Using Structured TEACCHing to support people with autism into employment

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Editorial comment

Sofia Mavropoulou is a senior lecturer in Special and Inclusive Education at the University of New England in Australia. In this paper, written with Steven Love, pediatric psychologist, and S Michael Chapman, director of supported employment, division TEACCH, University of North Carolina, she describes how the Structured Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH) model can be used to support people with autism in employment.

The first part of this paper reviews research on the instructional methods for achieving independence for individuals on the autism spectrum in work settings. The second part presents step by step guidelines for implementing Structured TEACCHing to help adults on the autism spectrum into employment. The third part outlines the supported employment models developed by the TEACCH programme to meet the needs of different adults on the autism spectrum. This paper will be of interest to employers, as well as those commissioning autism employment services.

Introduction

Social and vocational independence have been identified as persistent challenges and important curriculum goals for adolescents on the autism spectrum. Adults on the autism spectrum have identified the following as major challenges in their workplaces: the ability to maintain social relationships, to resolve conflicts (Sperry and Mesibov, 2005) and to tolerate sensory overload (Aylott et al, 2008). In contrast, following consistent daily routines, setting clear expectations for productivity, number of tasks, break times etc and having concrete rules have been identified as important factors for the successful job performance of people on the autism spectrum (Hurlbutt and Chalmers, 2004; Muller et al, 2003).

The role of appropriate on-site support for finding and maintaining suitable and competitive employment for people on the autism spectrum has been clearly demonstrated both in the UK and the US (Lawer et al, 2009; Mawhood and Howlin, 1999). In general, visual supports and being able to choose the sequence of tasks have been found to be most beneficial for the vocational engagement of adults on the autism spectrum (Duran, 2001; Reichle et al, 2005; Watanabe and Sturmey, 2003).

The TEACCH Programme, also called ‘Structured TEACCHing’ is based on the principle that visual supports are effective for making any information
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and school setting) to provide a well-rounded appraisal of skills and abilities. The instrument addresses the following six function areas:

- vocational skills
- vocational behaviour
- independent functioning
- leisure skills
- functional communication
- interpersonal behaviour

Greater ‘informal’ assessment information can be achieved through implementation of the broader array of tools contained in the TTAP. The Cumulative Record of Skills, Community Skills Checklist, Community Site Assessment Worksheet, Daily Accomplishment Chart and Community Behaviours Checklist allow for individualised assessment and documentation of skills and permit an appraisal of the effectiveness of strategies that have been used with the adolescent or adult that can aid in more effective job placement.

Once the completed TTAP is analysed, performance on items can be used to guide decision making on the types of structure that the student will likely benefit from in the workplace. The Instructional Design Elements section of the TTAP profile form can be used to record aspects of the subject’s performance that will guide instructional goals on the types of schedules, cues, work systems, and visual structure (ie instructions, organisation and clarity) that can be targeted in the classroom. For example, if the student was able to match coloured note cards into separate trays or measure amounts of rice with different measuring cups or spoons, use of container organisation or picture instructions that aided in the completion of these assessment activities, respectively, would suggest the type of visual organisation or visual instructions that could be incorporated into the student’s instructional goals in school. Using several sources of information (eg consistent success with multiple items on the Direct Observation component of the TTAP, school based information, or information from parents) helps to drive the decision making easier to understand and predictable for people on the autism spectrum and recommends four elements of structure: physical structure, visual schedules, work systems and visually structured tasks (Mesibov and Shea, 2010).

In a single-subject research study, visual work systems helped to increase the rate of task completion by 16 per cent in an adult with autism and learning disabilities at his employment site (Hume and Odom, 2007). Furthermore, Van Bourgondien et al (2003) reported the positive outcomes of a residential and vocational programme based on the TEACCH model for six adults with autism and severe learning disabilities. Specifically, the increased use of visual structure, communication adaptations, socialisation programming and preventive behaviour management approaches (for example the use of clear rules and limits, consistent strategies, analysis of reasons for problem behaviours and written data on behaviour programmes) reduced behaviours of concern.

Although the use of individualised schedules in employment sites has been recommended as a proactive strategy and as part of a positive behaviour support plan for students on the autism spectrum (Mesibov et al, 2002), there is a gap in the literature on specific guidelines for its application in these settings. The following sections of this paper will present the assessment procedure and the steps for implementing the components of Structured TEACChing (ST) in work environments for people on the autism spectrum as well as elaborate on models of supported employment, based on the ST approach.

The assessment process of Structured TEACChing for vocational placements

Formal assessment: the TEACCH Transition Assessment Profile (TTAP)

The TEACCH Transition Assessment Profile (Mesibov et al, 2007), a revision of the former Adolescent and Adult Psychoeducational Profile (Mesibov et al, 1988) provides a systematic way to obtain information during the school years. The TTAP constitutes the major ‘formal’ instrument of assessment and incorporates information from three contexts (direct observation, home setting and school setting) to provide a well-rounded appraisal of skills and abilities. The instrument addresses the following six function areas:
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Implementing Structured TEACCHing in vocational placements

The informal assessment of various aspects of the ST approach (Mesibov et al, 2005) and the application of environmental modifications or supports consequent to this assessment are most relevant for providing a broadly-structured and well organised environment within which the employee on the autism spectrum can work and function.

Physical organisation

Placing furniture and work materials appropriately can help the worker understand discreet areas within a vocational placement, and can also reduce distractions that may affect independent functioning. By using shelving units, and positioning tables and seating arrangements so that the individual’s back is turned away from areas of high activity, or by designating specific locations for obtaining task materials and returning completed work, functional working spaces that support the routine of approaching a task are created. Workers on the autism spectrum who are anxious about other co-workers coming into their work area may be able to concentrate more fully on the task at hand if shelving units are placed between or behind them, separating their work space from others. Identifying appropriate locations for taking breaks from work clearly define for the individual ‘places for break time’ as compared with ‘places for learning new tasks’ or carrying out job responsibilities. Specifying where the employee may work independently, as opposed to working alongside a co-worker (eg a shared workspace) also helps in defining the social expectations that may underlie a given job (eg in the shared workspace, “My co-workers and I share or cooperate in using the identified materials or tools necessary to perform our job”).

Individualised schedules

Schedules should be individualised for each person on the autism spectrum around their level of cognitive understanding, whether at a more concrete level where objects are used to denote different activities (eg a pair of overalls to suggest time to work); digital photographs or iconic representations (eg picture of the exercise room to clean, or icon for feeding the horses); and/or

process as well, since generalisation of skills in multiple settings would suggest a strong instructional base to work from on the part of the instructional staff.

Informal assessment

Informal assessment of the student’s level of representational ability, as determined through a demonstrated understanding of different cues such as objects matched to pictures, pictures matched to pictures, pictures matched to icons, or icons and pictures matched to words, can be accomplished in the classroom setting during 1:1 teaching/evaluation sessions using The TEACCH Structured Teaching assessment: a guide to individualizing schedules and work systems (Faherty, 2010).

The TEACCH supported employment programme assessment process

Through the TEACCH supported employment programme’s job identification, job sampling and job assessment phases, the job coach or supervisor working with the individual on the autism spectrum incorporates formal and informal assessment procedures to address the person, job, and setting specific factors that provide valuable information for identifying the ST supports that may be implemented. Interviewing the individual on the autism spectrum regarding his/her expectations for a job, and his/her understanding of the job skills and vocational behaviours necessary for the job, as well as interviewing the employer on these areas, can round out this assessment. Finally, interviewing the worker’s former secondary teacher(s), if available, and especially if transition is occurring immediately after the conclusion of formal schooling, can offer helpful insight into how the student has responded to particular visual, social and communicative supports and strategies, his or her strengths and weaknesses, interests, and specific challenges that have been encountered in the school environment. Thus, an assessment process that bridges the gap between school and vocational placement can be crucial to avoiding pitfalls in the transition process and identifying ST strategies that are most effective with the individual with autism.
written information (e.g., a checklist of the day's events presented sequentially from top to bottom) or certain phrases or key words denoting activities:

- weed garden
- put up tools
- wash hands

It should be emphasised that one benefit of the schedule is that it may help the individual to transition more independently throughout their day by making the movement through the day a discreet event. This is because they use the schedule to gather this information themselves, rather than being simply verbally prompted in going to each new location or activity (MacDuff et al., 1993; Mesibov et al., 2005; Mesibov et al., 2002).

By manipulating the schedule in some manner—whether crossing off written entries; taking a pictorial or written schedule card from the schedule; carrying it to a location and posting it in an envelope; or attaching it to a matching picture with Velcro; or placing an object in a small basket with an identical object secured to the basket—the person on the autism spectrum is encouraged to engage directly with the schedule, increasing the meaning of transition between activities. A similarly-formatted schedule as used in the secondary school setting can then be incorporated into the job setting to cue the worker when particular activities should be focused on across the day. After arriving at the work location indicated on their schedule, the individual's work efforts may then be supported through the use of a work system.

**Work systems**

The work system is designed to answer ‘visually’ four important aspects of task or job approach: “What work is to be done?”, “How much work is to be done?”, “How is progress being made towards approaching the concept of “finished”?“ and “What happens next (after work is concluded)?”. These four questions allow the students or workers on the autism spectrum to organise their approach from start to finish in proceeding through a series of tasks (Schopler et al., 1995).

Different types of work systems may be assessed to determine which most effectively organises the individual. Work may be organised in a simple left to right fashion, where work to be completed is located to the individual's left, and once completed, is placed in a ‘finished’ location (e.g. in a box, on a table or shelf) off to the individual's right. Individuals on the autism spectrum who have good matching skills might use a ‘matching work system’ in which pictures, letters, numbers or symbols, are matched to a sample located on a workbox or folder. For example, all the materials necessary to package the components of Task #1 may be contained in a box with a yellow chip on it and all the materials necessary to package the component of Task #2 may be contained in large tray with a blue chip on it. The worker would receive a cardboard strip with a yellow and then a blue chip velcroed to it, followed by a picture of some headphones. The work system would show him that first he would need to do the yellow task, then the blue task, and finally take a break (“What happens next?”) by listening to his headphones.

A timer could be set for ten minutes in the break area to delineate how much time for break is allowed. At the completion of the break time, the worker would be cued back to refer to their schedule to see what the next activity in their day would be, facilitating the use of visual systems to support independent transition, as opposed to a solely verbal prompting method which may encourage worker prompt dependence.

For a worker at the written level, it is possible to assess how well written cards or written lists could be used to specify the sequence of activities to be undertaken and once completed, what the worker would do when that work is completed. Again, the TEACCH Structured Teaching Assessment (Faherty, 2010) can be useful in assessing the range of potential work systems that might be used with an employee on the autism spectrum.

**Visual structure for task organisation**

The addition of visual supports to augment teaching of educational and vocational skills is one of the 24 recognised evidence-based practices (EBP) with people on the autism spectrum identified by the National Professional Development Center on autism (Hatton...
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and Odom, 2008). By providing visual information in such activities, the meaningfulness and understanding of concepts can be enhanced. Capitalising on the visual strengths of many individuals on the autism spectrum is a key feature of the ST approach implemented by the TEACCH Programme. Provision of visual instructions in either iconic, pictorial or the written word can show the person on the autism spectrum ‘what to do’. Visual highlighting of materials (eg colour coding, changes in font size or character to point out relevant information, or labelling objects or locations) are helpful in drawing the attention of the individual on the autism spectrum toward specifics of a task or job. Finally, visual organisation of materials into containers, as well as arranging materials in left to right or top to bottom order, helps to develop focused work routines and attention to discreet parts or components of activities (Eckenrode et al, 2003; 2004).

In vocational work sites, examples of visual supports might be as varied as specifically marking or highlighting containers that need refilling with bulk herbs/nuts versus those to be left alone; colour coding the measuring devices used in making a horse food mixture that includes different grains; developing a pattern for incorporating particular colours of yarn into a weaving project with a loom; or arranging materials to be packaged into separate bins or trays to facilitate selection of a variety of pieces into a final sealed product. The key to the selection of such supports is dependant on a thorough assessment of how easily the individual on the autism spectrum is able to scan, discriminate, select and use materials independently. Because the use of visual instructions promotes the eventual independent completion of tasks in the absence of a job coach or supervisor (through work routines being linked to meaningful visual augmentative supports and directions); the initial individualised structuring and trial and error process of evaluating structural supports is as necessary a part of the educational process as any.

Both the acquisition of skills and their demonstration over time are important aspects of strengthening the generalisation of skills, which some people with autism can find difficult and can prevent employment. In addition, visual supports to address the vocational behaviours (eg choosing appropriate coping or de-escalatory strategies for handling frustration, asking for assistance, staying focused on work, avoiding physical wandering, occupying leisure time meaningfully, or communicating needs) so crucial to maintenance of employment must be addressed as well.

**TEACCH supported employment approach**

There is a need to ensure that there are varied support mechanisms in place to help individuals on the autism spectrum to reach the greatest level of independence within the vocational setting (Mesibov et al, 2005). As such, TEACCH uses five different support models: the standard placement model, the group shared support model, the mobile crew model, the one to one model and the entrepreneurial model.

The Supported Employment Process consists of several distinct stages: Vocational Assessment, Job Development, Intensive Training, and Long Term Supports. In each of the stages, a job coach trained in autism and Structured TEACCHing works with the individual. During the Vocational Assessment phase, the job coach spends 20-40 hours to determine the vocational skills, characteristics of autism and unique learning style of the individual that will most impact future employment. In addition, the job coach is able to determine the required level of support for maintaining employment.

During the Job Development phase, the job coach works to find jobs matching the individual's strengths and skills, and employment sites that can be structured to meet the individual's needs. The person on the autism spectrum is involved in the process to the maximum extent of his/her ability. If even one of the areas considered is not a 'good fit' in the potential job setting, it is determined that the job must be declined. The average time it takes to find the best match is about 6 – 8 months (range: 1 – 24 months), depending on the individual's skills and the availability of matching jobs in the market.

Once the appropriate setting is located, the job coach spends a considerable amount of time (range: 20 – 200 hours) teaching the individual all the various components of the job using ST, as well as working with the
individual and the employer to create support systems for maximising independence in the employment setting. This training is intense in the first few days or weeks, with the job coach fading out as the individual becomes more independent in completing work tasks. Once the individual is fully trained, they are transitioned into the appropriate support model below (see Table 1).

**Standard placement model**
In this model a job coach provides support (1 – 2 visits per week to one visit every 2 months) to individuals on the autism spectrum who have completed the majority of the training process and are working independently within a business in the community. During these visits, the job coach addresses any concerns that the employee on the autism spectrum and the employer have been unable to correct themselves and then develops the necessary visual supports that help the individual complete the activity. The biggest advantage of this model is that people on the autism spectrum are able to obtain employment in any setting that matches their strengths and interests and are not limited in having to work in settings with the support of a job coach who needs to be there more frequently, as in the other models.

**Group shared support model**
This model consists of two to five individuals on the autism spectrum working at one business place, with a job coach providing part time to full time on-site support. Typically, each individual works at different jobs within the company. The job coach splits time among the individuals on the autism spectrum providing support to each individual, as required throughout their working hours. This model benefits people on the autism spectrum who need more consistent support in order to meet the employers’ standards for quality and accuracy.

**Mobile crew model**
This model consists of two to three individuals on the autism spectrum moving from site to site within the community providing a service for pay (ie mobile crew models for house cleaning and landscaping). In this model, the job coach is typically there for the entire working day. The advantages of this model are very similar to the group shared support model. However, due to this model's unique nature, the job coach can develop schedules and work systems that are tailored to the needs of the worker across the span of the workday or the amount of time needed for breaks. In

**Table 1 TEACCH supported employment models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Ratio of support</th>
<th>Level of support</th>
<th>Support given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard placement model</td>
<td>One job coach for every 20 – 30 adults</td>
<td>From 1 – 2 visits a week to one visit every 2 months</td>
<td>Concerns not resolved by the employee and employer</td>
</tr>
<tr>
<td>Group shared support model</td>
<td>One job coach for every 2 – 6 adults at one site</td>
<td>Part time to full time on-site support</td>
<td>Job coach splits their time between each person on the spectrum, providing more consistent support</td>
</tr>
<tr>
<td>Mobile crew model</td>
<td>One job coach for every 1 – 3 adults at one site</td>
<td>Accompanies crew for the entire working day</td>
<td>Job coach can develop schedules and work systems unique to each individual</td>
</tr>
<tr>
<td>One to one model</td>
<td>One job coach for each adult</td>
<td>Full time</td>
<td>Job coach gives their undivided attention to the person they are supporting</td>
</tr>
<tr>
<td>Entrepreneurial model</td>
<td>One job coach for each adult</td>
<td>Variable</td>
<td>The person with autism is supported to set up their own business</td>
</tr>
</tbody>
</table>
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addition, the job coach can divide tasks based upon the skill set of each individual on the autism spectrum on the mobile crew, whereas in a typical employment setting, employees are assigned work by the supervisor and must complete all aspects of that job position.

**One to one model**
Although this model is not unique, the Supported Employment Programme at TEACCH has recognised that some individuals on the autism spectrum need a support person dedicated to them the entire time they are working. As such, in this model the job coach provides continuous support to a person working at a place of business within the community. This model has benefits similar to the mobile crew and group shared support models, but its biggest advantage is that the job coach is able to give their undivided attention to the employee on the autism spectrum and is able to continuously adapt and modify structures to help him/her complete assigned work.

**Entrepreneurial model**
In this model, individuals on the autism spectrum are offered assistance in creating a business that allows them to use their skills to the fullest extent of their abilities. The amount and type of support a person on the autism spectrum will need to run his/her own business varies from individual to individual. Some may need help with accounting, organisation, contracts management or social interactions around the customer base. Sometimes the support is offered by the job coach or by other family members or staff hired to assist the individual with their company. This can help them overcome some of the barriers to the usual work setting, such as extreme social anxiety, different sleep patterns and productivity/pace issues.

Long-term support has been shown to be effective in helping people on the autism spectrum maintain gainful employment (Keel et al, 1997; Mesibov et al, 2005). Each of the models described here provide long-term support in different ways and amounts for the individual on the autism spectrum. It is during the visits to support the individual that ST strategies are used to help them achieve a greater level of independence on the job and to overcome any difficulties they are unable to solve themselves. During such visits, the job coach develops and modifies any visual systems that are no longer sufficient and teaches any changes to the individual. Once the individual has learned them, the job coach ensures that the employer understands how the systems now work for their employee on the autism spectrum. This open communication between employer and employee encourages the development of natural supports within the work environment, while maximising the independence and the success of the employee on the autism spectrum.

**Concluding comments**
Over the past 15 years, although considerable effort has been put into the design and implementation of strategies for the placement of individuals on the autism spectrum in vocational settings, outcomes have been inconsistent in terms of independence and job maintenance. The variability of skill level and the wide array of interests of individuals on the autism spectrum mean that there is a need for a graduated system of support in their workplace. This paper illustrates how a structured assessment in a range of settings and in combination with the four components of Structured TEACCHing as applied by the TEACCH Supported Employment Programme can be used for the benefit of people on the autism spectrum in vocational training and job placement.
References


