


**Adaptive Behavior in Adolescents and Adults with Autism Spectrum Disorders**

**Ongoing Research and Future Implications**

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**INTRODUCTION**

In general, adaptive behavior constitutes those skills and abilities that allow a person to function independently in his or her environment. Adaptive behavior is very important; it has been argued that outcomes for adults with autism spectrum disorders (ASDs) can, in part, be seen as a function of adaptive behavior competencies (Mazefsky, Williams, & Minshew, 2008). Thus, it is not an overstatement to say that adaptive behavior competencies will get people through times of no academic skills better than academic skills will get people through times of no adaptive behavior competencies.

Heward (2005) describes adaptive behavior as being that cohort of skills that allows each individual to meet standards of personal independence as expected for his or her age and social group. Adaptive behavior also refers to the ability of those without disabilities (i.e., neurotypicals) to meet current and future environmental demands. Heward notes that adaptive behavior changes according to a person's cultural expectations and environment. As such, adaptive behavior is, quite simply, everything we do that is not purely academic in nature.

Using this definition, adaptive behavior can be understood as being referenced to normative standards of behavior, but it is also reflective of the individualized demands associated with where a person lives and what a person does or is expected to do. In other words, although a cohort of adaptive skills is common to most individuals across most environments (e.g., dressing), there are various combinations and permutations of these skills that require a degree of individualization (e.g., dressing for a particular climate) or are
relevant only to a particular condition (e.g., women do not need to learn to shave their faces, whereas men generally do not need to learn to shave their legs or underarms). In practice, adaptive behavior is a much more complex concept than merely functional skills and represents a difficult yet critical instructional challenge for individuals with ASDs.

Unfortunately, beyond basic functional skills or activities of daily living (ADLs), adaptive behavior has little attention in the ASD literature. This can partly be understood as a function of the diagnostic criteria for ASDs. ASDs are diagnosed via a triad of impairments in the areas of communication, social skills, and the presence of idiosyncratic or repetitive behavior (American Psychiatric Association, 2000). Although communication and social skills are established components of adaptive behavior, they might be best understood as necessary but not sufficient conditions for adequate adaptive responding. The second edition of the Vineland Adaptive Behavior Scales (VABS-II; Sparrow, Cicchetti, & Balla, 2005), for example, includes assessments in the areas of gross and fine motor skills; personal, domestic, and community daily-living skills; play/leisure skills; and coping skills, with a secondary assessment of problem behavior. By attending to only those impairments defined in the diagnostic criteria, an entire repertoire of skills—particularly those required for success beyond the classroom—is seemingly ignored. For adolescents across the spectrum, this omission often represents a significant impediment to life outside the classroom, postgraduation opportunities for employment and community inclusion, and a positive quality of life.

MEASURING ADAPTIVE BEHAVIOR

The measurement systems associated with adaptive behavior provide a valid and a reliable representation of the skills that individuals with ASDs need in the areas of communication, socialization, and independent living. Standardized measures can also be useful as an adjunct in the diagnostic process because they can provide age-referenced information relevant to personal functioning (Kenworthy, Case, Harms, Martin, & Wallace, 2010). The significant advantages in using standardized measures include the ease with which the measures may be completed, observations covering large periods of time, and collected data that directly relate to concrete observable behavior (Krakier, 2000).

The second edition of the Adaptive Behavior Assessment System (ABAS-II; Harrison & Oakland, 2003) provides a complete assessment of adaptive skills broken down into conceptual, social, and practical behaviors. The ABAS-II is applicable from birth to 89 years of age and addresses the skill areas of communication, community use, functional academics, school/home living, health and safety, leisure, self-care, self-direction, social, and work. The Scales of Independent Behavior (SIB-R; Bruininks, Woodcock, Calherman, & Hill, 1996) address both problem behavior and adaptive behavior across the settings of school, home, employment, and community. VABS-II (Sparrow et al., 2003) includes domains of communication, daily living, motor skills, and socialization with an optional maladaptive behavior index. Although primarily descriptive in nature (i.e., where a person is at a certain point in time), these systems are also useful in identifying impairments in adaptive behavior to develop appropriate and effective interventions.

ADAPTIVE BEHAVIOR AND AUTISM SPECTRUM DISORDERS

Investigating adaptive behavior competencies between individuals with ASDs and age-matched peers with developmental delays (not ASDs), researchers have demonstrated that individuals with ASDs show more and greater impairments than age-matched peers with nonspecific developmental delays (Kenworthy et al., 2010; Rodrigue, Morgan, & Geffken, 1991). Additional research (Kanne et al., 2011) has demonstrated that children with ASDs do not acquire adaptive skills at a rate consistent with their age or cognitive development. In measuring adaptive behavior across time, it appears that regardless of the cognitive level, adaptive functioning either becomes stable or decreases with age (Gabriels, Ivers, Hill, Agnew, & McNeil, 2007; Williams et al., 2006). Individuals with ASDs also have less of an increase in adaptive skills across time (Gabriels et al., 2007).

There appears to be a general consensus in the literature that adaptive behavior impairments are prevalent in ASDs. In fact, research indicates that individuals with ASDs tend to have greater impairments in adaptive behavior compared with other skill areas, including basic communication (Anderson, Oti, Lord, & Welch, 2009; Liss et al., 2001). Although studies vary in the degree of impairment found across adaptive domains, a consistent if unsurprising finding is that the most significant impairments are in the area of social skills (Bolte & Poustka, 2002; Kenworthy et al., 2010; Liss et al., 2001; Rodrigue et al., 1991). This relatively greater impairment in social skills exists even in the framework of overall impaired adaptive functioning (Kenworthy et al., 2010). Across the spectrum, studies vary in the degree of impairment found in the areas of communication and daily living within an overall reduction in adaptive responding. Because adaptive behavior consists of the skills necessary to independently function across environments, it has been linked to positive outcomes for adults with ASDs (Paul et al., 2004). A growing understanding of the central importance of adaptive behavior has recently led both researchers and clinicians to consider adaptive behavior in assessing the ability of individuals to live on their own versus needing parent
or professional supervision and care (Liss et al., 2001; Matson, River, Fosstad, Dempsey, & Boisjoli, 2009).

Studies vary drastically in their estimates of the relationship between adaptive behavior and cognition (IQ), ranging from a near perfect relationship to no relationship (Reschly, Myers, & Hartel, 2002). Collective sample research suggests that individuals with ASDs, on average, show higher general cognitive functioning than overall adaptive behavior level. In subdividing individuals as being either higher functioning (i.e., IQ > 70) or lower functioning (i.e., IQ < 70), the adaptive behavior level and general cognitive functioning differ in a much greater magnitude for those who are higher functioning than for those who are lower functioning (Bolte & Poustka, 2002). In other words, for individuals with a comorbid intellectual disability, adaptive responding is similarly affected. For individuals without such comorbidity, there is greater variability in adaptive responding despite greater intellectual competencies.

The levels of cognitive and adaptive functioning are considered important predictors of outcomes for individuals with ASDs (Bolte & Poustka, 2002). The adaptive behavior level has a strong influence over lifestyle outcomes, and those with more severe disabilities lead more restricted lives (Felce, Perry, Lowe, & Jones, 2011). The daily-living skills domain of adaptive behavior is most closely related to better outcomes for individuals with autism. The implications of this include devising intervention programs centered on adaptive behavior to promote independence in adulthood (Farley et al., 2009).

**ADAPTIVE BEHAVIOR INTERVENTION WITH OLDER INDIVIDUALS**

Not surprisingly, the majority of the studies focusing on teaching adaptive skills typically involve individuals with ASDs who are low functioning (Tsatsanis, Saulnier, Sparrow, & Cicchetti, 2011) due to the intensity of need and the ease with which certain individual skills can be targeted and taught. Skills such as toileting, dressing, feeding, and self-care, to name a few, have been addressed in the literature (Matson, Hattier, & Belva, 2012). However, these studies represent a necessary but overly narrow view of adaptive behavior as a collection of individual skills rather than an integrated repertoire of skills applicable across environments.

There is a move to investigate adaptive behavior in a more context-based and, therefore, more applicable way. For example, Hoch, Taylor, and Rodriguez (2009) taught three adolescents with autism to address being lost by using a cell phone and seeking assistance from a nearby adult. Ghuman, Cataldo, Beck, and Slifer (2004) successfully tested a protocol to instruct individuals with ASDs to independently swallow pills of different sizes, thereby promoting compliance and reducing distress. Pitetti, Rendoff, Grover, and Beets (2007) addressed the issue of weight management by developing a systematic and preferred treadmill walking program for adolescents with severe autism. Green, Reid, Rollyson, and Passante (2005) investigated ways to reduce resistance and indexes of unhappiness in three women with profound multiple disabilities. Although this later study did not focus on autism, it demonstrates that happiness, which is a desirable outcome of adaptive behavior competencies, is a definable, measurable, viable, and important goal.

Significant gaps, however, remain in understanding adaptive behavior interventions for older individuals. As noted by Letso (see Chapter 1), there is little to no research in the critical areas of shaving, menstrual care, street crossing, health care, sexuality, safety, and accessing transportation. In addition, there continues to be a significant need for research in such diverse areas as safe and independent travel training, employment, personal hygiene, public restroom use, college life, aging, leisure, emotional regulation, personal advocacy, and clothes shopping.

**COMPONENTS OF EFFECTIVE INTERVENTION**

Although research on specific target skills or skill competencies may be limited, a variety of evidence-based interventions may be used to provide adaptive behavior interventions. Among these are using preference assessments to determine effective reinforcement, prompting, task analysis, shaping, chaining, self-monitoring, schedule training, stimulus control procedures, fading, and systematic desensitization. In addition, if the goal of such interventions is the generalized use of a skill in the environment in which its use is intended, numerous instructional parameters must be taken into account, including context inclusive of production, social, and navigation skills; intensity; efficiency; and value.

**Adaptive Behavior and Context**

In the provision of adaptive behavior interventions, a primary consideration is that instruction must be provided where the behavior is most likely to be displayed. There is ample documentation that individuals with ASDs are not proficient at generalizing skills to new environments or maintaining them across time (Simpson & Otten, 2005). Because the classroom cannot permanently be the primary environment for effective adaptive behavior instruction, instruction must be targeted toward the skills necessary for succeeding in the environments in which the individuals will spend the rest of their lives (e.g., neighborhoods, communities of faith, home, jobs). For example, teaching purchasing or money concepts in the isolated context
of a classroom may have little, if any, influence on an individual's ability to use money in exchange for desired goods at the supermarket. Being able to differentiate count by value, although a potentially usable skill, is a significantly different skill from using money to purchase a candy bar. As individuals begin to age out of educational entitlements, specific attention must be given to the context of instruction, whether it is the classroom, the home, or the community. Figure 9.1 illustrates this concept.

Adaptive behavior in context is, unfortunately, a highly complex set of interrelated competencies across at least three domains: production (motor) skills, navigation skills, and social skills. Production skills are those motor skills that actually constitute task completion and are separate from context. Hammering a nail would be a production skill because it is basically the same skill independent of context. Production skills tend to be the most clearly defined skills and usually are the easiest component skills to teach. Navigation skills are those skills that enable an individual to independently respond to environmental cues to initiate skills; shift between tasks; and access community resources, activities, and supports. In the example of hammering a nail, navigation skills might include recognizing the need to hammer, retrieving the correct nail from the bin, hammering in the correct location, and so forth. Navigation skills tend to vary in instructional difficulty from very easy to very difficult as a function of context. Lastly, social skills are those skills that enable a person to navigate the interpersonal environment in a way that is socially acceptable and allows a person to access positive reinforcement while avoiding undesirable consequences. In this example, social skills might include asking for help or more materials, making sure the environment is safe, telling someone the nail has been successfully hammered, or complaining coworkers on their nailing prowess. Social skills, almost by definition, tend to be the hardest component skills to teach. Another example of this complexity can be found in Table 9.1.

### Adaptive Behavior and Intensity

As students age out of elementary school, there is a tendency for direct instruction to diminish somewhat in the rate of presentation (i.e., intensity). For skill acquisition, individuals with ASDs often require numerous, sometimes repetitive, opportunities to respond (or discrete trials). Unfortunately, the onset of young adolescence in the classroom often brings with it a lessening of instructional intensity that may then be associated with a decreased rate of skill acquisition. As an example, consider a 5-year-old child with ASD who requires 1,000 opportunities to respond (i.e., 50 sets of 20 trials each) to be able to expressively and receptively identify all 64 colors in the crayon box and generalize this new acquired skill across all teachers and all environments. (Note: This is not an extreme number of opportunities because, in fact, 1,000 trials can easily be presented over the course of 1 week if so required.)

Now take the same child at age 15 with the goal of independently buying lunch at a fast-food restaurant. If the child is provided only one trial (i.e., opportunity to respond) per week, which is typical of most school programs, more than 15 years would be needed to provide this person with the 1,000 trials previously required to learn a relatively simple discrimination skill (color identification). On the other hand, if the instructional intensity was increased so that the person was provided with one opportunity to respond per day, it is reasonable to assume that such desirable skills could be mastered in significantly less time, primarily as a function of the increase

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**Table 9.1.** Production, social, and navigation skills when using an elevator

<table>
<thead>
<tr>
<th>Production</th>
<th>Social</th>
<th>Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press correct button</td>
<td>Wait (correct distance)</td>
<td>Locate elevator</td>
</tr>
<tr>
<td></td>
<td>When door opens, wait for others to leave</td>
<td>Enter elevator</td>
</tr>
<tr>
<td>Press correct button or</td>
<td>Ask for button to be pressed</td>
<td>Turn around</td>
</tr>
<tr>
<td>Monitor floor(s)</td>
<td></td>
<td>Adopt appropriate distance from others</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit elevator at correct floor Proceed to destination</td>
</tr>
</tbody>
</table>
in instructional intensity. The effective acquisition of adaptive skills may be less a function of individual learning ability than a function of insufficient instructional intensity provided in the natural context.

**Adaptive Behavior and Efficiency**

Directly related to both skill generalization and maintenance is the response effort, which can be understood as the response efficiency. Response efficiency is the ease (i.e., the amount of effort) with which a task—desirable or not—can be effectively completed. Some simple examples of high-response efficiency versus low-response efficiency in accomplishing a task are presented in Table 9.2.

On a more complex level, response efficiency can be understood as the effort required by an individual to acquire a skill that he or she might not find inherently important, although practitioners consider it important. An example would be cell phone use. There are many ways and reasons to use a cell phone, so consider the following four teaching options:

1. Teaching to initiate calling, dial numbers from memory, or look up numbers in the relevant directory. For a very able individual, this might be a very efficient strategy for normal cell phone use.
2. Teaching to dial by finding a familiar face or icon in the phone’s contact directory. This is a simpler strategy, but it may restrict the ability to call new people. For some, however, this might be the most efficient.
3. Teaching to dial by pressing a single face or icon, out of a small number of such faces or icons, on a phone’s home screen. This greatly simplified strategy allows phone contact with a few designated individuals only. To some, this may also be the most efficient option.
4. Teaching to simply keep the phone with the person to allow for answering the phone and, as appropriate, monitoring with a global positioning system. This involves fewer options but may be the most efficient option if cell phone use is primarily a community safety skill.

In all four cases, the individual is using a cell phone in a manner in which it is intended. Some individuals with ASDs may see little functional utility in acquiring the skill outlined in Steps 3 and 4, but the high response efficiency associated with each may make them more easily acquired.

**Adaptive Behavior and Value**

Value simply refers to the extent to which the individual in question finds a skill to be of personal value. For example, absent an awareness of the social prohibition against body odor, instruction in the use of deodorant may have little value to an individual. However, to the same individual, instruction on how to prepare a tray of brownies may have significant value. Skills that are of great value (i.e., highly preferred skills or skills that have significant functional utility) to an individual tend to be skills that, once acquired, are maintained over time with little additional intervention. Conversely, skills that are of little value generally require significant instructional intensity during both the skill acquisition and maintenance phases. Any effective and appropriate program of intervention must combine both high-value and low-value targets in such a way as to support engagement, competence, maintenance, enjoyment, and personal safety.

**Discussion and Recommendations**

Adaptive behavior is a complex and generally interrelated set of skills that allows an individual to successfully live, work, and recreate in his or her community. Adaptive behavior, as an instructional domain, is more complex than many academic subjects taught and requires direct, intense, and systematic instruction if the skills are to be acquired in a timely manner, generalized across environments, and maintained across time. Adaptive behavior is so central to adult life that it would not be an understatement to say that good adaptive behavior skills will get a person through times of no academic skills better than good academic skills will get a person through times of no adaptive behavior. Unfortunately, beyond instruction in a few basic functional skills, adaptive behavior has received little attention in the literature. These skills, with a few notable exceptions, tend to be taught in isolation with little (if any) attention to the complexity of adaptive behavior repertoires in the natural environment. Greater attention to adaptive
behavior is important on more than an individual level. More than 85% of adults with autism still live with their siblings, parents, or another relative, and more than 88,000 adults are already on waiting lists for residential housing (Donvan & Zucker, 2010). Assuming that the majority of these individuals lack a functional set of adaptive skills, the burden on parents, relatives, and other caregivers is greater than it might otherwise be.

As the field continues to demonstrate progress toward the goal of providing individuals with ASDs the skills required to live a competent and socially valued adult life, the following recommendations are offered:

- There must be general agreement that an "appropriate" education consists of more than just academic competences or functional skills. An appropriate education is defined as one that, through evidence-based interventions, provides the individual with the greatest potential for success outside the classroom.

- There must be broader recognition as to the complexity of adaptive behavior as an instructional domain for individuals with ASDs. Adaptive behavior as an instructional domain is as complex as, for example, inferential calculus, but it has far greater applicability. As such, adaptive behavior instruction does not represent a lessening of curricular difficulty and complexity when compared with academic instruction.

- Community-based instruction in adaptive skills must be provided with sufficient intensity (i.e., opportunities to respond) to promote skills acquisition in a reasonable amount of time. Community-based instruction must be differentiated from field trips that, in practice, are not considered as significant opportunities for instruction.

- Research must address best practices in developing adaptive behavior skills across the life span. Instructional parameters such as context, intensity, efficiency, and value must be systematically investigated.

REFERENCES


Peer Acceptance, Social Engagement, and Friendship

*Critical Social Goals for Children with Autism Spectrum Disorder*

Connie Kasari, Jill Locke, Eric Ishijima, and Mark Kretzmann

For the majority of children with an autism spectrum disorder (ASD) friendships are notably absent. Yet having a friend is often their most desired goal. Several studies have highlighted the difficulty of frienship development for children with ASDs. In a follow-up study of children with autism as adults, more than one half of these adults reported no friends or even acquaintances (Howlin, Goode, Hutton, & Rutter, 2004). When parents were asked about their children's friendships, they often report desired friendships rather than actual ones (Bauminger & Kasari, 2000), at one half of the parents reported no peer relations at all for adolescents at adults with autism (Ormond, Krauss, & Seltzer, 2004). When children report having a best friend, more than 80% of these friendships in elementary school are not reciprocated (Chamberlain, Kasari, & Rotheram-Fuller, 2007). Finally, school inclusion with typically developing peers has sometimes been associated with more friendships (Bauminger et al., 2008) making little difference in increasing friendships (Ormond et al., 2004).

Although this situation appears quite discouraging, it should be noted that nearly one half of children with autism do have friends according to previous reports. In longitudinal studies of children with ASDs, there is a typically a small number of individuals with good outcomes. For example, Szatmari, Bryson, Boyle, Streiner, and Duku (2003) examined the outcomes of 20 individuals with ASDs. Several of these adults were living independently and were successfully employed. More promising, 4 individuals had close relationships, with 1 married and 3 who dated regularly. Similar studies such as Cederlund, Hagberg, Billstredt, Gillberg, and Gillberg (2008) found that about one fourth of individuals with Asperger syndrome had a close or long relationship, with a good social outcome. Individuals with classic autism did much worse in terms of optimal outcome, with only 2 out of 70 reporting any friendship relationships. From these data, individuals with Asperg