# Positive behavior support: Supporting adults with autism spectrum disorders in the workplace

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**Abstract**. Individuals with autism spectrum disorders (ASD) can present challenging behavior at work. In fact, it is likely that the presence of challenging behavior can act as a major barrier for individuals with ASD achieving competitive employment. Community-based work environments can present challenges in the implementation of behavior intervention plans. Positive behavior support (PBS) is a behavior intervention model that presents opportunities to implement socially valid behavior interventions in supported and competitive workplaces. This article describes the PBS model and provides a case example for an individual with ASD at work. Finally this article presents recommendations for future research in supporting individuals with ASD at work.

Keywords: Autism, autism spectrum disorder, positive behavior support

## 1. Introduction

'DJ' is a 25 year old man with autism. He has been working at a small coffee and sandwich shop for about 6 months. His job, like all of the jobs at this small business, is carved from the many tasks that need to be accomplished in a work day. His tasks include food preparation, cleaning the food prep area, cleaning the dining area, taking out the garbage, and stocking the drink case. He has been quite successful in many aspects of the job. He has learned to chop and slice a number of vegetables based on their use. He knows the difference between the sizes of 'diced', 'sliced', and 'chopped for salad' foods. He is independent on all vegetable and meat preparation. He requires prompting and correction when taking out the garbage. This is because he wants to take out the garbage whenever he checks the receptacles. In this small business, taking out half empty garbage bags is too expensive. Despite this one need for continued instruction, he is a success at the job. That is except for his behavior. His problem behavior is a major barrier to his being fully independent at work. He makes

noises that are disturbing to the clientele. He does not generally use words to communicate. Instead he uses his behavior to let others know when he is upset. At these times, he gets louder and pushes others out of his way. This is scary to customers and staff alike. These challenges occur infrequently, yet his job coach, Sam, is worried about how to begin to fade from the site so that DJ will be independent. At the same time, DJ is at risk of losing his job if his infrequent behavior challenges increase in frequency or intensity.

## 2. Individuals with ASD at work: Characteristics and supports

DJ's story is a typical one for individuals with ASD [5, 9, 15, 17, 26, 43, 45, 50]. In fact, despite good job training, attention to detail, a high degree of accuracy, and a dedication to work, people with ASD are frequently underemployed and serially unemployed [10, 21, 27, 43, 44]. Like DJ, many individuals with ASD present a divergent employment profile. That is, they are frequently rated as excellent employees when con-

sidering the skill with which they complete their job and difficult employees when considering their 'people' skills and behavior challenges [16, 25, 40, 44]. This finding is directly related to the characteristics of individuals with ASD. The symptoms most associated with ASD include impairments in verbal and non-verbal communication, deficits in social interaction, insistence on maintaining routine, stereotyped motor movements and vocalizations, and unusual responses to sensory stimuli [37, 40, 41].

This variable employment profile may have lead to fewer individuals with ASD achieving independent employment in adulthood [5, 9, 17]. Lawer and Brusilovskiy et al. found that individuals with autism spectrum disorders (ASD) were more likely to be denied vocational rehabilitation services due to their disability being judged too severe [31]. Additionally, they found that individuals with ASD received a more expensive set of vocational rehabilitation services than those with other disabilities. Despite these two findings, Lawer et al. found that individuals with ASD achieved competitive employment at the same rate as individuals with intellectual disability and specific learning disabilities [31]. Schaller and Yang found that a higher percentage of individuals with autism received supported employment than individuals with other disabilities including severe disabilities, intellectual disabilities, traumatic brain injury, and mental illness [42]. Thus, due to their unique characteristics, individuals with ASD frequently require a higher intensity of support at work. The most likely explanation for the increased intensity of services related to work is presence of problem behavior [10, 21, 35]. This does not; however, seem to deter individuals with ASD from achieving competitive employment when the intensity of supports needed are provided [10, 25, 33, 35, 49].

These findings indicate that individuals, like DJ, would benefit from functional behavior assessments and implementation of positive behavior support plans, yet implementing such supports at work presents unique challenges [12]. To date, few articles have described specific aspects of behavior support and social skill instruction provided to persons with ASD at work [cf. 22, 23, 45, 46, 49]. Many of those that do describe work supports predate the emergence of positive behavior support (PBS) as an evidence-based practice for persons with ASD [7, 34]. This article presents a review of the evidence based practices related to PBS that could assist individuals like DJ to become independent at work. Further, this article will discuss implementation

considerations for service personnel who are supporting adults with ASD at work using PBS.

## 3. Positive behavior support in the workplace: Challenges and opportunities

Providing PBS at work presents challenges related to many factors. Specifically, the fact that PBS must be implemented in the visible public context of work may make it more difficult to implement. There is typically a smaller number of paid support staff to implement the intervention [20]. There is also an issue related to access to behavioral consultation services. While school age students have access to highly qualified teachers and other professional staff who usually have behavioral expertise, adults with ASD typically have limited access to staff with behavioral expertise at work. Finally, PBS interventions would take place in a business where staff and customers interact for the purpose of exchanging goods and services and not for the purpose of implementing interventions for people who present challenges. Thus, businesses typically have a lower tolerance for the time and resources it may take to implement PBS interventions [35].

Nevertheless, PBS is a set of assessment procedures and interventions that are uniquely designed to 'fit' in such community-based contexts [1]. PSB is a scientific approach to understanding problem behavior through the multiple lenses of person-centeredness, applied behavior analysis, biomedical intervention, and systems change [12]. The fundamental components in the application of PBS include functional behavior assessment, multicomponent intervention, utilization of multiple perspectives and methodological practices, lifespan perspective, improved quality of life, collaboration between stakeholders, and an emphasis on prevention of the problem behavior [6]. Many of these characteristics are also espoused by advocates for competitive employment for individuals with severe disabilities [21]. Thus, while the provision of PSB in a workplace presents some challenges, the opportunities to increase the success of individuals like DJ at work out weigh those challenges.

### 3.1. Implementation of functional behavior assessment at work

The process to complete a functional behavior assessment (FBA) is well documented as best practice assessment for individuals with ASD [7, 12, 34]. The

three critical steps to completing a functional behavior assessment are: 1) indirect assessment, 2) direct assessment/observation, and 3) hypothesis development [2]. The first and the third step involve team meetings and analysis of data. Both steps can occur with the team at a location outside of the workplace. This would decrease imposing upon the workplace and the possibility that the person would experience embarrassment. The second step, however, involves direct observation in the environment where the behavior occurs.

While these three steps can be implemented as designed [cf. 36], it is important for staff to complete direct assessment and observation discreetly. Staff who are observing an individual with ASD will appear conspicuous if the observers do not take care to blend into the workplace.

Additionally, professional staff who are guiding the process should develop easy-to-implement methods of collecting direct observation data from job coaches who support the person. Carr et al., described a simple 'index card' method for data collection that accomplishes this goal [8]. Other such methods include antecedent-behavior-consequence charts and scatter plots [2, 18, 36].

In DJ's case, Sam consulted with a Positive Behavior Support Facilitator to assist him in completing the functional behavior assessment [47]. They first met with DJ, his mother, DJ's rehabilitation counselor and Sam's supervisor from his employment service organization in the rehabilitation counselor's office to begin the first step of the FBA. During this step, the PBS facilitator interviewed the team to define the behavior, and identified potential antecedents to the problem behavior. This was followed by an observation at the coffee shop where the PBS facilitator ordered a coffee, and observed DJ from a table in the corner of the shop. After observation and data collection, the team met to analyze the data and proposed the hypothesis that DJ's noises and pushing others was an attempt to avoid correction. They observed that DJ became most noisy and pushed others away when he made a mistake and required verbal correction and redirection.

### 3.2. Positive behavior support plans

Once the team identifies the function of the problem behavior, the team should collaborate to develop the PBS plan. There is no single set of specific strategies that define PBS plans. Rather, there are socially valid criteria that each PBS plan should meet. Each PSB plan should result in an increased quality of life for the person. They should also result in increased independence and self determination. Plans should be developed to match the context in which they will be implemented. Finally, plans should be developed in collaboration with the direct staff who will implement them to ensure increased 'buy-in' and fidelity of implementation [1, 12, 24]. These criteria ensure that the values of self-determination, and person-centeredness act as a balance to the application of applied behavior analysis in community based settings. These criteria are particularly important to and congruent with the goals of supported and competitive employment for individuals with ASD.

In order to develop a multicomponent intervention plan, the PBS plan should include strategies in at least three intervention categories. They are: 1) antecedent strategies and ecological modifications designed to *prevent* the occurrence of problem behavior, 2) *teaching* replacement behaviors and new skills to render the problem behavior unnecessary, and 3) consequential strategies to *reinforce* the new skills and extinguish the problem behavior [2, 3, 12, 32]. These three, prevent, teach, and reinforce, are the essential components of a PBS plan [13].

### 3.3. Positive behavior support strategies for the workplace

Like the caution provided for completing an FBA, the same caution regarding choosing interventions that are not obvious or disruptive to the work setting applies. Fortunately, many of the recommended workplace support strategies meet this standard. The next sections will describe each of the evidence-based practices interventions designed to prevent problem behaviors, teach new behaviors, and respond differently to problem behaviors when they occur. These sections will also describe how to implement these interventions in work settings.

*Preventing problem behaviors*: The purpose of an antecedent strategy is to prevent a problem behavior. In the area of workplace supports, this is frequently among the most adaptable strategies. That is, in the workplace, it is often easiest to redesign work tasks to avoid the antecedents to problem behavior. This is also an area of intervention where there are some sound, evidence-based strategies.

The first and most logical antecedent strategy for the workplace is to assure a good job match. The factors that are most critical for an adult with ASD include the tasks of the job, sensory characteristics of the job, the 'social climate', and the flexibility within the workplace

itself [11, 30, 39]. DJ's job coach assured a good match by completing a pre-placement assessment of DJ's tasks preferences. He found out that DJ was skilled at preparing food and that he was able to chop and cut foods with a knife. The job coach also assured that DJ worked in an environment where they could post picture task lists and schedules to assist DJ in completing tasks. He required an environment where the noise was not overwhelming. DJ required an environment where his boss and co-workers would be willing to learn new ways to communicate with DJ. For example, since DJ mainly uses pictures for his communication system, his co-workers would have to learn how to use pictures to communicate with DJ. Finally, DJ's supervisor had to be flexible regarding his daily assignments. At this small coffee shop, it was traditional for employees to share tasks and rotate positions in the dishwashing line. Because of his difficulty with changes in routine, however, DJ's supervisor allowed DJ to complete the same tasks in the same order every day with very little variation [19]. All of these characteristics were satisfied at his current job placement.

Another evidence-based antecedent strategy that is effective in reducing problem behavior is to embed choice into daily tasks and routines [12, 48]. This simple, yet powerful technique can decrease the frequency and intensity of challenging behavior. For DJ, his job coach designed a picture choice menu to follow when checking the garbage. The menu included a picture of the garbage can when it was not full and provided choices of preferred tasks that DJ could do instead of taking out the garbage. The choices included refilling the drink case, wiping down the table, or taking a break. DJ was able to leave the garbage until it was full as a result of this antecedent strategy. Table 1 presents a list

Table 1
Antecedent strategies to prevent problem behavior in the  workplace for Persons with ASD

1. Matching the job to the person's preferred tasks
2. Designing work station to increase task completion
   a. Shows where to get needed supplies
   b. Shows where to put completed work
   c. Minimizes visual and auditory distractions
3. Providing written or picture schedules of tasks
4. Assigning tasks that are routine, but complex
5. Giving picture task lists and menus that allow the person to:
   a. Make choices
   b. Complete infrequently used routines
   c. Ask for help, ask for a break, ask for materials
   d. Move between tasks once one task is complete
   e. Follow procedures in emergencies
6. Communicating information concretely, and following-up with written or picture feedback

of the antecedent strategies that are documented to be most helpful for individuals with ASD.

Many of these strategies can be implemented in work settings with out disruption to environment. Additionally, these antecedent strategies are effective in decreasing the overall frequency of challenging behavior, but are not enough to result in an overall reduction in problem behavior by themselves. An essential aspect of PBS is to teach the individuals an alternate way to respond to stressful circumstances. The next section will review the evidence-based strategies related to teaching new skills.

*Teaching new behaviors*: Perhaps some of the most convincing research in the area of positive behavior support is in the area of replacement behavior strategies for problem behavior [7]. In this case, the goal is to teach two distinct types of behaviors. The first new behavior is a direct replacement behavior that will functionally replace the problem behavior. That is, the new behavior will result in the same function as the problem behavior [36]. The second behavior is designed to increase the person's tolerance of difficult situations [24]. The first behavior must serve the same function as the problem behavior. In DJ's case, the replacement behavior must result in him avoiding correction. Thus, the first behavior that the team taught DJ was to ask for a break when he was frustrated. DJ's job coach made a picture card with a picture of the employee break lounge and the word 'break' on the bottom. He then taught DJ to present this card when ever he had to correct DJ. DJ then learned to go to the break lounge for a few minutes when ever he presented this card. This approach, also known as *Functional Communication Training (FCT)*, is a well documented evidence-based practice for individuals with ASD [8, 12, 14].

The replacement behavior, while resulting in a decrease in the frequency of the problem behavior frequently does not result in full independence. Therefore, teams supporting individuals at work using PBS must also identify and teach the desired behavior that will also result in greater independence [24]. In DJ's case, the desired behavior requires him to learn to accept correction from his supervisor and job coach. DJ's job coach developed a short video clip showing the specific steps that he had to follow to accept correction from his supervisor, co-workers, and job coach. The job coach brought his laptop to the job site and showed the video clip to DJ everyday [4]. The steps they taught DJ are in Table 2.

These two types of behaviors are important to increase the long term outcomes associated with behav-

Table 2
Steps for DJ to accept a correction

To accept a correction:
1. Stop what you are doing
2. Listen to the person
3. Nod your head
4. Do what the person told you to do
5. Pick an activity from your choice menu
   a. Get a drink from the soda fountain
   b. Pick one of your favorite tasks and do it
   c. Get your lunch (only if it is time for lunch)
   d. Take a break in the staff break area

ior change, yet they can be difficult to teach in a work environment. The process of teaching an employee with autism in the work place can be disruptive to the ongoing operations of the business. Therefore, it is important that teams explore teaching methods associated with success and that provide ample opportunities for practice outside the worksite. Lattimore et al. demonstrated that, due to the lack of opportunity for enough practice, individuals with ASD acquired job skills at mastery in a shorter period of time when they were provided the opportunity to simulate job skills outside of the workplace [29]. Another simulation method, demonstrated above for DJ, is Video Modeling and Video Self-Modeling [VSM; 2]. Using this method, it is possible for the team to teach in and out of the work setting, while also offering enough skill practice to result in success.

*Reinforce: Changing the consequences for the problem behavior*: This final component of a multicomponent PSB plan is among the easiest to implement in a work setting. The goal of this component is to provide a rich schedule of reinforcement for the new behavior while placing the problem behavior on extinction. The reason this is easy to implement in the work setting is because, rather than purchasing and delivering contrived reinforcement, PBS relies on the reinforcement already present in the environment. That is, in DJ's case, because he sought escape from correction, the replacement behavior and the desired behavior both eventually result in escape from correction. In other words, PBS seeks to use the same reinforcement that is currently maintaining the problem behavior [2, 13, 24, 38].

There is one caveat though; once the reinforcement is provided for the replacement behavior and the new behavior, the team cannot provide that same reinforcement for the problem behavior. Thus this part of the plan must also include instructions on how to respond to the problem behavior for the job coach, co-workers, and workplace supervisor. In DJ's case, again, the job coach remained alert for any increase in loud noises.

When those occurred, the job coach would point to the 'break' card picture that he made for DJ.

*Data collection: Verifying the outcome, modifying the plan*: PBS is a data based process. Thus the way that the team must make sure that the plan is working is to verify the success of the plan through data [28]. In order to verify the success of the plan, team members will have to develop a simple, yet accurate measure of the behavior that they will collect across time. By collecting this data, the team will be able to compare the frequency of the problem behavior before and after the implementation of the PBS interventions. DJ's PBS Facilitator developed a simple tally for the job coach to complete on a daily basis while he was on the site. This tally counted the number of times that DJ either made loud noises or pushed past a co-worker, supervisor, or the job coach. Table 3 shows an example of the tally sheet, while Fig. 1 shows a graph of the data collected.

This graph demonstrates that, prior to implementation of the PBS plan; DJ had approximately 25 to 30 episodes of loud noises and 1 episode of pushing per month. Once the PBS plan was implemented, the frequency of pushing decreased to 0 incidents of pushing and between 10 and 4 incidents of loud noises across 5 months. Most importantly, DJ's supervisor at work reported that she no longer worried about DJ's behav-

Table 3
Sample data collection tally for DJ's problem behavior

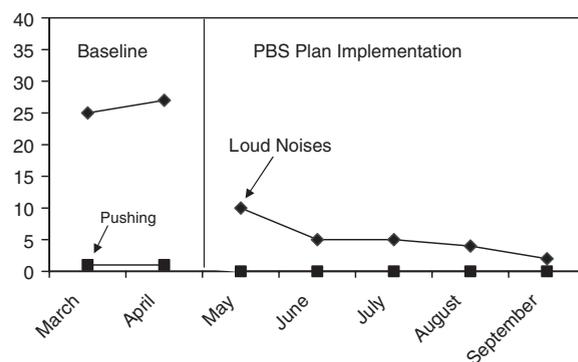| Date | Place a tally mark for every time DJ makes loud noises | Place a tally mark for every time DJ pushes another person |
|------|---------------------------------------------------------|-------------------------------------------------------------|
| 3/27/09 | /// | 1 |
| 4/4/09 | / | 0 |
| 4/11/09 | //// | 1 |



Fig. 1. Graph showing change in DJ's behavior before and after PBS plan implementation.

ior. The true success of the plan was that DJ's job was more secure after than prior to the implementation of PBS.

## 4. Directions for future research

This paper has reviewed the research on employment characteristics and supports for persons with ASD, described the PBS approach, and presented a case to demonstrate the application of PBS at work. Despite the finding that PBS is an evidence-based practice for individuals with ASD, there is little research confirming that finding in workplace settings [7, 34]. Given the challenges that individuals with ASD confront at work, researching the implementation of PBS at work is a critical research priority. There are many questions that arise in this context. First, I proposed that assessing behavior and implementing positive behavior supports in the workplace may present challenges that could interfere with the daily operation of the business. Thus the first question is; what assessments and what types of work supports are most likely to increase success in the work place without disruption? Second, what array of supports will lead to independence, or better said, interdependence at work? It is unreasonable to expect employers to implement highly stylized behavioral interventions, thus the concept of contextual fit is an important one [1]. What are the types of assessments, interventions, and data collection procedures that are most acceptable to employers? Individuals with ASD have demonstrated an increased need for intensity across their lifespan, from early childhood through adulthood. Yet, the availability of supports diminishes greatly in adulthood. Therefore, from a policy perspective, what services are necessary to prepare and support individuals with ASD at work? Finally, what work support models result in the highest level of successful placement for individuals with ASD?

Most adults without disabilities define themselves by their work. Work is, arguably one of the most important endeavors in which humans engage. Yet, research regarding individuals with ASD has largely focused on supports for toddlers and young children between the ages of three to six [21]. Clearly, it is a priority to identify the skills and supports necessary to increase individuals with ASD's participation in employment. As demonstrated through out the school life of children and youth with ASD, PBS is a highly successful intervention that results in significant reductions in problem behavior [7]. There is every reason to believe that PBS

will play an important role in the adult work lives of individuals with ASD.

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