

# Kentucky Teacher Education Journal: The Journal of the Teacher Education Division of the Kentucky Council for Exceptional Children

Volume 2 | Issue 1

Article 3

1-1-2013

## A Review of Choice and Preference Assessments to Increase Academic Attainment for Autism Spectrum Disorders

Jamie Emery  
*Crowder College*

Janet L. Applin  
*Western Kentucky University, janet.applin@wku.edu*

Marty Boman  
*Western Kentucky University*

Follow this and additional works at: <http://digitalcommons.wku.edu/ktej>

 Part of the [Higher Education and Teaching Commons](#), and the [Special Education and Teaching Commons](#)

### Recommended Citation

Emery, Jamie; Applin, Janet L.; and Boman, Marty (2013) "A Review of Choice and Preference Assessments to Increase Academic Attainment for Autism Spectrum Disorders," *Kentucky Teacher Education Journal: The Journal of the Teacher Education Division of the Kentucky Council for Exceptional Children*: Vol. 2: Iss. 1, Article 3.  
Available at: <http://digitalcommons.wku.edu/ktej/vol2/iss1/3>

This Review of the Literature is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Kentucky Teacher Education Journal: The Journal of the Teacher Education Division of the Kentucky Council for Exceptional Children by an authorized administrator of TopSCHOLAR®. For more information, please contact [connie.foster@wku.edu](mailto:connie.foster@wku.edu).

---

# A Review of Choice and Preference Assessments to Increase Academic Attainment for Autism Spectrum Disorders

## **Abstract**

Many schools use choice and preference assessments to decrease and/or increase behaviors of students with disabilities such as Autism Spectrum Disorders or ASD. Although there exists scant evidence from the literature exploring the relationship between utilizing choice and preference assessments as a tool to increase academic achievement, the Council for Exceptional Children's (CEC) "Initial Level Special Educator Preparation Standards" require beginning special education professionals to, "select, adapt, and use a repertoire of evidence-based instructional strategies to advance learning of individuals with exceptionalities," (CEC, 2012). To contribute to the knowledge base regarding using choice and preference assessment as a tool to increase academic attainment, this article provides a brief examination of the existing literature by reviewing four studies based on the following criteria: (a) participants referred for intervention based upon poor academic performance, (b) participants ranging from primary or elementary-grade students with or without identified disabilities, (c) studies examined the use of preference assessment to increase academic achievement, and (d) studies published in a peer reviewed publication within the past fifteen years. Findings from these studies produced mixed results and left the original purpose and question of the article review unanswered. The mixed results and conclusions drawn highlight the need for future research to be conducted to evaluate the effectiveness of choice and preference assessments as a tool to increase academic achievement for students with ASD.

## **Keywords**

choice assessments, preference assessments, academic achievement, ASD, autism

## **Cover Page Footnote**

Correspondence concerning this article should be addressed to Janet L. Applin, Associate Dean for Academic Program, College of Education and Behavioral Sciences, 1906 College Heights Blvd. #11030, Bowling Green, KY 42101. E-mail: [janet.applin@wku](mailto:janet.applin@wku)

## **A Review of Choice and Preference Assessments to Increase Academic Attainment for Students with Autism Spectrum Disorders**

Autism Spectrum Disorders (ASD) is currently considered the fastest growing developmental disability in the United States (National Center on Birth Defects and Developmental Disabilities, 2006). The number of children diagnosed with ASD has increased from approximately one in 150 children in 2000 to approximately one in 88 in 2008, representing a 78 percent increase in prevalence over the past decade (U.S. Centers for Disease Control and Prevention, 2012). When only 56% of students with ASD finishing high school, increased attention is needed to this population's academic attainment (U.S. Dept. of Education, 2006).

According to the *Diagnostic Statistical Manual Revised-IV-TR* (American Psychiatric Association, 2000, p.70), ASD denotes a qualitative impairment in social interaction in at least two of the following categories: (a) marked deficits in nonverbal behaviors used in social interactions; (b) deficient in peer relations relative to developmental levels; (c) decreased level of shared enjoyment/pleasure with others; and (d) difficulties with social-emotional reciprocity. These characteristics exist also for individuals, classified as high-functioning autism (HFA) or Asperger's disorder, diagnosed with a higher IQ and verbal ability, but displaying impairments with understanding social interactions (Klin & Volkmar, 1995).

The "26th Annual Report to Congress" (U.S. Department of Education, 2004) reported that 24.7% of children with ASD were included for 79% of their school day in general education inclusive settings during the 2002-2003 academic year. Bertrand, Mars, and Boyle (2001) estimated that between 48% of individuals diagnosed with ASD have IQs below 70, leaving the other 52% of people diagnosed with ASD in the high-functioning range. Teaching new skills to children with ASD involves many confounding principles and often educators or practitioners in the field working with individuals with ASD question whether a student's lack of academic attainment results from a skill deficit or a performance deficit. Further, special education teacher candidates must be taught to select strategies and methods that have the greatest potential for making significant improvements in the academic attainment of students with disabilities and diverse learning needs. A skill deficit indicates that a student needs more instruction time due to the lack of skills needed to complete the identified target. In contrast to a skill deficit, a student with a performance deficit exhibits the requisite skills and ability to demonstrate the desired behavior but chooses not to (Duhon, Noell,

Witt, Freeland, Dufrene, & Gilbertson, 2004). Research (Duhon, et al. 2004) supports the utilization of a skill or performance deficit assessment prior to academic skill interventions. When a performance deficit identifies the choice or preference needs, the treatment routinely implemented involves establishing extrinsic reinforcers.

### **Reinforcement Contingencies**

A reinforcement contingency describes the addition or removal of stimuli that increases the likelihood of a desired behavior to occur more frequently in the future (Maag, 2004). Reinforcement is utilized across the country in public school systems as part of a behavior-management model entitled Positive Behavior Supports (PBS). PBS employs a pro-active response with a combination of instruction and positive reinforcement to increase a child's behavioral repertoire; thereby, replacing the traditional application of aversive procedures to maladaptive behaviors (Carr et al., 2000). Nonetheless, reinforcement implementation occurs primarily when the goal is to decrease maladaptive behaviors. Iwata, Dorsey, Slifer, Bauman, and Richman (1994) found two common treatments exist for implementation after identifying the social function of a maladaptive behavior: contingent and noncontingent reinforcement (Iwata et al., 1994). Contingent reinforcement solidifies a relationship between the desired response and the presentation of desired stimuli by the student only gaining access to the stimuli after the emission of a desired response. Noncontingent reinforcement, often administered on a time schedule, remain independent of responding. Luczynski and Hanley (2009) conducted a study to evaluate the efficacy of and preference for contingent versus noncontingent social reinforcement during play with typically developing preschool students and found that 7 out of 8 of the students preferred contingent reinforcement over noncontingent. The perceived contingency between the desired response and stimuli often increases a student's awareness of his/her expectations and therefore increases the emission of the desired behavior.

The need to provide contingent reinforcement for students remains established in schools. Nonetheless, teachers struggle with the process of identifying those reinforcers and often rely on trial and error or less systematic methods. Fisher et al. (1992) suggested that these unsystematic approaches may result in inaccurate identification of stimuli that function as reinforcers. For example, teachers often identify reinforcers based on proximity, convenience or what is the norm of preference for the students in their classroom. Items that are identified with this method may not hold enough reinforcing value to increase the likelihood of the desired behavior to occur more frequently in the future.

To eliminate such error, *choice and preference assessments* can be administered to identify the items of preference for an individual child. A choice or preference assessment is often administered by presenting a student with free access to stimuli and/or activities to identify the presumed or presenting stimuli and/or activities and reveal a hierarchy of preferences. Research documents the efficacy of choice and preference assessment in the literature for changing behaviors and identifying items that function as reinforcers (Ahern, Clark, DeBar, & Florentino, 2005; Didden, Korzilius, Kamphuis, Sturmey, Lancioni, & Curfs, 2006; Didden, Korzilius, Sturmey, Lancioni, & Curfs, 2008; Tullis, Cannella-Malone, Basbigill, Yeager, Fleming, Payne, & Wu, 2011). Choice and preference assessment has been found to be effective at changing behavior for students with severe to profound disabilities (Tullis et al., 2011), adolescents with developmental disabilities (Groskreutz & Graff, 2009), mild mental retardation and autism (Mechling, Gast, & Cronin, 2006), and young children with autism (Nuernberger, Czapar, & Klatt, 2012) among other populations.

Much of the research on choice and preference assessment focuses on utilizing choice to decrease challenging behaviors and increase appropriate behaviors and, as noted above, has been supported as an evidence-based intervention for decreasing and/or increasing behavior. (Tullis, et al. 2011; Groskreutz & Graff, 2009; Mechling, Gast & Cronin, 2006; Nuernberger, Smith, Czapar, & Klatt, 2012). Modifying behaviors in school settings allows students to focus on their academic attainment skills, thereby increasing their academic achievement. Academic engaged time, also known as “on-task behavior”, refers to the amount of time students spend working on academic tasks and is thought to increase student achievement (Miller, 2009). Studies over the past two decades support the relationship between students who demonstrate a higher level of academic engaged time, or on-task behavior, and gains in their academic skills (Greenwood, 1991; Metzker, 2003; Parris & Block, 2007; Wang, Haertel, & Walberg, 1993).

However, there remains scant evidence from the literature that using choice and preference assessment for academic attainment for children with ASD. While intervention for challenging behaviors remains a precursor for academic instruction, few studies examine the effect of using choice and preference assessment as an academic intervention to increase academic engaged time and thereby increasing academic attainment.

## **Method**

The purpose here is to provide a brief examination of the existing literature to explore the relationship between utilizing choice and preference assessments as tools to determine effective reinforcers and increase academic achievement. If such a relationship exists, it would lend credence for teaching special education teacher candidates to employ choice and preference assessment as an evidence-based intervention.

Studies included in this review met the following criteria: (a) participants were referred for intervention due to poor academic performance; (b) participants were primary or elementary- grade students with or without identified disabilities; (c) studies examined the use of preference assessment to increase academic achievement; and (d) studies were published in a peer-reviewed publication within the past fifteen years. Articles beyond the scope of the inclusion criteria were excluded from the review. Also, exclusion occurred if preference assessments were evaluated for their efficacy in decreasing challenging behaviors as opposed to increasing academic achievement (i.e., Nuernberger, Smith, Czapar, and Klatt, 2012). Data and statistics of the Center for Disease Control (2012) met some inclusion criteria, but examined the use of preference assessment to investigate social interaction as a reinforcer as opposed to examining preference assessment to increase academic achievement.

Electronic searches included the database, PsycINFO (EbscoHost). Hand searches were conducted using the reference sections of the articles identified through the electronic searches. While twenty-six articles met criteria for one or more of the search criteria, only four articles met all criteria. Of the four articles that met all criteria, each included references, research questions or purpose of the study, a description of the participants, a description of the methodology employed, and results and/or conclusions.

### **Overview of Studies**

Tullis et al. (2011) focused on the use of choice and preference assessment to reduce challenging behaviors in children with severe to profound disabilities. The authors concluded in their extensive review of preference assessment and choice intervention, that convincing evidence exists that choice is, indeed, effective in reducing challenging behaviors. In addition, their research on preference assessment adds a more complete description of preferences. In the current literature review, authors seek to find evidence that

choice and preference assessments serve as effective tools for children with academic needs as well as behavioral needs.

Table 1 summarizes the four studies included in this review; each utilized single subject designs, a small number of participants, and focused on students without identified disabilities. Teachers identified the participants as having poor performance, deficits in mathematics, academics and behavioral problems and/or reading deficits (Duhon et al., 2004; Gilbertson et al., 2008; Noell et al., 2001; Reseter & Noell, 2008). All studies examined the use of brief assessments for the purpose of identifying effective interventions (Duhon et al., 2004; Gilbertson et al., 2008; Noell et al., 2001) or the efficacy of teacher-selected preferred stimuli for a mathematics intervention. Duhon et al. (2004) results suggested the potential utility of brief assessments to guide selection of appropriate intervention. Nevertheless, half of the participants responded to instructional interventions and half responded to motivational interventions.

The original purpose of this literature review was to determine a relationship between utilizing choice and/or preference assessments as a tool to select reinforcers to increase academic achievement for students with ASD. That purpose remains unfulfilled since none of the reviewed studies included participants with ASD. Tullis et al., (2011), described the fidelity of the research procedures as lacking in the literature reviewed. The mixed results and conclusions drawn in the studies reviewed in this article highlight the need for further research to be conducted to evaluate the effectiveness of choice and preference assessments as tools to increase academic attainment for students with ASD.

Earlier studies support the use of choice and preference assessments to intervene upon challenging behaviors for students with and without disabilities (Tullis et al., 2011; Groskreutz & Graff, 2009; Mechling, Gast & Cronin, 2006; & Nuernberger, Czapar, & Klatt, 2012). The studies examined in this literature review do not support or refute the use of choice and preference assessment as a means to increase academic skills. The focus of future research in this area needs to examine the use of choice and preference assessment with the goal of increasing academic attainment. In addition, future research in this area is needed and must include students with disabilities and ASD. Treatment fidelity remains essential with clear reporting in future studies so that replication may occur with nuances of the interventions explained.

Although this review did not lend definitive support for using choice and preference assessments as tools to intervene upon academic skills for students

with ASD, it guides the direction needed for future research. Strong evidence exists that choice and preference assessments serve as effective interventions with some populations and some challenging behaviors. Future research needs to determine if choice and preference assessments serve as a useful tool for working with students with ASD and other disabilities to increase their academic attainment. If evidence supports their use as a tool to increase participants' academic attainment, special education teachers should be taught to administer choice and preference assessments.



TABLE 1

*Studies Examining the Use of Choice and Preference Assessment to Increase Academic Attainment*

Article	Purpose of Study/Research Questions	Participant Description	Methodology	Results
Duhon, G.J., Noell, G.H., Witt, J.C., Freeland, J.T., Dufrene, B.A., & Gilbertson, D.N. (2004).	What extent does a hypothesis of a brief, relatively simple assessment predict students' response to a functionally relevant instructional or motivational interventions.	Four General Education students referred by teacher for poor performance	Alternating Treatment Design with math and reading probes	Mixed results with suggestions that the potential utility of brief assessments guide selection of appropriate intervention elements.
Reseter, J.L & Noell, G.H. (2008).	Examined and tested the reinforcing efficacy of teacher-selected rewards and compared the reinforcing efficacy of teacher-selected rewards with those selected via an MSWO preference assessment.	Four first or second grade children with deficits in mathematics identified by teacher	Alternating treatment design with three conditions: no reward; MSWO-selected rewards; teacher selected rewards	Teacher and student selected rewards rankings conflicted. No clear differences in reinforcing effectiveness of an MSWO selected and teacher selected preferred stimuli for digits correctly completed.
Gilbertson, D., Witt, J.C., Duhon, G., & Dufrene, B. (2008).	Examined the effects of an assessment approach for selecting intervention procedures to increase math fluency and on-task behavior.	Four students referred by their teachers due to academic and behavioral problems	Multiple baseline across participants design examined the effects of intervention with math probes	Results suggested performance was influenced by a combination of a skill and a performance deficit requiring instructional and motivational intervention.
Noell, G.H., Freeland, J.T., Witt, J.C., & Gansle, K.A. (2001).	To examine the extent to which a brief assessment could identify interventions that were effective when they were implemented over an extended period in a manner similar to classroom-based intervention.	Four Elementary school students in general education courses referred for assistance with reading by their teacher	Withdrawal design including three conditions (A-B-C). An extended analysis was implemented on a multiple baseline design across three levels of curricular materials: baseline; contingent reward; and instruction.	Students' oral reading fluency improved under at least one intervention condition and results suggest that brief analysis using rate-based outcome measures may be a practical means of selecting interventions.

## References

- Ahearn, W.H., Clark, K.M., DeBar, R., & Florentino, C. (2005). On the role of preference in response competition. *Journal of Applied Behavior Analysis, 38*, 247-250.
- American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders-IV-TR* (4<sup>th</sup> ed.). Washington, DC: Author.
- Bertrand, J., Mars, A., Boyle, C., & Bove, F. (2001). Prevalence of autism in a United States population: The Brick Township, New Jersey, Investigation. *Pediatrics, 108*, 1155–1161.
- Carr, J.E., Nicolson, A.C., & Higbee, T.S. (2000). Evaluation of a brief multiple-stimulus preference assessment in a naturalistic context. *Journal of Applied Behavioral Interventions, 33*, 353-357.
- Center for Disease Control (2012). Data and statistics. Available at [www.cdc.gov](http://www.cdc.gov), accessed on October 29, 2012.
- Council for Exceptional Children (2012). *CEC initial level special educator preparation standards*. Retrieved from Council for Exceptional Children website: <http://www.cec.sped.org/~media/Files/Standards/Professional%20Preparation%20Standards/Initial%20Preparation%20Standards%20with%20Elaborations.pdf>
- Didden, R., Korzillius, H., Kamphuis, A., Sturmey, P., Lancioni, G.M., & Curfs, L.M.G. (2006). Preferences in individuals with angelman syndrome assessed by a modified choice assessment scale. *Journal of Intellectual Disability Research, 50*, 54-60.
- Didden, R., Korzillius, H., Sturmey, P., Lancioni, G., & Curfs, L.M.G. (2008). Preference for water-related items in angelman syndrome, down syndrome, and non-specific intellectual disability. *Journal of Intellectual & Developmental Disability, 33*, 59-64.
- Duhon, G.J., Noell, G.H., Witt, J.C., Freeland, J.T., Dufrene, B.A., & Gilbertson, D.N. (2004). Identifying academic skill and performance deficits: The experimental analysis of brief assessments of academic skills. *School Psychology Review, 33*, 429-443.
- Fisher, W., Piazza, C.C., Bowman, L.G., Hagopian, I. P., Ownes, J.C., & Slevin, I. (1992). A comparison of two approaches for identifying reinforcers for persons with severe and profound disabilities. *Journal of Applied Behavioral Analysis, 25*, 491-498.
- Gilbertson, D., Witt, J.C., Duhon, G., & Dufrene, B. (2008). Using brief assessments to select math fluency and on-task behavior interventions: an investigation of treatment utility. *Education and Treatment of Children, 31*, 167-181.
- Greenwood, C.R. (1991). Longitudinal analysis of time, engagement, and achievement in at-risk versus non-risk students. *Exceptional Children, 57*, 521-535
- Groskreutz, M.P., & Graff, R.B. (2009). Evaluating pictorial preference assessment: The effect of differential outcomes on preference assessment results. *Research in Autism Spectrum Disorders, 31*, 113-128.
- Iwata, B.A., Dorsey, M.F., Slifer, K.J., Bauman, K.E., & Richman, G.S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27*, 197-209. (Reprinted from *Analysis and Intervention if Developmental Disabilities, 2*, 3-20, 1982)
- Klin, A., & Volkmar, F.R. (1995). Autism and the pervasive developmental disorders. *Child and Adolescent Psychiatric Clinics of North America, 4*, 617-630.
- Luczynski, K.C., & Hanley, G.P. (2009) Do children prefer contingencies? An evaluation of the

- efficacy of and preference for contingent versus noncontingent social reinforcement during play. *Journal of Applied Behavior Analysis*, 42, 511-525.
- Maag, J. W. (2003). *Behavior Management: From Theoretical Implications to Practical Applications* (2<sup>nd</sup> ed.). Cengage Learning: Boston, MA
- Mechling, L.C., Gast, D.L., & Cronin, B.A. (2006). The effects of presenting high-preference items, paired with choice, via computer-based video programming on task completion of student with autism. *Focus on Autism and Other Developmental Disabilities*, 21, 7-13.
- Metzker, B. (2003). *Time and learning*. ERIC Digest. Eugene, OR: ERIC Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED474260).
- Miller, S. (2009). *Validated Practices for Teaching Students with Diverse Needs and Abilities* (2<sup>nd</sup> ed.). Upper Saddle River, New Jersey: Merrill.
- National Center on Birth Defects and Developmental Disabilities. (2006). How common are autism spectrum disorders (ASD)? Department of Health and Human Services, Center for Disease Control and Prevention. Retrieved from [http://www.cdc.gov/ncbddd/autism/asd\\_common.htm](http://www.cdc.gov/ncbddd/autism/asd_common.htm)
- Noell, G.H., Freeland, J.T., Witt, J.C., & Gansle, K.A. (2001). Using brief assessments to identify effective interventions for individual students. *Journal of School Psychology*, 39, 335-355.
- Nuernberger, J.E., Smith, C.A., Czapar, K.N., & Klatt, K.P. (2012) Assessing preference for social interaction in children diagnosed with autism. *Behavior Interventions*, 27, 33-44.
- Parris, S.R., & Block, C.C. (2007). The expertise of adolescent literacy teachers. *Journal of Adolescent & Adult Literacy*, 50, 582-596.
- Reseter, J.L & Noell, G.H. (2008). Evaluating preference assessments for use in the general education population. *Journal of Applied Behavior Analysis*, 41, 447-451.
- Tullis, C.A., Cannella-Malone, H.I., Basbigill, A.R., Yeager, A., Fleming, C.V., Payne, D., & Wu, P. (2011). Review of die choice and preference assessment literature for individuals with severe to profound disabilities. *Education and Training in Autism and Developmental Disabilities*, 46, 576-595.
- Tullis, C.A., Cannella-Malone, H.I., & Fleming, C.V. (2012). Multiple stimulus without replacement preference assessments: An examination of the relation between session number and effectiveness. *Journal of Developmental and Physical Disabilities*, 24, 337-345.
- U.S. Department of Education, National Center for Special Education Research. (2006). An overview of findings from Wave 2 of the National Longitudinal Transition Study-2 (NLTS2). (NCSER 2—6-3004). Retrieved from [http://www.nlts2.org/reports/2006\\_08/nlts2\\_report\\_2006\\_08\\_complete.pdf](http://www.nlts2.org/reports/2006_08/nlts2_report_2006_08_complete.pdf).
- U. S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs, 26<sup>th</sup> Annual (2004) Report to Congress on the Implementation of the Individuals with Disabilities Education Act, vol. 2, Washington, D.C., 2006
- Wang, M.C., Haertel, G.D., & Walberg, H.J. (1993). Toward a knowledge base for school learning. *Review of Educational Research*, 63, 249-294.

