


INSTRUCTIONAL AND TRANSITION PROGRAMMING FOR SECONDARY STUDENTS AND ADULTS WITH AUTISM SPECTRUM DISORDERS

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ABSTRACT

Many students with autism spectrum disorder (ASD) are graduating from high school and entering the workforce and/or post-secondary education institutions. The challenges young adults and adults with ASD face that may impact this successful transition are documented in the literature, along with the identification of needed transition programming components. However, there are several issues within those components that need to be further addressed in the professional literature. Additionally, while there are several evidence-based practices (EBPs) established for working with children with ASD, which are well-documented in the literature, there are significantly far less for adolescents and young adults with ASD (ages 15-22), and a sparse number for adults with ASD. This paper discusses these issues and provides recommendations for needed future research.

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Introduction

While there is a great deal of information in the professional and academic literature about children with autism spectrum disorder (ASD), there is less examination about secondary (high school) students with ASD, and even less about adults with ASD. Secondary school special education teachers may find it challenging to identify and implement effective combinations of evidence-based practices, instructional strategies, and supports to best meet the needs of these students (Eastman et al, 2021; Mazzotti et al., 2016; Morningstar et al., 2010; Test & Fowler, 2018). Graduating from or leaving secondary school and beginning the next phase of life can be intimidating for any student; however, for students with disabilities, this change can be especially challenging (Shogren & Wittenburg, 2020; Trainor et al., 2020). Historically, students with disabilities struggle after leaving high school. They experience lower rates of employment and independent living and lower rates of attendance at post-secondary institutions (Bouck & Park, 2018; Eastman et al., 2021; Nicholas et al., 2018; Sung et al., 2019; Ward & Esposito, 2019).

According to the US Centers for Disease Control & Prevention (2023), the incidence of ASD in the US is now 1 in 36 children. ASD is a developmental disability characterized by problems with social communication and interaction (e.g., avoiding eye contact, struggling with emotions, not interacting with others) and restricted or repetitive behaviors or interests (e.g., a need for sameness/following routines, lining things up, unusual reactions to sensory stimuli, unusual interests, repeating words and phrases). Some individuals with ASD may experience cognitive or language delays, problems with sleep habits, emotional reactions, and gastrointestinal issues (APA, 2022; CDC, 2023). According to the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (Text Revised), (2022), individuals with ASD experience persistent differences in all these areas: (1) social–emotional reciprocity; (2) nonverbal communication behaviors used in social interactions; and (3) developing, maintaining, and understanding relationships.

Individuals with AS often experience hyper- or hypo-sensitivity to various sensory stimuli (Attwood, 2007; APA, 2000; Grandin, 1995; Myles & Simpson, 1998; Wing, 2001). Hyper-sensitivity to auditory stimuli is common, as well as sensitivities to lights, fabric textures, tastes, and smells.

Social skills continue to be the most problematic area of concern for individuals with ASD (APA, 2022; Centers for Disease Control & Prevention, 2023; Wing, 2001). They often experience difficulties in the following areas: understanding social rules and customs, understanding and dealing with their own and others' feelings, and correctly interpreting nonverbal body language (American Psychiatric Association, 2022; Hendricks, 2010; Hurlbutt & Chalmers, 2004; Silverman et al., 2014; Ward & Esposito, 2019). Work-related social skills, such as communicating effectively, working in teams, resolving conflicts, and following social rules, can be impacted as well, remaining as lifelong barriers to successful employment (Eastman et al., 2021; Howlin & Moss, 2012; Sung et al., 2019; Ward & Esposito, 2019). Conversely, many individuals with ASD do have/show/exhibit positive worker traits such as diligence, focus, consistency, creativity, unique and informed interest/specialty areas, and following work rules. This can be helpful in supporting adults with ASD to be successful in the workplace.

Social interactions and self-regulation, sensory concerns, and engaging in activities outside of a narrow range of interests all have an impact on the transition to the world of employment, independent living, and/or postsecondary education (APA, 2022; Eastman et al., 2021; Silverman et al., 2014; Shogren & Wittenburg, 2020; Ward & Esposito, 2019). This transition from school to the adult world can be made more manageable with the implementation of early and individualized services in school and the community (Eastman et al., 2021; Morningstar et al., 2020; Silverman et al., 2014; Ward & Esposito, 2019).

More than 500,000 young adults with ASD will exit the US school system for the world of work by 2027 (Centers for Disease Control and Prevention, 2023; Sung et al., 2019). This indicates a critical need for better transition planning for students with ASD (Antezana et al., 2017; Eastman et al., 2021; Szidon et al., 2015). This planning must begin early, be documented as a part of the Individualized Education Program (IEP),

and be supported by an educational team that includes the student and family, special education teachers, and outside agencies (Morningstar et al. 2010; Test & Fowler, 2018)

Morningstar and colleagues (2010) outlined five quality indicators of effective school to adulthood transition programs for individuals with ASD. These were shown to result in a higher possibility of achieving post-school outcomes for students with disabilities: student-centered transition planning, student self-determination, family involvement, interagency collaboration, and curriculum and instruction focused on specific post-school outcomes. These quality indicators are briefly described below.

Student-centered transition planning

This is a necessary part of transition planning. Student involvement in the IEP meeting and the educational planning process can lead to improved post-school outcomes (Test & Fowler, 2018). Schools should provide instruction and support to allow students to be active members of the IEP team and participate in the planning process, including expressing preferences and sharing this information with others (Collier et al., 2016; Morningstar et al., 2010). Students with ASD often experience challenges in group social situations, self-advocacy, communication skills, and with executive functioning planning (Bouck, & Park, 2018; Ward & Esposito, 2019). Many individuals with ASD also experience high rates of social anxiety, and mental health disorders, challenging a smooth transition (Collier et al., 2016; Eastman & Handler, 2019; Trainor et al., 2020). These concerns have a negative impact on their ability to participate in their transition planning process. School personnel and outside agencies can support students with ASD in this process to help make more employment options possible, utilizing the individual's strengths.

Student self-determination

Self-determination instruction is a necessary part of transition services planning and a predictor of improved employment post-school outcomes (Collier et al., 2016;

Shogren & Wittenburg, 2020; Test & Fowler, 2018). This instruction should include teaching job-related social communication skills and teaching self-management for employment skills. Trainor et al. (2020) identified the use of natural peer supports in the transition process as contributing to successful post-school outcomes. Morningstar et al. (2010) found that skill development and opportunities for self-determination resulted in increased feelings of hope and empowerment. Research shows that individuals with ASD often struggle with self-awareness and perceptions of self and others and may not be able to understand the reasons for, or the impact of, their behaviors, emotions, or mental health challenges in social situations (Collier et al., 2016; Eastman & Handler, 2019; Trainor et al., 2020; Ward & Esposito, 2019). Focusing on developing these behaviors and skills is important in helping students with ASD meet their goals. Access to instructional programming focused on skills such as goal-setting, problem-solving, and decision-making has been shown to be a predictor of improved employment post-school outcomes; however, more research is needed in this area (Shogren & Wittenburg, 2020; Trainor et al., 2020).

Family involvement

The literature supports the positive results of family involvement in transition planning. When students were asked to rate their family's involvement in their transition programming, it was found that family support in the transition process, including making decisions and planning for post-school outcomes, had a significant impact on students' feelings of empowerment and control (Morningstar et al., 2010). Hagner et al. (2012) described a family-centered transition program they implemented involving group training sessions for families, person centered planning with student and family, and follow-up assistance throughout the year to include reminders and assistance with work experiences, interviews, job exploration, for example. Results of limited research in the literature indicated students and parents are more able to identify post-school goals and how to achieve them, along with identifying needed resources when working together.

Interagency collaboration

Research shows that schools and outside agencies need to share responsibility in promoting interagency collaboration to ensure a successful transition from school to the adult services delivery system (Morningstar et al., 2010; Shogren & Wittenburg, 2020). This collaboration is a predictor of improved post-school outcomes, including working together to meet the transition needs of students with disabilities; however, evidence-based strategies to achieve this have yet to be identified (Plotner et al., 2020). Additionally, Plotner et al. (2020) noted that ways of establishing collaborative relationships among transition services team members also needs to be better determined. Recently, however, evidence has emerged to show collaboration between schools and Vocational Rehabilitation Services (VRS) has improved. The Workforce Innovation and Opportunity Act of 2014 amended how VRS provides services to youth with disabilities (Federal Register, 2016). Because of this act, more schools have been collaborating with VRS to help students find jobs. School personnel and outside agencies such as VRS can help a student with ASD do this so all viable options while utilizing individual strengths can be pursued.

Because of their unique strengths and challenges, individuals with ASD may require additional supports with interagency collaboration. They often have specialized interests in which they are extremely knowledgeable and enthusiastic, and while a career can evolve from those interests, students with ASD need to build on their strengths and the narrow focus to find suitable career matches (Hurlbutt & Handler, 2010; Nicholas et al., 2018). Current vocational research focuses on identifying specific supports and services that are best for individuals with ASD (Sung et al., 2019; Szidon et al., 2015; Ward & Esposito, 2019). Many young adults with ASD may move right into employment upon graduation from high school. For this to happen, responsibility for a seamless transition is within the transition IEP team, including the student and families, special education teachers, and outside agencies such as VRS, and that more preparation needs to happen while students are still in high school.

Curriculum and instruction focused on specific post-school outcomes

In addition to the long-accepted best practices of flexible programming, outcomes-based programs, and the teaching of functional skills, community-based instruction and community experiences are critical to state-of-the-art transition programming (Test et al., 2009). Research emphasizes the importance of educators using curriculum that aligns with students' post-school outcomes, but that also includes functional academics, independent living skills, social skills, work experiences, and vocational education (Morningstar et al., 2010; Test et al., 2009; Test & Fowler, 2018). Many individuals with ASD experience challenges in making transitions without thoughtful and specific preparation and planning and may struggle with organizational skills as well as the emotional impact of change (Hurlbutt & Handler, 2010; Schreiber, 2011). Direct instruction in organizational and planning skills, self-awareness and social skills, job-related social communication skills, and self-management for employment skills should be included in special education programming (Eastman & Handler, 2019; Elmore, 2016; Hurlbutt & Handler, 2010; Test et al., 2009).

Additionally, some students with disabilities strive to attend college and need support in becoming college-ready. Transition services and the transition team should discuss career and educational goals with students, conduct assessments to explore career interests, determine college admissions requirements, take courses in high school that prepare students for college, and be active participants during IEP meetings (Hagner et al., 2012; Mazzotti et al., 2016; Morningstar et al., 2010; Szidon et al., 2015).

Evidence-based practices

Several practices have shown evidence of positive effects with autistic youth (focusing on ages 15-22). The discussion of the practices that follow are identified in Steinbrenner et al. (2020) as having enough scientific support in the professional literature to be identified as evidence-based and recommended for use. These evidence-

based practices (EBPs) have been shown to improve academic, cognition, adaptive, behavior, communications, social, motor, and vocational outcomes for high school students with ASD.

Steinbrenner et al. (2020) report that the following outcome areas have had the highest amount of research for individuals with ASD, ages 15 to 22 years: Adaptive/self-help, communication, and social. The following outcome areas have had the lowest amount of research for the same age group: cognition, mental health, motor, and vocational. Play and school readiness also have a low amount of research, which is to be expected, given this age range. Steinbrenner et al. (2020) also identified the following practices as having a positive impact in the greatest number of outcome areas for individuals with ASD, ages 15 to 22 years, and are classified as evidence-based practices (EBPs): antecedent-based intervention, cognitive behavioral instructional strategies, prompting, reinforcement, social skills training, video modeling, and visual supports. See **Table 1** for more information.

Table 1. Outcome areas with evidence for ages 15-22 (Steinbrenner et al., 2020)

Evidence-based Practice	Outcome Areas
Antecedent-based intervention	Academic, adaptive, challenging behaviors, communication, mental health, and social
Cognitive behavioral instruction	Academic, adaptive, challenging behaviors, communication, mental health, and social
Prompting	Academic, adaptive, challenging behaviors, communication, social, and vocational
Reinforcement	Academic, adaptive, challenging behaviors, communication, social, and vocational
Social skills training	Adaptive, challenging behaviors, communication, mental , mental health, and social
Video modeling	Academic, adaptive, communication, motor, social, and vocational
Visual supports	Academic, adaptive, social, and vocational

Antecedent-Based Interventions (ABI)

These are strategies that are used to modify the environment or activity to prevent an interfering behavior from occurring. This allows the learner to be more successful in completing/learning the skill. ABI has been used to address academic, adaptive, behavior, communication, and social outcomes, with the focus being on reducing challenging behaviors (Banda et al., 2012; Barahona et al., 2013; Isong et al., 2014; McLay et al., 2020; Steinbrenner et al., 2020). According to Sam, A., & AFIRM Team (2016) strategies include the following:

- *Using learner preferences,*
- *Changing schedules/routines,*
- *Implementing pre-activity interventions,*
- *Using choice-making,*
- *Altering how instruction is delivered,*
- *Enriching the environment with sensory stimuli.*

Cognitive behavioral instructional strategies (CBIS)

These are strategies that are used for individuals who exhibit problem behaviors which are related to emotions or feelings (e.g., anger, anxiety, escalating emotions). Learners are taught specific strategies that increase self-awareness which help in regulating thoughts, behaviors, and emotions. This can improve stress management, motivation, and resiliency. Other practices are usually used in conjunction with CBIS, including modeling, positive reinforcement, prompting, peer-mediated intervention, visual modeling, and visual supports (Mussey et al., 2017; Sing et al., 2011; Steinbrenner et al., 2020). According to Mussey et al., (2017), additional strategies for individuals with autism include the following:

- *Psychoeducation* (e.g., learning about condition, problem solving, communication, and self-assertiveness training) (Sarkhel et al., 2020).
- *Cognitive restructuring* (e.g., changing negative thinking) (Ackerman, c., 2018)
- *Graded exposure* (e.g., exposing and introducing the learner to situations that cause fear or anxiety (Rodgers et al., 2023; Sharma et al., 2021)
- *Practice of strategies* (e.g., modeling, role-play, use of strategies and skills in real situations) (Mussey et al., 2017).

Prompting

Verbal, gestural, or physical assistance given to learners to support them in acquiring or engaging in a targeted behavior or skill. Prompting is sometimes referred to as an ‘errorless’ learning method because it can reduce errors or prevent inaccurate responses. Prompting can be used when the learner is about to perform the skill, perform steps incorrectly, or does not respond when asked (Bouxsein et al., 2008; Burke et al., 2013; Sam, A., & AFIRM Team, 2015; Schlosser et al., 2019; Steinbrenner et al., 2020). According to Sam, A., & AFIRM Team (2015) prompting procedures include the following:

- *Least-to-Most Prompting* – provides opportunities for the learner to respond without prompts first, followed by prompts of least to most amount of assistance/support.
- *Graduated guidance* – prompt is provided to ensure success from the beginning, and then prompts are faded as the learner begins to perform the skill or behavior. If the learner struggles, prompts are provided again.
- *Simultaneous prompting* – during instruction prompt is given at the same time as the task directive to ensure success. During probe sessions, task directive is given without prompts to monitor performance.

Reinforcement

Reinforcement has long been associated with the field of psychology and is designated as a behavioral intervention. It is defined as the application of consequences after a skill or behavior occurs that increases the learner's use of the skill or behavior. (Coon et al., 2021; Graff & Larsen, 2011; Hall, 2018; Hume et al., 2021; Steinbrenner et al., 2020). According to Sam, A., & AFIRM Team (2015), reinforcement includes the following:

- *Positive reinforcement (e.g., Reinforcement is delivered each time learner demonstrates target skill or behavior (or as indicated in reinforcement schedule). Preferred reinforcers need to be determined first.*
- *Token economy (e.g., A token is provided each time learner demonstrates the target skill or behavior (or as indicated in the reinforcement schedule). The tokens are earned and saved to be traded in for a desired reinforcer.*
- *Negative reinforcement (e.g., This is the process of removing or taking away an unpleasant or undesirable stimulus or outcome after the desired skill or behavior is demonstrated, to increase the likelihood of that skill or behavior being repeated. It is recommended for short-term use only.*

Social Skills Training

This is instruction where social skills are targeted, can be used to teach target social skills, and increase desired behavior. Social skills training occurs in individual or group format. Peer models can be used to support the learner in practicing the learned social skills. (Gray, 2015; Griffen et al., 2016; Palmen et al., 2008; Soares et al., 2021; Steinbrenner et al., 2020). According to Griffin et al. (2016), social skills can be taught through direct instruction of skills, social stories/social narratives, modeling, roleplay, prompting, visual supports, and practice in real settings).

Video Modeling

Video modeling is an evidence-based practice that uses a visual model of a skill or behavior being taught. The learner watches videos of positive and accurate examples of a peer, adult, or self engaging in the skill or behavior (Allen et al., 2010; Bross et al., 2021; Cox, A., & AFIRM Team., 2018; Delano, 2007; Thomas et al., 2020; Steinbrenner et al., 2020). Equipment to record the video (camera, phone, iPad, computer), editing software, and a device for the learner to view the video are needed to successfully use video modeling (Cox, A., & AFIRM Team, 2018).

Visual Supports

Visual supports are used to help foster independence, to help the learner understand next steps, and to help the learner focus on key elements, while minimizing adult direction. Items, such as pictures, icons, drawings, written words, objects, maps, labels, organization systems, and scripts, that are used with or without accompanying cues, to help the individual learn about the routine, environment, skill, or activity being addressed (Arthur-Kelly et al., 2009; Bross et al., 2023; Hughes et al., 2011; Sam, A., & AFIRM Team, 2015; Steinbrenner et al., 2020). According to Sam, A., & AFIRM Team (2015), there are three types of visual supports as described below:

- Visual boundaries (e.g., designated area where skill or behavior needs to be completed).
- Visual cues (e.g., need to use specific, concise words to direct the learner to look at the visual support).
- Visual schedules (e.g., a visual sequence of steps needed to perform the skill or behavior).

Discussion and Recommendations for Future Research

A review of the literature for information on secondary and transition planning for high school students and young adults with ASD showed the literature to be informative regarding the needs of adolescents and young adults, as well as secondary and transition programming information. However, there is minimal information in several areas. Additional research is needed to show how secondary students with ASD can be more involved in the transition process, with less anxiety and more understanding of the process. Additionally, while research shows that students achieve more successful transitions from high school with family involvement, more research is needed on how best to involve families at this stage. Another need area identified in the literature is in interagency collaboration. While relationships between high schools and outside agencies have improved, a need for evidence-based strategies to help students with a more successful transition to employment and/or postsecondary education have yet to be identified. Additionally, research needs to be conducted on how to establish better communication, relationships, and partnerships between and among transition team members.

There are approximately twenty evidence-based practices (EBPs) that have been identified and established in the literature base (Steinbrenner et al., 2020). There are a small number of emerging interventions also identified in the literature (Steinbrenner et al., 2020). Of the established EBPs, the number of publications about children (aged 3-14 years) is overwhelming. In reviewing the supporting evidence in Steinbrenner et al. (2020), there were three to four times as many publications about children as there were for adolescents and young adults (ages 15-22). The amount of research on EBPs for adults with ASD is scant. There is a significant need for more research to support EBPs for adults as there is for children. There are several extremely well-established EBPs for children with ASD, however, research on those EBPs for adults in vocational is missing. As employment-related vocational skills is a significant need area for adults with ASD, it is imperative that research is done to identify EBPs that produce successful outcomes. Some of these well-known and long-established EBPs include Discrete Trial Training and Peer-Based Instruction & Intervention. Two emerging interventions, Exercise &

Movement, and Technology-aided Instruction & Intervention, were found to have some documentation for adolescents and young adults but not enough evidence to classify as EBPs.

Finally, mental health needs and self-determination development have been identified as areas in which many adults with ASD struggle. No EBPs were identified in Steinbrenner et al. (2020) for addressing self-determination needs among 15- to 22-year-olds with ASD, and only three were identified for addressing mental health concerns. These are also areas that need further research.

With more students with ASD graduating and entering the workforce and/or post-secondary education, research in identifying additional EBPs to ensure success in more outcome areas needs to be conducted. Most of the research on young adults and adults with ASD has focused on adaptive skills training, challenging behaviors, and social skills. Those are important and necessary, however, other areas such as vocational and mental health are sorely absent in the literature.

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