the survey, the most frequently used functional assessment was a descriptive assessment. The majority (67.8%) of practitioners indicated they believed functional analysis to be the most informative assessment tool for selecting behavioral treatment. However, only 34.6% of respondents indicated they typically use functional analysis to inform the development of a behavior plan.

The discrepancy between perceived utility and use of functional analysis may be due to lack of resources (e.g., a dedicated space and limited staff) or perceived risk that harm may follow if problem behavior occurs. Another potential explanation is that clinicians may have a history of unsuccessful attempts at conducting functional analyses. This could be because relevant circumstances weren't identified or arranged in a way that allowed clinicians to determine why the problem behavior was occurring.

One way to remedy this concern is to systematically alter antecedent and consequent events to better capture situations that produce problem behavior. In a review paper on functional analyses published between 2001 and 2010, Schlichenmeyer, Roscoe, Rooker, Wheeler, and Dube (2013) identified 42 studies that included such modifications. Although a variety of antecedent and consequent events were found to be functionally relevant to problem behavior, the authors noted the lack of a technology for systematically identifying these events.

To address the need for such a technology, Roscoe, Schlichenmeyer, and Dube (2015) developed and evaluated a systematic method for identifying events to test during modified functional analyses. Six individuals with ASD participated, and their initial functional analyses were inconclusive. The authors developed and conducted an indirect assessment questionnaire and subsequent descriptive analysis to identify idiosyncratic antecedent and consequences to include in modified functional analysis conditions.

As a result of this process, conclusive outcomes were obtained in modified functional analyses for five of the six participants. Some examples of the idiosyncratic maintaining variables identified were: escape from only certain types of demands, access to specific activities in specific locations during a walk, and access to arranging and ordering specific items.

continued on next page

Roscoe, continued from page 3

Having methods like this one to tailor our analytical work helps NECC clinicians identify situations affecting our students' problem behavior. This allows our clinical work to be more effective by using more individualized treatments that produce better outcomes.

Roscoe, E. M., Phillips, K. M., Kelly, M. A., Farber, R., & Dube, W. V. (2015). A statewide survey assessing practitioners' use and perceived utility of functional assessment. *Journal of Applied Behavior Analysis*, 48, 830-844. [doi: 10.1002/jaba.259](https://doi.org/10.1002/jaba.259)

Roscoe, E. M., Schlichenmeyer, K. J., & Dube, W. V. (2015). Functional analysis of problem behavior: A systematic approach for identifying idiosyncratic variables. *Journal of Applied Behavior Analysis*, 48, 1-26. [doi: 10.1002/jaba.201](https://doi.org/10.1002/jaba.201)

Schlichenmeyer, K. J., Roscoe, E. M., Rooker, G. W., Wheeler, E. E., & Dube, W. V. (2013). Idiosyncratic variables that affect functional analysis outcomes: A review (2001-2010). *Journal of Applied Behavior Analysis*, 46, 339-348. [doi: 10.1002/jaba.12](https://doi.org/10.1002/jaba.12)

Research at BABAT

EDITOR'S NOTE:

Thirty-three staff from NECC® recently presented papers and poster sessions at the 39th Annual [Berkshire Association for Behavior Analysis and Therapy](https://www.babat.org/) (BABAT) Conference in Amherst, MA.

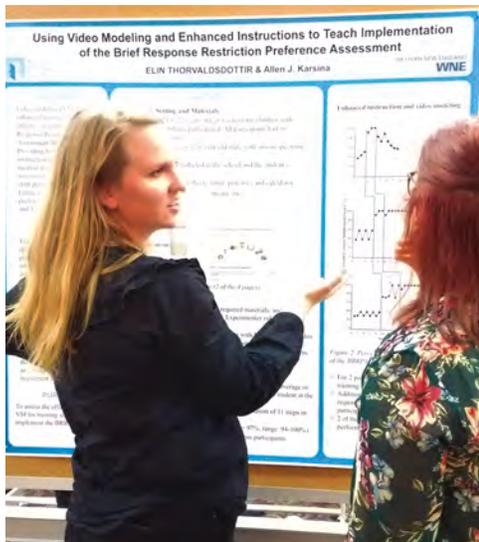
USING VIDEO MODELING AND ENHANCED INSTRUCTIONS TO TEACH IMPLEMENTATION OF THE BRRPA

Thorvaldsdottir, E., & Karsina, A.J.

EDITOR'S NOTE:

NECC teachers conduct systematic preference assessments to identify leisure activities and reinforcers for teaching important skills to NECC students. Therefore, an important research goal at NECC is to develop efficient staff training procedures to teach staff how to implement these assessments. In this paper, NECC researchers describe a training approach for teaching staff to implement a response restriction preference assessment. The training procedure included presenting a video model and enhanced written instructions, and adding feedback when necessary.

We used a training package including enhanced written instructions and video modeling to train three teachers at a school for children with autism to implement a brief response restriction preference assessment (BRRPA). Accuracy on implementing the BRRPA was assessed during baseline and post-training probes with the experimenter playing the role of the student. Probes were conducted with each participant implementing the BRRPA with a student in the classroom. Training consisted of written instructions including diagrams and figures and an 8-minute video with voice-over demonstrating how to conduct the BRRPA. A non-concurrent multiple baseline across participants design was used. For two participants results indicated the training techniques were effective, but additional feedback and training was required to meet acquisition criteria for one participant. Two of the participants maintained performance in the treatment extension. Interobserver reliability was calculated in 30% of sessions with a mean total IOA of 97.3 (range, 94.3 - 100%).



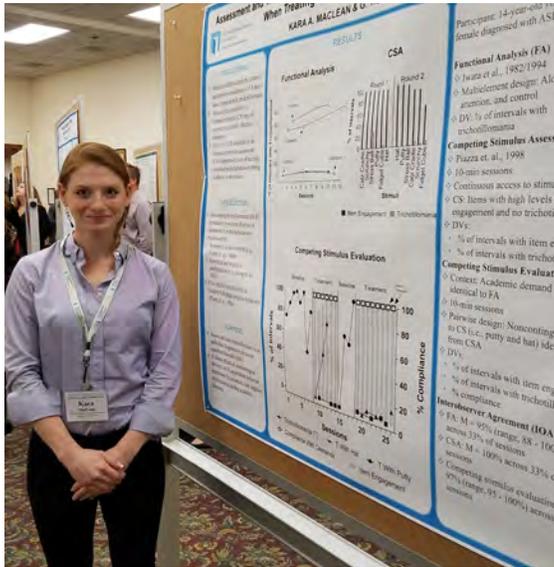
Elin Thorvaldsdottir

ASSESSMENT AND TREATMENT OF TRICHOTILLOMANIA

MacLean, K., & Toran, G.T.

EDITOR'S NOTE:

An important step toward increasing independence in children with ASD is the development of treatment to decrease interfering problem behavior – behavior that impedes communication and learning. In this study, NECC researchers conducted a functional assessment and treatment of a student's trichotillomania (i.e., repetitive hair pulling that often results in substantial hair loss and bald patches). Analysis indicated that the behavior was likely maintained by automatic reinforcement (it occurs because of the sensory stimulation it produces) and escape from demands (it occurs because it has resulted in a break from having to complete work). The authors identified competing activities and conducted a treatment that involved presenting the competing activities while the student received demands.



Kara MacLean

The noncontingent delivery of items associated with higher levels of interaction and lower levels of problem behavior (i.e., competing items; CI) has been effective in reducing problem behavior maintained by automatic reinforcement. We used a package consisting of a functional analysis (FA) of hair pulling, a competing items assessment (CSA), and an evaluation of noncontingent access to CIs, to decrease rates of hair pulling in a 14-year-old girl diagnosed with ASD. FA results indicated that hair pulling was maintained by automatic reinforcement and by escape. The CSA identified two competing items (i.e., putty and hat) and their effectiveness was assessed in a pairwise comparison within a reversal design. Hair pulling persisted during baseline sessions identical to the demand condition of the functional analysis. During treatment the participant was given noncontingent access to each CI in a pairwise arrangement. When putty was made available, high rates of engagement with putty and near zero rates of hair pulling were observed. When the hat was made available, high rates of engagement with the hat but higher rates of hair pulling were observed. Behavior increased during a reversal to baseline conditions. Interobserver agreement (IOA) data were collected across 33% of the FA sessions and was calculated at 95% (Range: 88% – 100%). IOA data were collected across 47% of the treatment analyses sessions and was calculated at 97% (Range: 95% – 100%).

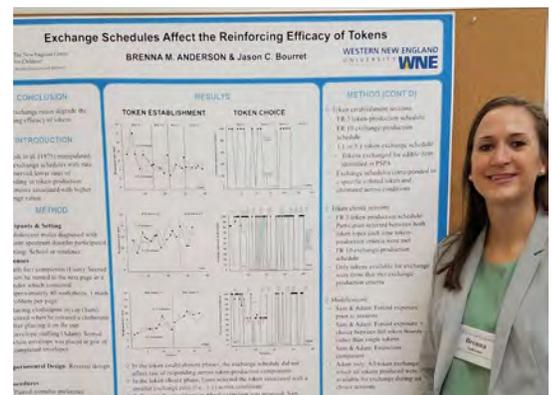
EXCHANGE SCHEDULES AFFECT THE REINFORCING EFFICACY OF TOKENS

Anderson, B., & Bourret, J.C.

EDITOR'S NOTE:

NECC researchers are evaluating how to maximize the efficacy of token economies in children with ASD. In token economies, the teacher delivers tokens following appropriate behavior, and the student can later exchange the tokens for various preferred items (game time, edibles, etc.). In this study, the authors evaluated how varying the price of edibles—in terms of the amount of tokens they cost—affected their behavior. For example, they asked whether tokens will increase behavior when an edible costs 1 token versus 5 tokens.

Token economies are commonly used in behavior-analytic interventions, but the relation between the exchange ratio and reinforcing efficacy of a token is unknown. There are data to suggest that higher exchange ratios degrade the reinforcing efficacy of tokens (Malagodi et al., 1975). This study compares the reinforcing efficacy of two tokens, each associated with a different exchange value (e.g., 1:1 and 5:1). One individual diagnosed with autism participated. A high-preference edible was exchangeable for tokens for the duration of the study. In the first phase the participant was exposed to the exchange schedules associated with each token. In the second phase the participant selected which token he earned following completion of the target task on a fixed-ratio (FR) schedule. Differential selection of the token with the smaller exchange ratio (e.g. 1:1) was observed. Interobserver agreement was collected for 33.3% of sessions with an average agreement of 95.77% (range 88%-100%).



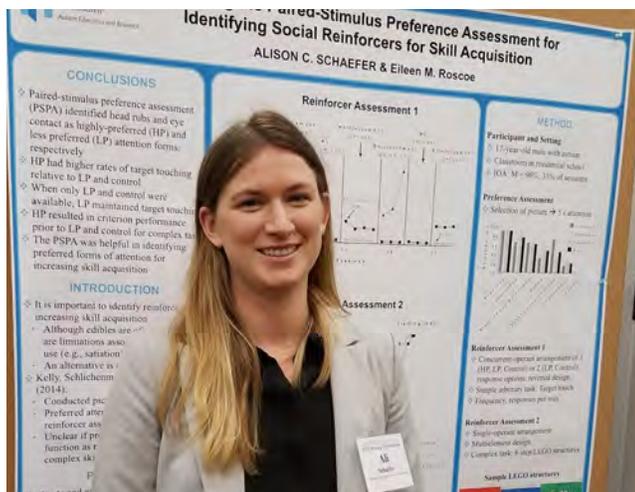
Brenna Anderson

EVALUATING THE PS PREFERENCE ASSESSMENT FOR IDENTIFYING SOCIAL REINFORCERS FOR SKILL ACQUISITION

Schaefer, A., & Roscoe, E.M.

EDITOR'S NOTE:

Stimulus preference assessments allow clinicians to identify reinforcers (something that increases the likelihood that a specific behavior or response will occur) for increasing socially important behavior such as academic task engagement, vocational task productivity, social initiations, or independent completion of daily living skills. Although edibles and leisure items are often used as reinforcers, they are not always practical for use throughout a child's day. An alternative reinforcer that could be used is attention. In this study, NECC researchers compared highly-preferred and less-preferred attention forms to determine the validity of the preference assessment outcomes.



Alison Schaefer

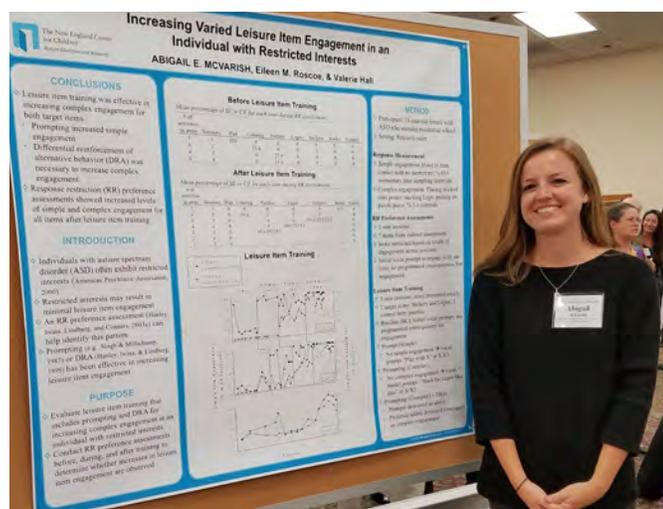
The purpose of this study was to replicate and extend previous research on pictorial paired-stimulus (PS) preference assessments with social stimuli by assessing the generality of outcomes across multiple reinforcer assessments. A 16-year-old boy with autism participated. Following implementation of the PS assessment, highly preferred (HP) and less preferred (LP) attention forms were evaluated in two subsequent reinforcer assessments. First, we conducted a concurrent-operant arrangement in a reversal design, using a simple arbitrary response (i.e., target touch). Responding was allocated to the HP relative to the LP and control options; however, responding was allocated to the LP relative to control when the HP option was no longer available. Second, we conducted a single-operant arrangement in a multielement design, using a more complex arbitrary task (i.e., 8-step LEGO structures). Criterion performance was achieved only when the HP item was contingently delivered. Reliability was calculated for 33% of sessions and agreement averaged 96%.

INCREASING VARIED LEISURE ITEM ENGAGEMENT IN AN INDIVIDUAL WITH RESTRICTED INTERESTS

McVarish, A., & Roscoe, E.M.

EDITOR'S NOTE:

Individuals with ASD often display limited interest in leisure activities. For example, they may exclusively engage with only one activity, such as watching videos on an iPad. NECC researchers are evaluating ways to promote increases in leisure item engagement with multiple leisure items in children with ASD. Children with ASD who engage in a variety of leisure activities have additional opportunities for learning new skills and interacting with peers who have a broader range of interests.



Abigail McVarish

The purpose of the current study was to increase simple and complex leisure item engagement across a variety of non-electronic items. An individual with autism, who engaged with an iPad to the exclusion of other leisure activities, participated. Response restriction (RR) preference assessments were conducted before, during, and following training to determine whether shifts in response allocation emerged. A multiple baseline across items design was used. We assessed leisure item training, including prompting and differential reinforcement of alternative behavior (DRA), for increasing simple and complex forms of item engagement. Prompting alone was sufficient in increasing simple engagement to criterion levels. However, the addition of DRA was required to increase complex engagement. Increases in engagement occurred with an untrained leisure item. Shifts in response allocation from iPad to non-electronic leisure items occurred in post-training RR assessments. Reliability was collected in 31% of sessions and averaged 97%.

Research at ASHA

american speech and language hearing
association convention

BILINGUAL COMMUNICATION INTERVENTION IN CHILDREN WITH AUTISM SPECTRUM DISORDER IN THE UAE: PRELIMINARY FINDINGS



مركز محمد بن راشد للتعليم الخاص

Mohammed bin Rashid Center for Special Education

Operated By

The New England Center for Children* بإدارة مركز نيو إنجلاند للأطفال

Shaalan, S. Egan, K., Gould, D. & Olsen P.

EDITOR'S NOTE:

Staff from the Mohammed bin Rashid Center for Special Education Operated by The New England Center for Children (formerly NECC-Abu Dhabi) recently presented at the ASHA convention. In this study, MRC-NECC researchers wanted to examine the effects of bilingual, ABA-based intervention on the vocabulary skills of children with ASD in the United Arab Emirates. Additionally, they wanted to assess whether there was any correlation between a student's speaking abilities upon entry into the study and his/her vocabulary acquisition.

The study included 23 Emirati students (17 males, 6 females) diagnosed with ASD and ranging in age from 3 years 8 months to 6 years 3 months at entry into the study. All participants were categorized by speaking ability, and at the start of the study 10 students were considered non-speaking, 3 were minimally speaking, and 10 were speaking. All students were enrolled in an intensive day program where they received services based on the principles of ABA for 30 hours/week. They each had an Individualized Education Plan and had communication objectives targeting skills in both English and Arabic. The students' clinical teams were not given any specific instructions regarding modifications to instructional methods. Additionally, parents were not given any instructions about changing the language used in the home environment.

The study is a longitudinal, descriptive study that examines vocabulary acquisition in both English and Arabic over time. To complete the study, researchers conducted regular vocabulary assessments with each student. Testing occurred at entry into the study and then approximately every 6 months after. No standardized scores were reported as the normative samples for the assessment tools used did not match the student population. Student vocabulary growth was recorded using raw scores (total number of items correct). All assessments were administered by speech and language pathologists with native level proficiency in the language being assessed.

Overall, students showed improvements in their vocabulary skills for both languages. Improvements were noted regardless of a student's speaking ability at the start of the study. For some students there was also movement from lower levels of vocal abilities to higher levels. At the time of the most recent assessments, 8 students are considered non-speaking, 0 students are considered minimally speaking, and 15 students are speaking.

Based on initial findings, the researchers would argue that the recommendation to use only 1 language with a child with autism is not supported. This recommendation can lead to a child not acquiring his or her home language which can have social and cultural repercussions for the family.



Manar Bakhsh, Speech & Language Pathologist at MRC-NECC, and Kerry Egan, Assistant Director of Speech & Language Services, MRC-NECC.

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