Title: Staff Training in Intellectual and Developmental Disability Settings: A Scoping Review

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Abstract

Background

Frontline staff are a valuable asset within an intellectual and developmental disability service. Their work dictates the overall standard of care delivered by the organization. However, there is evidence that the research relating to effective practice is having little impact on the competencies displayed by staff in the real-world setting. Therefore, a scoping review of published literature was conducted to investigate potential explanations for the inadequate dissemination of evidence-based practice in this sector.

Method

Systematic searches of relevant databases identified 156 papers for inclusion in the review. Practices in which staff were trained were categorized as either behavioral interventions or "other" interventions. The behavioral category was sub-divided into: a) assessment; b) antecedent; c) consequence and, d) "mixed" practices.

Results

Although the studies reviewed provided staff training across a range of practices, many empirically supported interventions were not utilized. Despite rigorous scientific support for strategies such as functional communication training and noncontingent reinforcement, the literature did not robustly evaluate effective protocols to disseminate these practices to frontline staff. The review also highlighted a continued reliance on individualized training packages, rather than the implementation of empirically supported training models. Finally, results showed that a relatively small number of included studies examined the impact of staff training on service user outcomes and adult service users were underrepresented across all intervention categories.

Conclusions

Findings provide a potential explanation for the apparent disconnect between theoretical advancements and practice in the applied setting and are discussed in relation to approaches to staff training.

Keywords: Intellectual and developmental disabilities, staff training, scoping review, theory-practice gap

Introduction

People with intellectual and developmental disabilities experience significant limitations, in terms of their intellectual functioning and adaptive behavior (American Association on Intellectual and Developmental Disabilities, 2017). This group are also at an increased risk for engagement in challenging behavior, including aggression, self-injury and property destruction (National Disability Authority, 2003; National Institute for Health and Care Excellence, 2015). The comorbid presence of challenging behavior magnifies the difficulties faced by people with intellectual and developmental disabilities and complicates the delivery of services and supports by organizations and frontline staff (Emerson, 2001).

To further exacerbate this situation, many people working in the intellectual disability sector do not have qualifications directly related to their role (Campbell, 2010). Considering that research has shown that compromised skills sets among intellectual and developmental disability staff can have substantial repercussions for service users (e.g., Finn & Sturmey, 2009; Jahr, 1998; Schepis, Reid, Ownbey, & Parsons, 2001), this anomaly poses a serious issue for the intellectual disability sector. However, research has reported that staff with varying backgrounds and educational qualifications can be effectively trained to carry out procedures in line with evidence-based practice (Knotter et al., 2018; Maffei-Almodovar & Sturmey, 2018). As such, a well-designed, comprehensive, in-house training programme could overcome the challenges posed by hiring staff without adequate qualifications.

International guidelines on best practice for people with disabilities state that all persons, regardless of disability, have the right to the highest quality of support that is currently available (National Disability Authority, 2003; National Institute for Health and Care Excellence, 2015). Research has consistently shown that high quality, empirically supported programs are effective in facilitating the timely attainment of personal goals, increased independence, and improved quality of life for service users (Brown, Schalock, & Brown, 2009; Maes, Lambrechts, Hostyn, & Petry, 2007). Furthermore, training and supervision in evidence-based practice is also associated with lower levels of staff stress and burnout (Graber et al., 2008) and higher levels of job satisfaction (Zwijsen et al., 2015).

To support practitioners and consumers in making informed treatment choices, research has focused on the assimilation and operationalization of evidence-based practice for people with intellectual and developmental disabilities (Grey & Hastings, 2005; Grow, Carr, & LeBlanc, 2009; National Autism Center, 2009; Rapp et al., 2010; Sturmey & Didden,

2014). Many of the evidence-based practices identified have been developed within the disciplines of Applied Behavior Analysis (ABA) and Positive Behavior Support (PBS). ABA is a science that systematically employs strategies derived from the scientific principles of behavior to produce socially significant, meaningful changes in the adaptive and maladaptive behavior of individuals (Cooper, Heron, & Heward, 2014). Similarly, PBS, which evolved from ABA (Johnston, Foxx, Jacobson, Green, & Mulick, 2006), is a widely cited approach for treating challenging behavior and improving quality of life outcomes for people with intellectual and developmental disabilities (National Institute for Health and Care Excellence, 2015; Royal College of Psychiatrists, 2007). The technology of PBS employs system change methods based on the fundamental principles of behavior analysis (Carr et al., 2002; Wehmeyer & Schalock, 2001).

Although significant progress has been made in assimilating and operationalizing evidence-based practice, substantial disconnect remains between these theoretical advancements and the competencies of frontline staff in applied settings (Hile & Walbran, 1991; Rapp et al., 2010; Swain, Whitley, McHugo, & Drake, 2010). Campbell (2010) refers to this inconsistency in dissemination as a "theory-practice gap". This gap can arise as a result of a number of factors, including but not limited to insufficient basic knowledge (Hastings, 1996), inadequate training (Campbell, 2007; Jahr, 1998) and the perceived social validity of the treatments and interventions (Callahan et al., 2016). Previous systematic reviews and meta-analyses have evaluated the effects of staff training programmes with intellectual disability services and identified components that are integral to addressing the issues of insufficient basic knowledge and inadequate training (e.g., Knotter et al., 2018; van der Meer et al., 2017). However, research shows that perceived social validity is positively correlated with the use of empirically supported strategies in applied settings (Callahan, Henson, & Cowan, 2008) and "just because a program is considered effective does not mean that it will be considered appropriate by those closely involved in the implementation" (p. 7, Carter, 2010).

Therefore, a scoping review of published literature was conducted to investigate potential explanations for the inadequate dissemination of evidence-based practice in this sector. Given the large and heterogeneous nature of the available research, a scoping review rather than a traditional systematic review was carried out in this instance. The aim of this review was to systematically identify gaps within the existing body of literature that may adversely impact the usability of evidence-based strategies in real-world settings. As a result,

we set out to examine the content of the staff training programmes that are being evaluated in the literature; the staff training models that are most frequently assessed, and whether or not the existing research focuses on outcomes for the service users with intellectual and developmental disabilities.

Method

Search Procedures

Comprehensive literature searches were carried out across the following electronic databases: EBSCO Academic Search Complete, PsycINFO, PsycArticles, ERIC, Web of Science, and PubMed. Systematic searches were conducted by combining the search terms *staff* and *training* with one keyword from each of the following two lists: *List 1 – evidence-based practice, applied behavior* analysis, and positive behavior* support*; *List 2 - disability, disorder, autis*, developmental disabil*, intellectual disabil*, and mental retardation.* An example of a search term combination was: (Staff) 'and' (Training) 'and' (Applied Behavior* Analysis) 'and' (Disabil*). This process was systematically repeated until all possible search term combinations were employed. In addition, a review of the reference lists of all included articles was conducted to identify other studies meeting the inclusion criteria. The review protocol was not pre-registered.

Inclusion and Exclusion Criteria

Searches were limited by year of publication (2000-2018), with studies prior to 2000 being excluded from the review. Given the volume and heterogeneous nature of the existing body of literature and the technological advances achieved since the turn of the century, we decided that it was prudent to restrict our scoping review to studies published since 2000. In addition, only those studies, which were written in the English language and were published in peer-reviewed journals, were considered for inclusion. Studies, included in the current review met the following criteria: a) a specified training program was provided to staff during the study; b) staff worked with individuals with intellectual and developmental disabilities; c) staff were trained in practices used to treat skill deficits and/or challenging behavior, and d) the impact of staff training was evaluated for at least one of the following groups: staff; service users, and/or the wider organization. As this was a scoping review, 'staff' included any personnel employed in the direct provision of services to people with intellectual and developmental disabilities (e.g., teachers, aides, therapists) and no restrictions were placed on the type of service settings in which staff were working (e.g., schools, residential settings,

day-based community services). It is important to note that students and parents/caregivers were not considered 'staff' for the purposes of this review.

During the full-text article review, studies which described the provision of training to a student or parent/caregiver population only were excluded from the review (n=3). In addition, studies that focused exclusively on service users with a physical developmental disability only were excluded (n=1). The remaining 40 studies were excluded because they did not meet the inclusion criteria detailed above. A total of 75 studies met the criteria for inclusion at this point. The reference sections of these 75 studies were examined for relevant articles not identified as part of the search. Subsequently, the reference sections of these additional identified studies were also examined to source further relevant articles. A total of 156 studies met the criteria for inclusion following the filtering process outlined in Figure 1.

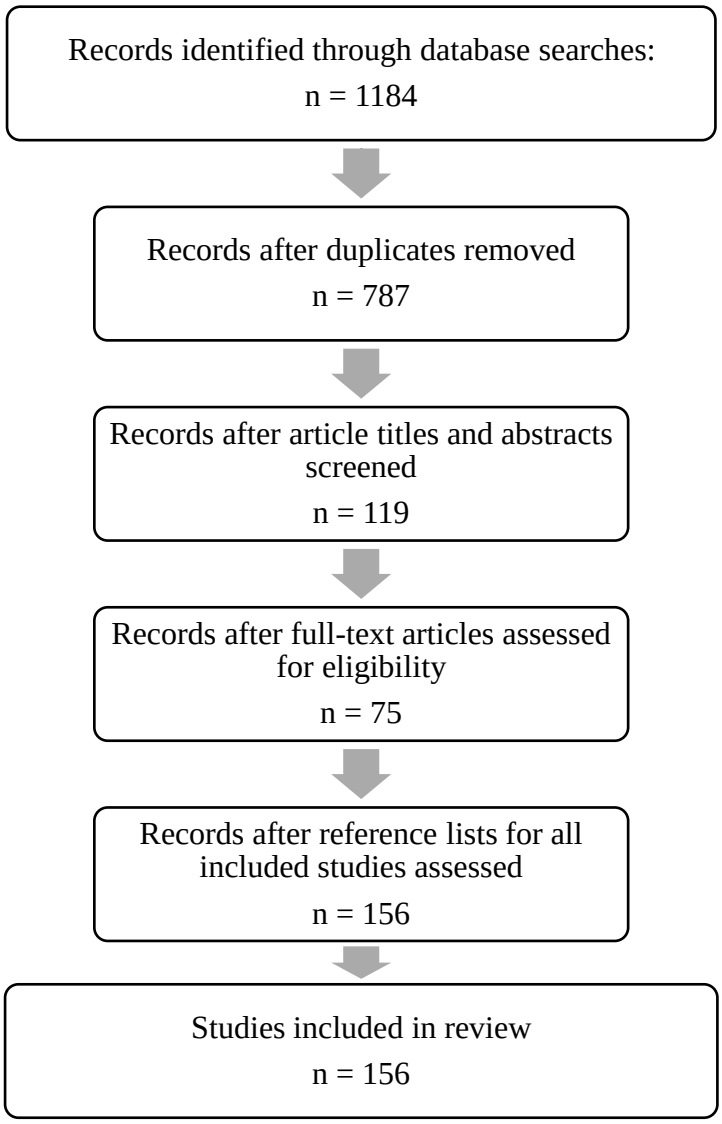

Figure 1. Flow diagram showing inclusion/exclusion of studies identified during database search process.

Study Classification

Studies were categorized according to the practices in which staff were trained. Firstly, practices were divided into behavioral interventions or "other" interventions. Practices were classified as behavioral if the training content utilized principles and/or intervention strategies derived from the science of behavior. The "other" category comprised all other treatment or intervention strategies. The behavioral intervention category was further divided into four sub-categories including studies which provided training in: (1) behavioral assessment practices only; (2) antecedent-based practices only; (3) consequence-based practices only, or (4) mixed interventions. Mixed interventions comprised training packages that included a combination of techniques from the other three sub-categories (i.e., assessment, antecedent, and consequence-based practices). The full list of included studies within each category is provided in Table 1.

Table 1

A Summary of the Studies Providing Training in Behavioral Interventions (Assessment Practices, Antecedent Practices, Consequence Practices, and "Mixed" Practices) and "Other" Interventions

Assessment practices
Bishop and Kenzer (2012)
Borgmeier, Loman, Hara, and Rodriguez (2015)
Bovi, Vladescu, DeBar, Carroll, and Sarokoff (2017)
Deliperi, Vladescu, Reeve, Reeve, and DeBar (2015)
Erbas, Tekin-Iftar, and Yucesoy (2006)
Graff and Karsten (2012)
Higgins, Luczynski, Carroll, Fisher, and Mudford (2017)
Kunnavatana, Bloom, Samaha, and Dayton (2013)
Kunnavatana, Bloom, Samaha, Lignugaris/Kraft, et al. (2013)
Lambert, Bloom, Kunnavatana, Collins, and Clay (2013)
Lavie and Sturmey (2002)
Lipschultz, Vladescu, Reeve, Reeve, and Dipsey (2015)
Loman and Horner (2014)
Machalicek et al. (2010)
Moore et al. (2002)
Moore and Fisher (2007)
Pence, St Peter, and Tetreault (2012)
Rosales, Gongola, and Homlitas (2015)
Roscoe and Fisher (2008)
Roscoe, Fisher, Glover, and Volkert (2006)
Wallace, Doney, Mintz-Resudek, and Tarbox (2004)
Weldy, Rapp, and Capocasa (2014)
Antecedent practices
Artman-Meeker and Hemmeter (2012)
Brock et al. (2016)
Brock, Seaman, and Downing (2017)
Brock and Carter (2015)
Browder, Trela, and Jimenez (2007)
Brown, Stephenson, and Carter (2014)
Collins, Higbee, and Salzberg (2009)
Giannakakos, Vladescu, Kisamore, and Reeve (2016)
Quilty (2007)
Reid, Green, and Parsons (2003)
Salmento and Bambara (2000)
Schlosser, Walker, and Sigafoos (2006)
Schmidt, Urban, Luiselli, White, and Harrington (2013)
Snell et al. (2014)

Consequence practices
Duchaine, Jolivete, and Fredrick (2011)
Hemmeter, Snyder, Kinder, and Artman (2011)
Keen, Paynter, Simpson, Sulek, and Trembath (2017)
Maggin, Fallon, Sanetti, and Ruberto (2012)
Petscher and Bailey (2006)
"Mixed" practices
Allen and Tynan (2000)
Barnes, Dunning, and Rehfeldt (2011)
Barton and Wolery (2010)
Belfiore, Fritts, and Herman (2008)
Bingham, Spooner, and Browder (2007)
Bolton and Mayer (2008)
Bradshaw, Mitchell, and Leaf (2010)
Bradshaw, Reinke, Brown, Bevans, and Leaf (2008)
Bradshaw, Waasdorp, and Leaf (2012)
Bryson and Ostmeyer (2014)
Buzhardt and Heitzman-Powell (2005)
Cardinal et al. (2017)
Casey and McWilliam (2008)
Catania, Almeida, Liu-Constant, and Reed (2009)
Chang, Shire, Shih, Gelfand, and Kasari (2016)
Crates and Spicer (2012)
Da Fonte and Capizzi (2015)
Denne, Thomas, Hastings, and Hughes (2015)
Dib and Sturmey (2007)
DiGennaro, Martens, and Kleinmann (2007)
Douglas, Light, and McNaughton (2013)
Douglas, McNaughton, and Light (2013)
Dowey, Toogood, Hastings, and Nash (2007)
Ducharme, Williams, Cummings, Murray, and Spencer (2001)
Eldevik et al. (2013)
Feldman and Matos (2013)
Fisher et al. (2014)
Gentry, Iceton, and Milne (2001)
Gianoumis, Seiverling, and Sturmey (2012)
Gilligan, Luiselli, and Pace (2007)
Gore and Umizawa (2011)
Granpeesheh et al. (2010)
Grey, Honan, McClean, and Daly (2005)
Grey and McClean (2007)
Grey, McClean, and Barnes-Holmes (2002)
Haberlin, Beauchamp, Agnew, and O'Brien (2012)

Hall, Grundon, Pope, and Romero (2010)
Hamad, Serna, Morrison, and Fleming (2010)
Hay-Hansson and Eldevik (2013)
Hetzroni and Roth (2003)
Higbee et al. (2016)
Homlitas, Rosales, and Candel (2014)
Horrocks and Morgan (2011)
Lawton and Kasari (2012)
LaVigna, Christian, and Willis (2005)
Layden et al. (2018)
Leblanc, Ricciardi, and Luiselli (2005)
Ledford et al. (2017)
Lerman, Tetreault, Hovanetz, Strobel, and Garro (2008)
Lerman, Vorndran, Addison, and Kuhn (2004)
Long, Collins, MacDonald, Johnston, and Hardy (2008)
Lowe et al. (2007)
Luiselli, Bass, and Whitcomb (2010)
Luiselli and St. Amand (2005)
Luiselli, St. Amand, MaGee, and Sperry (2007)
Macurik, O'Kane, Malanga, and Reid (2008)
Madzharova, Sturmey, and Jones (2012)
McBride and Schwartz (2003)
McClean et al. (2005)
McClean and Grey (2012)
McCulloch and Noonan (2013)
McGill, Bradshaw, and Hughes (2007)
McKenzie, Sharp, Paxton, and Murray (2002)
Mouzakitis, Codding, and Tryon (2015)
Neely, Rispoli, Gerow, and Hong (2016)
Nigro-Bruzzi and Sturmey (2010)
Nosik and Williams (2011)
Nosik, Williams, Garrido, and Lee (2013)
Parsons, Rollyson, and Reid (2004)
Parsons, Rollyson, and Reid (2012)
Polirstok, Dana, Buono, Mongelli, and Trubia (2003)
Reid, Rotholz, et al. (2003)
Robinson (2011)
Rose, Gallivan, Wright, and Blake (2014)
Ryan and Hemmes (2005)
Sarokoff and Sturmey (2004)
Sarokoff and Sturmey (2008)
Schepis, Ownbey, Parsons, and Reid (2000)
Schepis, Reid, Ownbey, and Clary (2003)

Schepis, Reid, Ownbey, and Parsons (2001)
Seiverling, Pantelides, Ruiz Henry, and Sturmey (2010)
Serna et al. (2015)
Singh et al. (2015)
Smyth, Reading, and McDowell (2017)
Stahmer et al. (2015)
Suhrheinrich (2011)
Suhrheinrich (2015)
Tierney, Quinlan, and Hastings (2007)
Towery, Parsons, and Reid (2014)
Vanono, Dotson, and Huizen (2013)
van Vonderen, de Swart, and Didden (2010)
van Vonderen, Duker, and Didden (2010)
Vismara, Young, Stahmer, Griffith, and Rogers (2009)
Vladescu, Carroll, Paden, and Kodak (2012)
Wong (2013)
Wood, Luiselli, and Harchik (2007)
Zoder-Martell et al. (2014)

"Other" practices
Baker, Appleton, and Williams (2017)
Bradshaw et al. (2004)
Brookman-Frazee, Drahota, and Stadnick (2012)
Campbell and Hogg (2008)
Chou et al. (2011)
Felce et al. (2000)
Hylkema, Petitiaux, and Vlaskamp (2011)
Jones et al. (2001)
Marks, Sisirak, and Chang (2013)
Perkins and Leadbetter (2002)
Smidt, Balandin, Reed, and Sigafoos (2007)
Smith, Felce, Jones, and Lowe (2002)
Stancliffe, Harman, Toogood, and McVilly (2007)
Stimpson et al. (2013)
Toogood (2008)
Totsika, Toogood, Hastings, and McCarthy (2010)
Totsika, Toogood, Hastings, and Nash (2008)
Willner et al. (2013)

Data Extraction

For each included study, data were extracted on the following variables: (1) training content; (2) training model; (3) method(s) used to evaluate staff learning as a result of training (4) the general age profile of service users supported by staff receiving training (adults (>18 years), children (≤ 18 years), combination of children and adults), and (5)) whether or not the authors reported service user data relating to skill acquisition, social interaction or challenging behavior.

Categorization of training models were as follows: (1) Behavior Skills Training (BST); (2) Pyramidal Training - BST; (3) Pyramidal Training – individualized packages; (4) Person Focused Training; (5) video modeling; (6) video modeling and voiceover; (7) Interactive Training, and (8) individualized packages.

If authors reported using a combination of instruction, modeling, rehearsal, and feedback to train the staff participants, this training model was categorized as BST (Sarokoff & Sturmey, 2004). If an expert trained a practitioner, who subsequently trained another practitioner to implement target strategies with a service user, this was labelled Pyramidal Training (Jones et al., 2001). If a BST approach was taken within the Pyramidal Training approach this was characteristed as Pyramidal Training – BST. Pyramidal Training models not employing BST were catergorized as Pyramidal Training – individual packages. Person Focused Training (Grey & McClean, 2007) was defined as a training models that involved the development of a behavior assessment and support plan for a specific client under specialist guidance. If the training model primarily involved trainees watching video models of instructors correctly implementing the target procedure this was categorized as video modeling. However, if the video models included embedded instructions (e.g,. voiceover) this was characterized as video modeling with embedded instruction. The Interactive Training model, which was designed specifically for the Active Support Approach (Toogood, 2008; Totsika, Toogood, Hastings, & McCarthy, 2010; Totsika, Toogood, Hastings, & Nash, 2008), used a combination of pre-training observation and feedback, interactive coaching and discussion, and post-training observation and review. Finally, individualized training packages did not meet criteria for the models already described but included instruction and/or practical application.

Data were also extracted on the methods used to evaluate staff learning as a result of training. These methods were broadly characterised as assessments of knowledge acquisition

specific to training content and assessments of trainee ability to implement a target practice with fidelity. For the purposes of this review knowledge acquisition assessments could be written or oral in nature but did not involve the overt display of the target skill. The assessment of implementation fidelity involved the overt display of the target skill and could be assessed in either a classroom or real-world setting.

Interrater Agreement

For each study, the primary coder extracted data across the five variables listed above. The accuracy of this data was evaluated by having a second rater review 55 (35.3%) of the included studies. The second rater was not blind to the data extracted by the primary coder. A total of 275 items were coded for interrater agreement (i.e., five items per article). Interrater agreement was calculated by dividing the total number of agreements by the sum of agreements plus disagreements x 100. Inter-rater agreement was found to be 98.9%. In cases where discrepancies were evident, discussion between raters was used to achieve consensus.

Results

Table 2 summarizes the training content covered within the four behavioral intervention categories. Table 3 summarizes the types of training models used, methods of training evaluation, the service user populations supported, and the reporting of service user outcome data across all behavioral intervention categories and the "other" category. Given the number of included studies, data pertaining to individual papers are available from the authors on request.

Behavioral Interventions

Assessment practices. Twenty-two studies met criteria for inclusion in this category (see Table 1). Preference assessments were the most represented training content, followed by functional analyses and functional behavior assessments. The most represented training models within this category were BST or individualized training packages. The individualized training packages typically employed a combination of one or more of the following elements: instruction, modeling, and feedback. The majority of studies evaluated the impact of training by examining the improvement in the implementation of target skills among trainees. A small number of articles (n=4) focused on both knowledge and target skill development among staff trainees, while one study assessed knowledge acquisition only.

The most frequently targeted group of service users in this category of studies were children. There was one study which focused on staff supporting adult service users and three studies did not specify whether the service users were children or adults. However, none of the included studies reported data on service-user outcomes.

Antecedent practices. Fourteen articles met criteria for inclusion in this category (see Table 1). Each article focused on a different antecedent strategy or combination of strategies, with task analysis, prompting, and time delay being marginally better represented. Ten of the fourteen studies employed individualized training packages, which typically involved one or more of the following elements: instruction, video modeling, and feedback. The remaining four studies used BST, Pyramidal BST or video modeling with embedded instruction. All studies in this category examined the impact of training, in the context of improved implementation of target skills among staff trainees. The majority of services users supported by staff in the articles reviewed were children and six of the eleven studies that focused on child-age service users, assessed the impact of training on these individuals. However, only one of the three studies that provided training to staff supporting adult service users examined service user-based outcomes.

Consequence practices. Five studies met criteria for inclusion in this category (see Table 1). Descriptive praise was the most represented training content, followed by both group contingencies and token economies. Four of the five studies used individualized training packages, which typically involved at least an instruction and performance feedback component. One study employed BST. The method most frequently employed for evaluating the impact of training was an assessment of improvement across staff implementation of target skills. Finally, children were the only group of service users represented in this category of studies and a total of 60% of studies reported data on outcomes for this group.

"Mixed" practices. Ninety-seven articles met criteria for inclusion in this category (see Table 1). Behavioral packages, which targeted two or more behavioral principles, techniques or strategies (e.g., prompting, contingent praise, error correction, task analysis) were the most represented type of training content. This was followed by discrete trial teaching (DTT), training in augmentative and alternative communication (AAC), instruction in the promotion of social communication, and pivotal response training/incidental teaching. The most represented training models within this category were individualized training packages (53.6% of studies), followed by BST (29.9% of studies). The individualized

training packages typically employed one or more of the components of BST: instruction, modeling, rehearsal, and feedback. The most common method of evaluating training impact among staff trainees was an examination of the improvement in the implementation of target skills among trainees (62.9% of studies). A small portion of studies also focused on knowledge acquisition (16.5% of studies) or a combination of knowledge and skill acquisition (12.4% of studies). The majority of service users supported by staff in the studies reviewed were children (68% of studies), followed by adults (13.4% of studies) and a combination of children and adults (7.2% of studies) and over 40 % of these studies reported data on service user outcomes (children: 56.1% (n=37) of studies; adults: 46.5% (n=6) of studies; adults and children: 42.9% (n=3) of studies).

"Other"

Eighteen studies met criteria for inclusion in this category (see Table 1). The most represented training topic was Active Support, followed by Cognitive Behavior Therapy (CBT) and the remaining articles trained staff in practices to support service users with mental health issues (Brookman-Frazee, Drahota, & Stadnick, 2012); aggressive behavior (Campbell & Hogg, 2008; Perkins & Leadbetter, 2002); physical health problems (Marks, Sisirak, & Chang, 2013); sleep disorders (Hylkema, Petitiaux, & Vlaskamp, 2011), and communication difficulties (Smidt, Balandin, Reed, & Sigafoos, 2007). Individualized training packages, which typically employed a combination of instruction and in-vivo coaching, were the most frequently represented training models in this category. This was followed by Pyramidal Training using individualized training packages or Interactive Training.

The most frequently used method employed for evaluating training impact was an assessment of improvement across staff implementation of target skills (55.6% of studies). However, almost 30% of studies in this category did not evaluate the impact of training on either staff knowledge or skill acquisition. Unlike the previous categories, the most represented group of service users supported by staff in the articles reviewed were adults (77.8% of studies) and the majority of studies, which specified the service user population, also examined the impact of training on service user-based outcomes (85.7% of studies).

Table 2

Summary of training content across 138 studies within the four sub-categories of behavioral interventions: Upper panel – Assessment practices; Upper middle panel – Antecedent practices; Lower middle panel – Consequence practices; Lower panel – "Mixed" practices

	Functional analysis	**Preference assessment – multiple types**	**Preference assessment – paired stimulus**	**Preference assessment – multiple stimuli without replacement**	**Functional behavior assessment**
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Assessment (N=22)	8 (36.4%)	7 (31.8%)	3 (13.6%)	2 (9.1%)	2 (9.1%)

	Time delay	**Most-to-least prompting**	**Least-to-most prompting and time delay**	**Task analysis**	**Task analysis and prompting**	**Social stories**	**Choice provision**	**Providing requesting opportunities**	**Environmental organization**	**Other**
Antecedent (N=14)	1	1	1	1	1	1	1	1	1	2

	Descriptive praise	**Group contingencies**	**Token economy**
Consequence (N=5)	3 (60%)	1 (20%)	1 (20%)

	Behavior package	**DTT**	**AAC**	**Social communication**	**Incidental teaching / PRT**	**Manding**	**Play skills intervention**	**Other**
Mixed (N=97)	54 (55.7%)	15 (15.5%)	8 (8.2%)	7 (7.2%)	6 (6.2%)	3 (3.1%)	2 (2.1%)	2 (2.1%)

Table 3

Summary of the training models used; methods of training evaluation; service user populations supported, and the reporting of service user outcome data across each of the four behavioral intervention categories of practice and the "other" category.

	Assessment N=22 n (%)	**Antecedent N=14 n (%)**	**Consequence N=5 n (%)**	**Mixed N=97 n (%)**	**Other N=18 n (%)**
Training Model					
Behavior Skills Training	7 (31.8%)	2 (14.3%)	1 (20%)	29 (29.9%)	0
Pyramidal Training: BST	2 (9.1%)	1 (7.1%)	0	2 (2.1%)	0
Pyramidal Training: Individualized packages	0	0	0	6 (6.2%)	3 (16.7%)
Person Focused Training	0	0	0	5 (5.2%)	0
Video modeling	1 (4.5%)	0	0	1 (1%)	0
Video modeling with embedded instruction	5 (22.7%)	1 (7.1%)	0	2 (2.1%)	0
Interactive training	0	0	0	0	3 (16.7%)
Individualized packages	7 (31.8%)	10 (71.4%)	4 (80%)	52 (53.6%)	11 (61.1%)
Training Evaluation					
Skill acquisition	17 (77.3%)	14 (100%)	4 (80%)	61 (62.9%)	10 (55.6%)
Knowledge acquisition	1 (4.5%)	0	1 (20%)	16 (16.5%)	1 (5.6%)
Skill & knowledge acquisition	4 (18.2%)	0	0	12(12.4%)	2 (11.1%)
Other	0	0	0	1 (1%)	0
None	0	0	0	7 (7.2%)	5 (27.8%)
Service User Age Profile					
Adults	1 (4.5%)	3 (21.4%)	0	13 (13.4%)	14 (77.8%)
Children	18 (81.8%)	11 (78.6%)	5 (100%)	66 (68%)	2 (11.1%)
Adults & children	0	0	0	7 (7.2%)	0
Not reported	3 (13.6%)	0	0	10 (10.3%)	2 (11.1%)
Service User Data Reported					
Adults	0	1 (33.3%)	NA	6 (46.5%)	12 (85.7%)
Children	0	6 (54.5%)	3 (60%)	37 (56.1%)	1 (50%)
Adults & children	NA	NA	NA	3 (42.9%)	NA

Discussion

A scoping review of published literature in the area of staff training was conducted to investigate potential explanations for the limited dissemination of evidence-based practices to staff working in the intellectual and developmental disability sector. For the purposes of this review 'staff' included any personnel employed in the direct provision of services to people with intellectual and developmental disabilities. The review comprised 156 studies, published between the years 2000 and 2018. The majority of included studies focused on training staff in behavioral interventions and data were extracted across a number of variables including training content, training model and the general age profile of the service users that were supported by the staff who were receiving training.

Results showed that over 30 interventions used to treat skill deficits and challenging behavior were targeted by studies in the current review. However, the application of many established evidence-based practices was not readily evident in this literature. For example, although functional communication training (FCT) is an empirically supported treatment for challenging behavior displayed by individuals with intellectual disabilities (Kurtz, Boelter, Jarmolowicz, Chin, & Hagopian, 2011), the current review did not uncover any studies, which provided training in the implementation of this practice. Although there were a limited number of studies, which assessed training in augmentative and alternative communication, vocal requesting, and the principles of FCT, none involved training staff to conduct a functional behavior assessment and explicitly replace an inappropriate behavior, with a functionally equivalent communication behavior.

Noncontingent reinforcement, a function-based approach to challenging behavior, has also been shown to be an evidence-based intervention for individuals with intellectual disabilities (Carr, Severtson, & Lepper, 2009). However, none of the articles reviewed investigated staff training in this practice. The following strategies were also notably absent from the current scoping review: (1) shaping; (2) discrimination training; (3) reinforcement schedules; (4) differential reinforcement techniques, and (5) extinction implementation (including planned ignoring and escape-extinction). Such findings provide a potential explanation for the current disconnect between theory and effective practice in the field of intellectual disability; despite rigorous support for the efficacy and social validity of these practices (Callahan et al., 2016; National Autism Center, 2015; Wong et al., 2014), the

published literature does not appear to concurrently evaluate training protocols to successfully disseminate these practices to relevant personnel.

Another possible explanation for the "theory-practice gap" is the continued reliance on individualized approaches to the dissemination of training content, across all categories of practice. BST, which originated within the discipline of ABA, is a type of training package that employs instruction, modeling, rehearsal, and feedback (Sarokoff & Sturmey, 2004) and has been repeatedly implemented to effectively and efficiently educate frontline staff working with children and adults with intellectual and developmental disabilities (Maffei-Almodovar & Sturmey, 2018). Furthermore, in their recent systematic review, van der Meer et al. (2017) recommended the use of multicomponent training programmes, like BST, that include opportunities for rehearsal and feedback when training direct-care staff to provide communication interventions to adults with intellectual disabilities. However, despite the substantial evidence-base for BST, the majority of studies in this review did not employ this training model. Therefore, it would appear that many researchers are unaffected by the developments around effective training practice, which in turn makes it difficult for consumers of research to identify the structural components necessary for optimal training outcomes.

In terms of promoting effective approaches to staff training, it is particularly positive that the majority of studies in the current review evaluated training impact in the context of either skill acquisition or knowledge and skill acquisition among staff trainees. However, the effectiveness of any staff training intervention is inextricably linked to service user outcomes (Jahr, 1998) and a relatively small number of studies in the review reported data, which examined the impact of the various training packages, on service user outcomes. In addition, the population of adult service users was underrepresented across studies included in the current review; the majority of articles provided training to staff supporting children with intellectual and developmental disabilities. Interactions with service users have been identified as one of the most influential work-related demands faced by intellectual and developmental disability staff (McManus, Feyes, & Saucier, 2011; Smyth, Healy, & Lydon, 2015). However, staff training in practices that have been shown to systematically improve service user outcomes can enhance staff-service user interaction and create an opportunity for additional learning opportunities (Hastings & Brown, 2002). Therefore, a failure to examine service user outcomes when evaluating staff training programmes may undermine their social validity, which in turn may deter consumers from adopting evidence-based training practices.

A key limitation to this review is the sheer volume of included research and the nature of the review, as a result. The initial systematic search identified 75 relevant articles. This number expanded to 156 following manual examinations of the reference sections of the original 75 papers. A scoping review is typically designed to synthesize a large body of research evidence, in order to broadly categorize it in terms of its volume and defining features (Tricco et al., 2018). Therefore, what a scoping review gains in scope and breadth, it sacrifices in precision and detail. As such, the results of the current review do not allow us comment on the effectiveness of specific training programmes; previous systematic reviews and meta-analyses have already made substantial progress in this respect (Knotter et al., 2018; Maffei-Almodovar & Sturmey, 2018; van der Meer et al., 2017). Instead, we set out to identify gaps and limitations in the staff training literature, in order to highlight potential explanations for why there why there is a disconnect between theoretical advances in evidence-based strategies and training practices and the competencies and skills displayed by staff in real-world settings. The current review revealed that the application of many established evidence-based practices was not evident in the existing body of staff training research, there is a continued reliance on bespoke training packages that may not generalize to other settings, the evaluation of service user outcomes is often neglected, and only a minority of studies provided training for staff supporting adults with intellectual and developmental disabilities. Given the positive correlation between perceived social validity and the adoption of research findings in applied settings (Callahan et al., 2008), it is likely that all these factors play a role in propagating the "theory-practice gap".

To the best of our knowledge, this is the first scoping review on this topic. As a result, it does not claim to identify all relevant gaps in the literature. In addition, the systematic search strategy may not have uncovered all relevant articles. Therefore, future reviews are required, not only to examine the findings of the current review in more detail, but also to evaluate the procedural descriptions of the training protocols evaluated in the published literature. As researchers, we need to ensure that adequate descriptions of training content and protocols are provided to facilitate easy replication in real-world applied settings. Resource investment by intellectual disability services in staff training and evidence-based practice might be more forthcoming if research can provide a tangible blueprint and generalizable outcomes for staff and service users, alike.

References

Allen, D., & Tynan, H. (2000). Responding to aggressive behavior: Impact of training on staff members' knowledge and confidence. *Mental Retardation, 38*(2), 97-104. doi: http://dx.doi.org.elib.tcd.ie/10.1352/0047-6765(2000)038<0097:RTABIO>2.0.CO;2

American Association on Intellectual and Developmental Disabilities. (2017). Intellectual Disability. Retrieved 30/03/2017, 2017

Artman-Meeker, K. M., & Hemmeter, M. L. (2012). Effects of training and feedback on teachers' use of classroom preventive practices. *Topics in Early Childhood Special Education, 33*(2), 112-123. doi: 10.1177/0271121412447115

Baker, P., Appleton, P., & Williams, R. (2017). An examination of the addition of video informed reflective practice to the active support toolkit. *British Journal of Learning Disabilities, 45*(3), 180-189. doi: 10.1111/bld.12193

Barnes, C. S., Dunning, J. L., & Rehfeldt, R. A. (2011). An evaluation of strategies for training staff to implement the picture exchange communication system. *Research in Autism Spectrum Disorders, 5*(4), 1574-1583.

Barton, E. E., & Wolery, M. (2010). Training teachers to promote pretend play in young children with disabilities. *Exceptional Children, 77*(1), 85-106. doi: 10.1177/001440291007700104

Belfiore, P. J., Fritts, K. M., & Herman, B. C. (2008). The role of procedural integrity using self-monitoring to enhance discrete trial instruction (DTI). *Focus on Autism and Other Developmental Disabilities, 23*(2), 95-102. doi: 10.1177/1088357607311445

Bingham, M. A., Spooner, F., & Browder, D. (2007). Training paraeducators to promote the use of augmentative and alternative communication by students with significant disabilities. *Education and Training in Developmental Disabilities, 42*(3), 339-352.

Bishop, M. R., & Kenzer, A. L. (2012). Teaching behavioral therapists to conduct brief preference assessments during therapy sessions. *Research in Autism Spectrum Disorders, 6*(1), 450-457.

Bolton, J., & Mayer, M. D. (2008). Promoting the generalization of paraprofessional discrete trial teaching skills. *Focus on Autism and Other Developmental Disabilities, 23*(2), 103-111. doi: 10.1177/1088357608316269

Borgmeier, C., Loman, S. L., Hara, M., & Rodriguez, B. J. (2015). Training school personnel to identify interventions based on functional behavioral assessment. *Journal of Emotional and Behavioral Disorders, 23*(2), 78-89.

Bovi, G. M. D., Vladescu, J. C., DeBar, R. M., Carroll, R. A., & Sarokoff, R. A. (2017). Using video modeling with voice-over instruction to train public school staff to implement a preference assessment. *Behavior Analysis in Practice, 10*(1), 72-76. doi: 10.1007/s40617-016-0135-y

Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2010). Examining the effects of Schoolwide Positive Behavioral Interventions and Supports on student outcomes: Results from a randomized controlled effectiveness trial in elementary schools. *Journal of Positive Behavior Interventions, 12*(3), 133-148.

Bradshaw, C. P., Reinke, W. M., Brown, L. D., Bevans, K. B., & Leaf, P. J. (2008). Implementation of School-Wide Positive Behavioral Interventions and Supports (PBIS) in elementary schools: Observations from a randomized trial. *Education and Treatment of Children, 31*(1), 1-26.

Bradshaw, C. P., Waasdorp, T. E., & Leaf, P. J. (2012). Effects of school-wide positive behavioral interventions and supports on child behavior problems. *Pediatrics, 130*(5), e1136-e1145. doi: 10.1542/peds.2012-0243

Bradshaw, J., McGill, P., Stretton, R., Kelly-Pike, A., Moore, J. B., Macdonald, S., . . . Marks, B. (2004). Implementation and evaluation of active support. *Journal of Applied Research in Intellectual Disabilities, 17*(3), 139-148. doi: doi:10.1111/j.1468-3148.2004.00190.x

Brock, M. E., Cannella-Malone, H. I., Schaefer, J. M., Page, E. J., Andzik, N. R., & Seaman, R. L. (2016). Efficacy of training job coaches to implement evidence-based instructional strategies. *JOURNAL OF VOCATIONAL REHABILITATION, 45*(3), 351-364. doi: 10.3233/jvr-160835

Brock, M. E., & Carter, E. W. (2015). Effects of a professional development package to prepare special education paraprofessionals to implement evidence-based practice. *Journal of Special Education, 49*(1), 39-51.

Brock, M. E., Seaman, R. L., & Downing, C. (2017). Promoting learning for a student with a severe disability through paraprofessional training. *Research and Practice for Persons with Severe Disabilities, 42*(4), 211-224. doi: 10.1177/1540796917729682

Brookman-Frazee, L., Drahota, A., & Stadnick, N. (2012). Training community mental health therapists to deliver a package of evidence-based practice strategies for school-age children with autism spectrum disorders: A pilot study. *Journal Of Autism And Developmental Disorders, 42*(8), 1651-1661.

Browder, D. M., Trela, K., & Jimenez, B. (2007). Training teachers to follow a task analysis to engage middle school students with moderate and severe developmental disabilities in grade-appropriate literature. *Focus on Autism and Other Developmental Disabilities, 22*(4), 206-219.

Brown, P., Stephenson, J., & Carter, M. (2014). Multicomponent training of teachers of students with severe disabilities. *Teacher Education and Special Education, 37*(4), 347-362.

Brown, R. I., Schalock, R. L., & Brown, I. (2009). Quality of life: Its application to persons with intellectual disabilities and their families—introduction and overview. *Journal of Policy and Practice in Intellectual Disabilities, 6*(1), 2-6.

Bryson, S. A., & Ostmeyer, K. F. (2014). Increasing the effectiveness of community mental health center social skills groups for children with autism spectrum disorder: A training and consultation example. *Administration and Policy in Mental Health and Mental Health Services Research, 41*(6), 808-821. doi: 10.1007/s10488-013-0533-1

Buzhardt, J., & Heitzman-Powell, L. (2005). Training behavioral ades with a combination of online and face-to-face procedures. *TEACHING Exceptional Children, 37*(5), 20-26. doi: 10.1177/004005990503700503

Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal Of Autism And Developmental Disorders, 38*(4), 678-692.

Callahan, K., Hughes, H. L., Mehta, S., Toussaint, K. A., Nichols, S. M., Ma, P. S., . . . Wang, H. T. (2016). Social validity of evidence-based practices and emerging interventions in autism. *Focus on Autism and Other Developmental Disabilities*.

Campbell, M. (2007). Staff training and challenging behaviour: Who needs it? *Journal of Intellectual Disabilities, 11*(2), 143-156.

Campbell, M. (2010). Workforce development and challenging behaviour: Training staff to treat, to manage or to cope? *Journal of Intellectual Disabilities, 14*(3), 185-196.

Campbell, M., & Hogg, J. (2008). Impact of training on cognitive representation of challenging behaviour in staff working with adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 21*(6), 561-574. doi: 10.1111/j.1468-3148.2008.00436.x

Cardinal, J. R., Gabrielsen, T. P., Young, E. L., Hansen, B. D., Kellems, R., Hoch, H., . . . Knorr, J. (2017). Discrete trial teaching interventions for students with autism: Web-based video modeling for paraprofessionals. *Journal of Special Education Technology, 32*(3), 138-148. doi: 10.1177/0162643417704437

Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., . . . Fox, L. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Interventions, 4*(1), 4-16.

Carr, J. E., Severtson, J. M., & Lepper, T. L. (2009). Noncontingent reinforcement is an empirically supported treatment for problem behavior exhibited by individuals with developmental disabilities. *Research In Developmental Disabilities, 30*(1), 44-57.

Carter, S. L. (2010). *The social validity manual: A guide to subjective evaluations of behavioral interventions*. Boston, MA: Academic Press.

Casey, A. M., & McWilliam, R. A. (2008). Graphical feedback to increase teachers' use of incidental teaching. *Journal of Early Intervention, 30*(3), 251-268. doi: 10.1177/1053815108319038

Catania, C. N., Almeida, D., Liu-Constant, B., & Reed, F. D. D. (2009). Video modeling to train staff to implement discrete-trial instruction. *Journal Of Applied Behavior Analysis, 42*(2), 387-392.

Chang, Y.-C., Shire, S. Y., Shih, W., Gelfand, C., & Kasari, C. (2016). Preschool deployment of evidence-based social communication intervention: JASPER in the classroom. *Journal Of Autism And Developmental Disorders, 46*(6), 2211-2223.

Chou, Y. C., Harman, A. D., Lin, C. J., Lee, W. P., Chang, S. C., & Lin, M. L. (2011). Outcome evaluation of active support training in Taiwan. *Research In Developmental Disabilities, 32*(3), 1130-1136. doi: 10.1016/j.ridd.2011.01.011

Collins, S., Higbee, T. S., & Salzberg, C. L. (2009). The effects of video modeling in staff implementation of a problem-solving intervention with adults with developmental disabilities. *Journal Of Applied Behavior Analysis, 42*(4), 849-854. doi: 10.1901/jaba.2009.42-849

Cooper, J. O., Heron, T. E., & Heward, W. L. (2014). *Applied Behavior Analysis* (2nd ed.). Columbus, OH: Merrill Publishing Company.

Crates, N., & Spicer, M. (2012). Developing behavioural training services to meet defined standards within an Australian statewide disability service system and the associated client outcomes. *Journal of Intellectual and Developmental Disability, 37*(3), 196-208. doi: 10.3109/13668250.2012.703318

Da Fonte, M. A., & Capizzi, A. M. (2015). A module-based approach: Training paraeducators on evidence-based practices. *Physical Disabilities: Education and Related Services, 34*(1), 31-54.

Deliperi, P., Vladescu, J. C., Reeve, K. F., Reeve, S. A., & DeBar, R. M. (2015). Training staff to implement a paired-stimulus preference assessment using video modeling with voiceover instruction. *Behavioral Interventions, 30*(4), 314-332. doi: 10.1002/bin.1421

Denne, L. D., Thomas, E., Hastings, R. P., & Hughes, J. C. (2015). Assessing competencies in applied behavior analysis for tutors working with children with autism in a school-based setting. *Research in Autism Spectrum Disorders, 20*, 67-77. doi: 10.1016/j.rasd.2015.08.008

Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching *Journal Of Applied Behavior Analysis, 40*(2), 339-343. doi: 10.1901 /jaba.2007.52-06

DiGennaro, F. D., Martens, B. K., & Kleinmann, A. E. (2007). A comparison of performance feedback procedures on teachers' treatment implementation integrity and students'

inappropriate behavior in special education classrooms. *Journal Of Applied Behavior Analysis, 40*(3), 447-461. doi: 10.1901/jaba.2007.40-447

Douglas, S. N., Light, J. C., & McNaughton, D. B. (2013). Teaching paraeducators to support the communication of young children with complex communication needs. *Topics in Early Childhood Special Education, 33*(2), 91-101.

Douglas, S. N., McNaughton, D., & Light, J. (2013). Online training for paraeducators to support the communication of young children. *Journal of Early Intervention, 35*(3), 223-242.

Dowey, A., Toogood, S., Hastings, R. P., & Nash, S. (2007). Can brief workshop interventions change care staff understanding of challenging behaviours? *Journal of Applied Research in Intellectual Disabilities, 20*(1), 52-57. doi: 10.1111/j.1468-3148.2006.00339.x

Duchaine, E. L., Jolivete, K., & Fredrick, L. D. (2011). The effect of teacher coaching with performance feedback on behavior-specific praise in inclusion classrooms. *Education and Treatment of Children, 34*(2), 209-227.

Ducharme, J. M., Williams, L., Cummings, A., Murray, P., & Spencer, T. (2001). General case quasi-pyramidal staff training to promote generalization of teaching skills in supervisory and direct-care staff. *Behavior Modification, 25*(2), 233-254.

Eldevik, S., Ondire, I., Hughes, J. C., Grindle, C. F., Randell, T., & Remington, B. (2013). Effects of computer simulation training on in vivo discrete trial teaching. *Journal Of Autism And Developmental Disorders, 43*(3), 569-578. doi: 10.1007/s10803-012-1593-x

Emerson, E. (2001). *Challenging behaviour: Analysis and intervention in people with severe intellectual disabilities* (2nd ed.). Cambridge, UK: Cambridge University Press.

Erbas, D., Tekin-Iftar, E., & Yucesoy, S. (2006). Teaching special education teachers how to conduct functional analysis in natural settings. *Education and Training in Developmental Disabilities, 41*(1), 28-36.

Felce, D., Bowley, C., Baxter, H., Jones, E., Lowe, K., & Emerson, E. (2000). The effectiveness of staff support: Evaluating active support training using a conditional probability approach. *Research In Developmental Disabilities, 21*(4), 243-255.

Feldman, E. K., & Matos, R. (2013). Training paraprofessionals to facilitate social interactions between children with autism and their typically developing peers. *Journal of Positive Behavior Interventions, 15*(3), 169-179.

Finn, L. L., & Sturmey, P. (2009). The effect of peer-to-peer training on staff interactions with adults with dual diagnoses. *Research In Developmental Disabilities, 30*(1), 96-106.

Fisher, W. W., Luczynski, K. C., Hood, S. A., Lesser, A. D., Machado, M. A., & Piazza, C. C. (2014). Preliminary findings of a randomized clinical trial of a virtual training program for applied behavior analysis technicians. *Research in Autism Spectrum Disorders, 8*(9), 1044-1054. doi: https://doi.org/10.1016/j.rasd.2014.05.002

Gentry, M., Iceton, J., & Milne, D. (2001). Managing challenging behaviour in the community: Methods and results of interactive staff training. *Health and Social Care in the Community, 9*(3), 143-150.

Giannakakos, A. R., Vladescu, J. C., Kisamore, A. N., & Reeve, S. A. (2016). Using video modeling with voiceover instruction plus feedback to train staff to implement direct teaching procedures. *Behavior Analysis in Practice, 9*(2), 126-134. doi: 10.1007/s40617-015-0097-5

Gianoumis, S., Seiverling, L., & Sturmey, P. (2012). The effects of behavior skills training on correct teacher implementation of Natural Language Paradigm teaching skills and child behavior *Behavioral Interventions, 27*(2), 57-74. doi: doi:10.1002/bin.1334

Gilligan, K. T., Luiselli, J. K., & Pace, G. M. (2007). Training paraprofessional staff to implement discrete trial instruction: Evaluation of a practical performance feedback intervention. *the Behavior Therapist, 30*(3), 63-66.

Gore, N., & Umizawa, H. (2011). Challenging behavior training for teaching staff and family carers of children With intellectual disabilities: A preliminary evaluation. *Journal of Policy and Practice in Intellectual Disabilities, 8*(4), 266-275. doi: 10.1111/j.1741-1130.2011.00315.x

Graber, J. E., Huang, E. S., Drum, M. L., Chin, M. H., Walters, A. E., Heuer, L., . . . Quinn, M. T. (2008). Predicting changes in staff morale and burnout at community health centers participating in the health disparities collaboratives. *Health Serv Res, 43*(4), 1403-1423.

Graff, R. B., & Karsten, A. M. (2012). Evaluation of a self-instruction package for conducting stimulus preference assessments. *Journal Of Applied Behavior Analysis, 45*(1), 69-82. doi: 10.1901/jaba.2012.45-69

Granpeesheh, D., Tarbox, J., Dixon, D. R., Peters, C. A., Thompson, K., & Kenzer, A. (2010). Evaluation of an eLearning tool for training behavioral therapists in academic knowledge of applied behavior analysis. *Research in Autism Spectrum Disorders, 4*(1), 11-17. doi: 10.1016/j.rasd.2009.07.004

Grey, I. M., & Hastings, R. P. (2005). Evidence-based practices in intellectual disability and behaviour disorders. *Current Opinion in Psychiatry, 18*(5), 469-475. doi: 10.1097/01.yco.0000179482.54767.cf

Grey, I. M., Honan, R., McClean, B., & Daly, M. (2005). Evaluating the effectiveness of teacher training in Applied Behaviour Analysis. *Journal of Intellectual Disabilities, 9*(3), 209-227. doi: 10.1177/1744629505056695

Grey, I. M., & McClean, B. (2007). Service user outcomes of staff training in positive behaviour support using person-focused training: A control group study. *Journal of Applied Research in Intellectual Disabilities, 20*(1), 6-15. doi: 10.1111/j.1468-3148.2006.00335.x

Grey, I. M., McClean, B., & Barnes-Holmes, D. (2002). Staff attributions about the causes of challenging behaviours: Effects of longitudinal training in multi-element behaviour support. *Journal of Learning Disabilities (United Kingdom), 6*(3), 297-312.

Grow, L. L., Carr, J. E., & LeBlanc, L. A. (2009). Treatments for attention-maintained problem behavior: Empirical support and clinical recommendations. *Journal of Evidence-Based Practices for Schools, 10*(1), 70-92.

Haberlin, A. T., Beauchamp, K., Agnew, J., & O'Brien, F. (2012). A comparison of pyramidal staff training and direct staff training in community-based day programs. *Journal of Organizational Behavior Management, 32*(1), 65-74. doi: 10.1080/01608061.2012.646848

Hall, L. J., Grundon, G. S., Pope, C., & Romero, A. B. (2010). Training paraprofessionals to use behavioral strategies when educating learners with autism spectrum disorders across environments. *Behavioral Interventions, 25*(1), 37-51.

Hamad, C. D., Serna, R. W., Morrison, L., & Fleming, R. (2010). Extending the reach of early intervention training for practitioners: A preliminary investigation of an online curriculum for teaching behavioral intervention knowledge in autism to families and service providers. *Infants Young Child, 23*(3), 195-208. doi: 10.1097/IYC.0b013e3181e32d5e

Hastings, R. P. (1996). Staff training and management in services for people with learning disabilities. *British Journal of Clinical Psychology, 35*(3), 480-482. doi: 10.1111/j.2044-8260.1996.tb01202.x

Hastings, R. P., & Brown, T. (2002). Behavioural knowledge, causal beliefs and self-efficacy as predictors of special educators' emotional reactions to challenging behaviours. *Journal of Intellectual Disability Research, 46*(2), 144-150.

Hay-Hansson, A. W., & Eldevik, S. (2013). Training discrete trials teaching skills using videoconference. *Research in Autism Spectrum Disorders, 7*(11), 1300-1309. doi: 10.1016/j.rasd.2013.07.022

Hemmeter, M. L., Snyder, P., Kinder, K., & Artman, K. (2011). Impact of performance feedback delivered via electronic mail on preschool teachers' use of descriptive praise. *Early Childhood Research Quarterly, 26*(1), 96-109. doi: 10.1016/j.ecresq.2010.05.004

Hetzroni, O. E., & Roth, T. (2003). Effects of a positive support approach to enhance communicative behaviors of children with mental retardation who have challenging behaviors. *Education and Training in Developmental Disabilities, 38*(1), 95-105.

Higbee, T. S., Aporta, A. P., Resende, A., Nogueira, M., Goyos, C., & Pollard, J. S. (2016). Interactive computer training to teach discrete-trial instruction to undergraduates and special educators in Brazil: A replication and extension. *Journal Of Applied Behavior Analysis, 49*(4), 780-793. doi: 10.1002/jaba.329

Higgins, W. J., Luczynski, K. C., Carroll, R. A., Fisher, W. W., & Mudford, O. C. (2017). Evaluation of a telehealth training package to remotely train staff to conduct a preference assessment. *Journal Of Applied Behavior Analysis, 50*(2), 238-251. doi: 10.1002/jaba.370

Hile, M. G., & Walbran, B. B. (1991). Observing staff-resident interactions: What staff do, what residents receive. *Mental Retardation, 29*(1), 35-41.

Homlitas, C., Rosales, R., & Candel, L. (2014). A further evaluation of behavioral skills training for implementation of the picture exchange communication system. *Journal Of Applied Behavior Analysis, 47*(1), 198-203. doi: 10.1002/jaba.99

Horrocks, E. L., & Morgan, R. L. (2011). Effects of inservice teacher training on correct implementation of assessment and instructional procedures for teachers of students with profound multiple disabilities. *Teacher Education and Special Education, 34*(4), 283-319.

Hylkema, T., Petitiaux, W., & Vlaskamp, C. (2011). Utility of staff training on correcting sleep problems in people with intellectual disabilities living in residential settings. *Journal of Policy and Practice in Intellectual Disabilities, 8*(2), 85-91. doi: 10.1111/j.1741-1130.2011.00294.x

Jahr, E. (1998). Current issues in staff training. *Research In Developmental Disabilities, 19*(1), 73-87.

Johnston, J. M., Foxx, R. M., Jacobson, J. W., Green, G., & Mulick, J. A. (2006). Positive behavior support and applied behavior analysis. *Behavior Analyst, 29*(1), 51-74.

Jones, E., Felce, D., Lowe, K., Bowley, C., Pagler, J., Strong, G., . . . Kurowska, K. (2001). Evaluation of the dissemination of active support training and training trainers. *Journal of Applied Research in Intellectual Disabilities, 14*(2), 79-99. doi: 10.1046/j.1468-3148.2001.00064.x

Keen, D., Paynter, J., Simpson, K., Sulek, R., & Trembath, D. (2017). Implementing structured consultation with autism spectrum disorder early intervention practitioners. *Journal of Intellectual and Developmental Disability, 42*(3), 269-274. doi: 10.3109/13668250.2016.1235683

Knotter, M., Spruit, A., De Swart, J., Wissink, I. B., Moonen, X., & J.M. Stams, G. (2018). Training direct care staff working with persons with intellectual disabilities and challenging behaviour: A meta-analytic review study. *Aggression and Violent Behavior, 40*, 60-72. doi: 10.1016/j.avb.2018.03.005

Kunnavatana, S. S., Bloom, S. E., Samaha, A. L., & Dayton, E. (2013). Training teachers to conduct trial-based functional analyses. *Behavior Modification, 37*(6), 707-722. doi: 10.1177/0145445513490950

Kunnavatana, S. S., Bloom, S. E., Samaha, A. L., Lignugaris/Kraft, B., Dayton, E., & Harris, S. K. (2013). Using a modified pyramidal training model to teach special education teachers to conduct trial-based functional analyses. *Teacher Education and Special Education, 36*(4), 267-285. doi: 10.1177/0888406413500152

Kurtz, P. F., Boelter, E. W., Jarmolowicz, D. P., Chin, M. D., & Hagopian, L. P. (2011). An analysis of functional communication training as an empirically supported treatment for problem behavior displayed by individuals with intellectual disabilities. *Research In Developmental Disabilities, 32*(6), 2935-2942.

Lambert, J. M., Bloom, S. E., Kunnavatana, S. S., Collins, S. D., & Clay, C. J. (2013). Training residential staff to conduct trial-based functional analyses. *Journal Of Applied Behavior Analysis, 46*(1), 296-300.

Lavie, T., & Sturmey, P. (2002). Training staff to conduct a paired-stimulus preference assessment. *Journal Of Applied Behavior Analysis, 35*(2), 209-211. doi: 10.1901/jaba.2002.35-209

LaVigna, G. W., Christian, L., & Willis, T. J. (2005). Developing behavioural services to meet defined standards within a national system of specialist education services. *Pediatric Rehabilitation, 8*(2), 144-155. doi: 10.1080/13638490400024036

Lawton, K., & Kasari, C. (2012). Teacher-implemented joint attention intervention: Pilot randomized controlled study for preschoolers with autism. *Journal Of Consulting And Clinical Psychology, 80*(4), 687-693. doi: 10.1037/a0028506

Layden, S., Hendricks, D., Inge, K., Sima, A., Erickson, D., Avellone, L., & Wehman, P. (2018). Providing online professional development for paraprofessionals serving those with ASD: Evaluating a statewide initiative. *JOURNAL OF VOCATIONAL REHABILITATION, 48*(2), 285-294. doi: 10.3233/jvr-180932

Leblanc, M.-P., Ricciardi, J. N., & Luiselli, J. K. (2005). Improving discrete trial instruction by paraprofessional staff through an abbreviated performance feedback intervention. *Education and Treatment of Children, 28*(1), 76-82.

Ledford, J. R., Zimmerman, K. N., Chazin, K. T., Patel, N. M., Morales, V. A., & Bennett, B. P. (2017). Coaching paraprofessionals to promote engagement and social interactions during small group activities. *Journal of Behavioral Education, 26*(4), 410-432. doi: 10.1007/s10864-017-9273-8

Lerman, D. C., Tetreault, A., Hovanetz, A., Strobel, M., & Garro, J. (2008). Further evaluation of a brief, intensive teacher-training model. *Journal Of Applied Behavior Analysis, 41*(2), 243-248.

Lerman, D. C., Vorndran, C. M., Addison, L., & Kuhn, S. C. (2004). Preparing teachers in evidence-based practices for young children with autism. *School Psychology Review, 33*(4), 510-526.

Lipschultz, J. L., Vladescu, J. C., Reeve, K. F., Reeve, S. A., & Dipsey, C. R. (2015). Using video modeling with voiceover instruction to train staff to conduct stimulus preference assessments. *Journal of Developmental and Physical Disabilities, 27*(4), 505-532. doi: 10.1007/s10882-015-9434-4

Loman, S. L., & Horner, R. H. (2014). Examining the efficacy of a basic functional behavioral assessment training package for school personnel. *Journal of Positive Behavior Interventions, 16*(1), 18-30.

Long, C. G., Collins, L., MacDonald, C., Johnston, D., & Hardy, S. (2008). Staff stress and challenging behaviour on a medium secure development disabilities ward for women:

The outcomes of organisational change, and clinical interventions. *The British Journal of Forensic Practice, 10*(3), 4-11. doi: 10.1108/14636646200800014

Lowe, K., Jones, E., Allen, D., Davies, D., James, W., Doyle, T., . . . Moore, K. (2007). Staff training in positive behaviour support: Impact on attitudes and knowledge. *Journal of Applied Research in Intellectual Disabilities, 20*(1), 30-40. doi: 10.1111/j.1468-3148.2006.00337.x

Luiselli, J. K., Bass, J. D., & Whitcomb, S. A. (2010). Teaching applied behavior analysis knowledge competencies to direct-care service providers: Outcome assessment and social validation of a training program. *Behavior Modification, 34*(5), 403-414. doi: 10.1177/0145445510383526

Luiselli, J. K., & St. Amand, C. (2005). Staff training in applied behavior analysis: Improving knowledge competencies of service providers for people with developmental disabilities. *Mental Health Aspects of Developmental Disabilities, 8*(4), 120-125.

Luiselli, J. K., St. Amand, C., MaGee, C., & Sperry, J. M. (2007). Group training of applied behavior analysis (ABA) knowledge competencies to community-based service providers for adults with developmental disabilities. *International Journal of Behavioral Consultation and Therapy, 4*(1), 41-47. doi: 10.1037/h0100830

Machalicek, W., O'Reilly, M. F., Rispoli, M., Davis, T., Lang, R., Franco, J. H., & Chan, J. M. (2010). Training teachers to assess the challenging behaviors of students with autism using video tele-conferencing. *Education and Training in Autism and Developmental Disabilities, 45*(2), 203-215.

Macurik, K. M., O'Kane, N. P., Malanga, P., & Reid, D. H. (2008). Video training of support staff in intervention plans for challenging behavior: Comparison with live training. *Behavioral Interventions, 23*(3), 143-163.

Madzharova, M. S., Sturmey, P., & Jones, E. A. (2012). Training staff to increase manding in students with autism: Two preliminary case studies. *Behavioral Interventions, 27*(4), 224-235. doi: 10.1002/bin.1349

Maes, B., Lambrechts, G., Hostyn, I., & Petry, K. (2007). Quality-enhancing interventions for people with profound intellectual and multiple disabilities: A review of the empirical research literature. *Journal of Intellectual and Developmental Disability, 32*(3), 163-178.

Maffei-Almodovar, L., & Sturmey, P. (2018). Change agent training in behavior analytic procedures for people with developmental and intellectual disabilities: A meta-analysis. *Review Journal of Autism and Developmental Disorders, 5*(2), 129-141. doi: 10.1007/s40489-018-0128-6

Maggin, D. M., Fallon, L. M., Sanetti, L. M. H., & Ruberto, L. M. (2012). Training paraeducators to implement a group contingency protocol: Direct and collateral effects. *Behavioral Disorders, 38*(1), 18-37.

Marks, B., Sisirak, J., & Chang, Y.-C. (2013). Efficacy of the "HealthMatters Program" train-the-trainer model. *Journal of Applied Research in Intellectual Disabilities, 26*(4), 319-334.

McBride, B. J., & Schwartz, I. S. (2003). Effects of teaching early interventionists to use discrete trials during ongoing classroom activities. *Topics in Early Childhood Special Education, 23*(1), 5.

McClean, B., Dench, C., Grey, I., Shanahan, S., Fitzsimons, E., Hendler, J., & Corrigan, M. (2005). Person Focused Training: A model for delivering positive behavioural supports to people with challenging behaviours. *Journal of Intellectual Disability Research, 49*, 340-352. doi: 10.1111/j.1365-2788.2005.00669.x

McClean, B., & Grey, I. (2012). A component analysis of positive behaviour support plans. *Journal of Intellectual and Developmental Disability, 37*(3), 221-231. doi: 10.3109/13668250.2012.704981

McCulloch, E. B., & Noonan, M. J. (2013). Impact of online training videos on the implementation of mand training by three elementary school paraprofessionals. *Education and Training in Autism and Developmental Disabilities, 48*(1), 132-141.

McGill, P., Bradshaw, J., & Hughes, A. (2007). Impact of extended education/training in positive behaviour support on staff knowledge, causal attributions and emotional responses. *Journal of Applied Research in Intellectual Disabilities, 20*(1), 41-51. doi: 10.1111/j.1468-3148.2006.00338.x

McKenzie, K., Sharp, K., Paxton, D., & Murray, G. C. (2002). The impact of training and staff attributions on staff practice in learning disability services: A pilot study. *Journal of Learning Disabilities (United Kingdom), 6*(3), 239-251.

McManus, J. L., Feyes, K. J., & Saucier, D. A. (2011). Contact and knowledge as predictors of attitudes toward individuals with intellectual disabilities. *Journal of Social and Personal Relationships, 28*(5), 579-590.

Moore, J. W., Edwards, R. P., Sterling-Turner, H. E., Riley, J., DuBard, M., & McGeorge, A. (2002). Teacher acquisition of functional analysis methodology. *Journal Of Applied Behavior Analysis, 35*(1), 73-77.

Moore, J. W., & Fisher, W. W. (2007). The effects of videotape modeling on staff acquisition of functional analysis methodology. *Journal Of Applied Behavior Analysis, 40*(1), 197-202.

Mouzakitis, A., Codding, R. S., & Tryon, G. (2015). The effects of self-monitoring and performance feedback on the treatment integrity of behavior intervention plan implementation and generalization. *Journal of Positive Behavior Interventions, 17*(4), 223-234. doi: 10.1177/1098300715573629

National Autism Center. (2009). The National Standards Project – Addressing the need for evidence-based practice guidelines for autism spectrum disorders. . http://www.nationalautismcenter.org/national-standards-project/history/.

National Autism Center. (2015). National Standards Project - Phase 2. http://www.nationalautismcenter.org/national-standards-project/history/.

National Disability Authority. (2003). Mental Health Services: A Review of Access to Mental Health Services for People with Intellectual Disabilities. http://nda.ie/Equality-/-Equality-Publications/Mental-Health-Services-.html.

National Institute for Health and Care Excellence. (2015). Challenging behaviour and learning disabilities: prevention and interventions for people with learning disabilities whose behaviour challenges. NICE Guidelines. http://nice.org.uk/guidance/ng11.

Neely, L., Rispoli, M., Gerow, S., & Hong, E. R. (2016). Preparing interventionists via telepractice in incidental teaching for children with autism. *Journal of Behavioral Education, 25*(4), 393-416. doi: 10.1007/s10864-016-9250-7

Nigro-Bruzzi, D., & Sturmey, P. (2010). The effects of behavioral skills training on mand training by staff and unprompted vocal mands by children. *Journal Of Applied Behavior Analysis, 43*(4), 757-761. doi: 10.1901/jaba.2010.43-757

Nosik, M. R., & Williams, W. L. (2011). Component evaluation of a computer based format for teaching discrete trial and backward chaining. *Research in Developmental Disabilities: A Multidisciplinary Journal, 32*(5), 1694-1702.

Nosik, M. R., Williams, W. L., Garrido, N., & Lee, S. (2013). Comparison of computer based instruction to behavior skills training for teaching staff implementation of discrete-trial instruction with an adult with autism. *Research in Developmental Disabilities: A Multidisciplinary Journal, 34*(1), 461-468.

Parsons, M. B., Rollyson, J. H., & Reid, D. H. (2004). Improving day-treatment services for adults with severe disabilities: A norm-referenced application of outcome management. *Journal Of Applied Behavior Analysis, 37*(3).

Parsons, M. B., Rollyson, J. H., & Reid, D. H. (2012). Evidence-based staff training: A guide for practitioners. *Behavior Analysis in Practice, 5*(2), 2-11.

Pence, S. T., St Peter, C. C., & Tetreault, A. S. (2012). Increasing accurate preference assessment implementation through pyramidal training. *Journal Of Applied Behavior Analysis, 45*(2), 345-359.

Perkins, J., & Leadbetter, D. (2002). An evaluation of aggression management training in a special educational setting. *Emotional and Behavioural Difficulties, 7*(1), 19-34.

Petscher, E. S., & Bailey, J. S. (2006). Effects of training, prompting, and self-monitoring on staff behavior in a classroom for students with disabilities. *Journal Of Applied Behavior Analysis, 39*(2), 215-226. doi: 10.1901/jaba.2006.02-05

Polirstok, S. R., Dana, L., Buono, S., Mongelli, V., & Trubia, G. (2003). Improving functional communication skills in adolescents and young adults with severe autism using gentle teaching and positive approaches. *Topics in Language Disorders, 23*(2), 146-153. doi: 10.1097/00011363-200304000-00007

Quilty, K. M. (2007). Teaching paraprofessionals how to write and implement social stories for students with autism spectrum disorders. *Remedial and Special Education, 28*(3), 182-189.

Rapp, C. A., Etzel-Wise, D., Marty, D., Coffman, M., Carlson, L., Asher, D., . . . Holter, M. (2010). Barriers to evidence-based practice implementation: Results of a qualitative study. *Community Mental Health Journal, 46*(2), 112-118.

Reid, D. H., Green, C. W., & Parsons, M. B. (2003). An outcome management program for extending advances in choice research into choice opportunities for supported workers with severe multiple disabilities. *Journal Of Applied Behavior Analysis, 36*(4), 575-578. doi: 10.1901/jaba.2003.36-575

Reid, D. H., Rotholz, D. A., Parsons, M. B., Morris, L., Braswell, B. A., Green, C. W., & Schell, R. M. (2003). Training human service supervisors in aspects of PBS: Evaluation of a statewide, performance-based program. *Journal of Positive Behavior Interventions, 5*(1), 35-46. doi: 10.1177/10983007030050010601

Robinson, S. E. (2011). Teaching paraprofessionals of students with autism to implement pivotal response treatment in inclusive school settings using a brief video feedback training package. *Focus on Autism and Other Developmental Disabilities, 26*(2), 105-118.

Rosales, R., Gongola, L., & Homlitas, C. (2015). An evaluation of video modeling with embedded instructions to teach implementation of stimulus preference assessments. *Journal Of Applied Behavior Analysis, 48*(1), 209-214. doi: 10.1002/jaba.174

Roscoe, E. M., & Fisher, W. W. (2008). Evaluation of an efficient method for training staff to implement stimulus preference assessments. *Journal Of Applied Behavior Analysis, 41*(2), 249-254. doi: 10.1901/jaba.2008.41-249

Roscoe, E. M., Fisher, W. W., Glover, A. C., & Volkert, V. M. (2006). Evaluating the relative effects of feedback and contingent money for staff training of stimulus preference assessments. *Journal Of Applied Behavior Analysis, 39*(1), 63-77.

Rose, J., Gallivan, A., Wright, D., & Blake, J. (2014). Staff training using positive behavioural support: The effects of a one-day training on the attributions and attitudes of care staff who work with people with an intellectual disability and challenging behaviour. *International Journal of Developmental Disabilities, 60*(1), 35-42.

Royal College of Psychiatrists, B. P. S., Royal College of Speech and Language Therapists. (2007). Challenging Behaviour: A unified approach - clinical and service guidelines

for supporting people with learning disabilities who are at risk of receiving abusive or restrictive practices. http://www.rcpsych.ac.uk

Ryan, C. S., & Hemmes, N. S. (2005). Post-training discrete-trial teaching performance by instructors of young children with autism in early intensive behavioral intervention. *Behavior Analyst Today, 6*(1), 1-12.

Salmento, & Bambara, M. (2000). Teaching staff members to provide choice opportunities for adults with multiple disabilities. *Journal of Positive Behavior Interventions, 2*(1), 12.

Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal Of Applied Behavior Analysis, 37*(4), 535-538. doi: 10.1901/jaba.2004.37-535

Sarokoff, R. A., & Sturmey, P. (2008). The effects of instructions, rehearsal, modeling, and feedback on acquisition and generalization of staff use of discrete trial teaching and student correct responses. *Research in Autism Spectrum Disorders, 2*(1), 125-136.

Schepis, M. M., Ownbey, J. B., Parsons, M. B., & Reid, D. H. (2000). Training support staff for teaching young children with disabilities in an inclusive preschool setting. *Journal of Positive Behavior Interventions, 2*(3), 170-178. doi: 10.1177/109830070000200305

Schepis, M. M., Reid, D. H., Ownbey, J., & Clary, J. (2003). Training preschool staff to promote cooperative participation among young children with severe disabilities and their classmates. *Research and Practice for Persons with Severe Disabilities, 28*(1), 37-42.

Schepis, M. M., Reid, D. H., Ownbey, J., & Parsons, M. B. (2001). Training support staff to embed teaching within natural routines of young children with disabilities in an inclusive preschool. *Journal Of Applied Behavior Analysis, 34*(3), 313-327.

Schlosser, R. W., Walker, E., & Sigafoos, J. (2006). Increasing opportunities for requesting in children with developmental disabilities residing in group homes through pyramidal training. *Education and Training in Developmental Disabilities, 41*(3), 244-252.

Schmidt, J. D., Urban, K. D., Luiselli, J. K., White, C., & Harrington, C. (2013). Improving appearance, organization, and safety of special education classrooms: Effects of staff training in a human services setting. *Education and Treatment of Children, 36*(2), 1-13.

Seiverling, L., Pantelides, M., Ruiz Henry, H., & Sturmey, P. (2010). The effect of behavioral skills training with general-case training on staff chaining of child vocalizations within natural language paradigm. *Behavioral Interventions, 25*(1), 53-75. doi: doi:10.1002/bin.293

Serna, R. W., Lobo, H. E., Fleming, C. K., Fleming, R. K., Curtin, C., Foran, M. M., & Hamad, C. D. (2015). Innovations in behavioral intervention preparation for paraprofessionals working with children with autism spectrum disorder. *Journal of Special Education Technology, 30*(1), 1-12. doi: 10.1177/016264341503000101

Singh, N. N., Lancioni, G. E., Karazsia, B. T., Myers, R. E., Winton, A. S. W., Latham, L. L., & Nugent, K. (2015). Effects of training staff in MBPBS on the use of physical restraints, staff stress and turnover, staff and peer Injuries, and cost effectiveness in developmental disabilities. *Mindfulness, 6*(4), 926-937. doi: 10.1007/s12671-014-0369-0

Smidt, A., Balandin, S., Reed, V., & Sigafoos, J. (2007). A communication training programme for residential staff working with adults with challenging behaviour: Pilot data on intervention effects. *Journal of Applied Research in Intellectual Disabilities, 20*(1), 16-29.

Smith, C., Felce, D., Jones, E., & Lowe, K. (2002). Responsiveness to staff support: Evaluating the impact of individual characteristics on the effectiveness of active support training using a conditional probability approach. *Journal of Intellectual Disability Research, 46*(Pt 8), 594-604.

Smyth, E., Healy, O., & Lydon, S. (2015). An analysis of stress, burnout, and work commitment among disability support staff in the UK. *Research In Developmental Disabilities, 47*, 297-305.

Smyth, S., Reading, B. E., & McDowell, C. (2017). The impact of staff training on special educational needs professionals' attitudes toward and understanding of applied behavior analysis. *Journal of Intellectual Disabilities*, 1744629517739160. doi: 10.1177/1744629517739160

Snell, M. E., Voorhees, M. D., Walker, V. L., Berlin, R. A., Jamison, K. R., & Stanton-Chapman, T. L. (2014). A demonstration of the universal problem-solving approach to address children's inappropriate behavior in Head Start classrooms. *Topics in Early Childhood Special Education, 34*(1), 4-15. doi: 10.1177/0271121413491836

Stahmer, A. C., Rieth, S., Lee, E., Reisinger, E. M., Mandell, D. S., & Connell, J. E. (2015). Training teachers to use evidence-based practices for autism: Examining procedural implementation fidelity. *Psychology in the Schools, 52*(2), 181-195. doi: 10.1002/pits.21815

Stancliffe, R. J., Harman, A. D., Toogood, S., & McVilly, K. R. (2007). Australian implementation and evaluation of active support. *Journal of Applied Research in Intellectual Disabilities, 20*(3), 211-227. doi: 10.1111/j.1468-3148.2006.00319.x

Stimpson, A., Kroese, B. S., MacMahon, P., Rose, N., Townson, J., Felce, D., . . . Willner, P. (2013). The experiences of staff taking on the role of lay therapist in a group-based cognitive behavioural therapy anger management intervention for people with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 26*(1), 63-70.

Sturmey, P., & Didden, R. (2014). *Evidence-based practice and intellectual disabilities*. UK: Wiley-Blackwell.

Suhrheinrich, J. (2011). Training teachers to use pivotal response training with children with autism: Coaching as a critical component. *Teacher Education and Special Education, 34*(4), 339-349.

Suhrheinrich, J. (2015). A sustainable model for training teachers to use pivotal response training. *Autism, 19*(6), 713-723. doi: 10.1177/1362361314552200

Swain, K., Whitley, R., McHugo, G. J., & Drake, R. E. (2010). The sustainability of evidence-based practices in routine mental health agencies. *Community Mental Health Journal, 46*(2), 119-129.

Tierney, E., Quinlan, D., & Hastings, R. P. (2007). Impact of a 3-day training course on challenging behaviour on staff cognitive and emotional responses. *Journal of Applied Research in Intellectual Disabilities, 20*(1), 58-63.

Toogood, S. (2008). Interactive training. *Journal of Intellectual and Developmental Disability, 33*(3), 215-224. doi: 10.1080/13668250802292596

Totsika, V., Toogood, S., Hastings, R. P., & McCarthy, J. (2010). The effect of active support interactive training on the daily lives of adults with an intellectual disability. *Journal of Applied Research in Intellectual Disabilities, 23*(2), 112-121.

Totsika, V., Toogood, S., Hastings, R. P., & Nash, S. (2008). Interactive training for active support: Perspectives from staff. *Journal of Intellectual and Developmental Disability, 33*(3), 225-238. doi: 10.1080/13668250802283348

Towery, D., Parsons, M. B., & Reid, D. H. (2014). Increasing independence within adult services: A program for reducing staff completion of daily routines for consumers

with developmental disabilities. *Behavior Analysis in Practice, 7*(2), 61-69. doi: 10.1007/s40617-014-0013-4

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., . . . Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Ann Intern Med, 169*(7), 467-473. doi: 10.7326/m18-0850

van der Meer, L., Matthews, T., Ogilvie, E., Berry, A., Waddington, H., Balandin, S., . . . Sigafoos, J. (2017). Training direct-care staff to provide communication intervention to adults with intellectual disability: A systematic review. *American Journal of Speech-Language Pathology, 26*(4), 1279-1295. doi: 10.1044/2017_ajslp-16-0125

van Vonderen, A., de Swart, C., & Didden, R. (2010). Effectiveness of instruction and video feedback on staff's use of prompts and children's adaptive responses during one-to-one training in children with severe to profound intellectual disability. *Research In Developmental Disabilities, 31*(3), 829-838.

van Vonderen, A., Duker, P., & Didden, R. (2010). Instruction and video feedback to improve staff's trainer behaviour and response prompting during one-to-one training with young children with severe intellectual disability. *Research In Developmental Disabilities, 31*(6), 1481-1490.

Vanono, L., Dotson, L., & Huizen, T. (2013). Positive interactions: A pilot study of an observation measuring tool and interactive intervention workshop for staff working with adults with intellectual disabilities. *International Journal of Positive Behavioural Support, 3*(1), 5-15.

Vismara, L. A., Young, G. S., Stahmer, A. C., Griffith, E. M., & Rogers, S. J. (2009). Dissemination of evidence-based practice: Can we train therapists from a distance? *Journal Of Autism And Developmental Disorders, 39*(12), 1636-1651. doi: 10.1007/s10803-009-0796-2

Vladescu, J. C., Carroll, R., Paden, A., & Kodak, T. M. (2012). The effects of video modelling with voiceover instruction on accurate implementation of discrete-trial instruction *Journal Of Applied Behavior Analysis, 45*(2), 419-423. doi: 10.1901/jaba.2012.45-419

Wallace, M. D., Doney, J. K., Mintz-Resudek, C. M., & Tarbox, R. S. (2004). Training educators to implement functional analyses. *Journal Of Applied Behavior Analysis, 37*(1), 89-92.

Wehmeyer, M. L., & Schalock, R. L. (2001). Self-determination and quality of life: Implications for special education services and supports. *Focus on Exceptional Children, 33*(8), 1-16.

Weldy, C. R., Rapp, J. T., & Capocasa, K. (2014). Training staff to implement brief stimulus preference assessments. *Journal Of Applied Behavior Analysis, 47*(1), 214-218. doi: 10.1002/jaba.98

Willner, P., Rose, J., Jahoda, A., Kroese, B. S., Felce, D., MacMahon, P., . . . Hood, K. (2013). A cluster randomised controlled trial of a manualised cognitive-behavioural anger management intervention delivered by supervised lay therapists to people with intellectual disabilities. *Health Technology Assessment, 17*(21), 1-173.

Wong, C., Odom, S. L., Hume, K., Cox, A., Fettig, A., Kucharczyk, S., . . . Schultz, T. (2014). Evidence-based practices for children, youth and young adults with autism spectrum disorder. Chapel Hill: The University of North Carolina, Frank Porter Graham Child Development Institute, Autism Evidence-Based Practice Review Group.

Wong, C. S. (2013). A play and joint attention intervention for teachers of young children with autism: A randomized controlled pilot study. *Autism, 17*(3), 340-357. doi: 10.1177/1362361312474723

Wood, A. L., Luiselli, J. K., & Harchik, A. E. (2007). Training instructional skills with paraprofessional service providers at a community-based habilitation setting. *Behavior Modification, 31*(6), 847-855.

Zoder-Martell, K. A., Dufrene, B. A., Tingstrom, D. H., Olmi, D. J., Jordan, S. S., Biskie, E. M., & Sherman, J. C. (2014). Training direct care staff to increase positive interactions with individuals with developmental disabilities. *Research In Developmental Disabilities, 35*(9), 2180-2189. doi: 10.1016/j.ridd.2014.05.016

Zwijsen, S. A., Gerritsen, D. L., Eefsting, J. A., Smalbrugge, M., Hertogh, C. M. P. M., & Pot, A. M. (2015). Coming to grips with challenging behaviour: A cluster randomised controlled trial on the effects of a new care programme for challenging behaviour on burnout, job satisfaction and job demands of care staff on dementia special care units. *International Journal of Nursing Studies, 52*(1), 68-74.