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INTELLECTUAL DISABILITIES (M FELDMAN AND R CONDILLAC, SECTION EDITORS)

Review of Evidence-Based Approaches to Caregiver Training

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Abstract

Purpose of Review Training caregivers on tasks related to quality of life for the individuals they support is important across service sectors. Moreover, trainees often rank quality training as highly acceptable. This review summarizes the current status of the caregiver training literature, while providing recommendations for future research initiatives.

Recent Findings Telecommunication and pyramidal training models represent advancements in caregiver trainings, and burgeoning evidence suggests that these approaches may effectively develop caregiver skill mastery. However, improved caregiver performance may not reliably coincide with client improvement.

Summary Behavioral skills training is an evidence-based approach to establish mastery across a range of skills within the context of caregivers supporting individuals with intellectual and developmental disabilities (IDD). Research examining skill generalization and maintenance, and the relationship between caregiver skill mastery and client outcomes remains relatively understudied. Early evidence examining advancements in caregiver training is promising and may offset costs associated with standard training approaches.

Keywords Caregiver training · Behavioral skills training · Intellectual and developmental disability

Introduction

Evidence-based practice (EBP) is a term that has been adopted by numerous service sectors and disciplines, but the definitions may vary based on different methodologies. The term originated in the field of psychology and was used to describe the best available research integrated with clinical expertise in the context of patient characteristics, culture, and preferences [1]. Although there continues to be debate regarding what constitutes EBP, its purpose is unanimously understood: to promote and apply sensitive and effective clinical practice [1].

In some helping professions, like behavior analysis, clinicians rely on paraprofessionals or caregivers to accurately apply most interventions. This approach is referred to as the *mediator model*. Common mediators include biological and foster parents; teachers and educational assistants; direct care, day care, and nursing home staff; and students and volunteers. Using mediators to implement clinical interventions necessitates an EBP training approach that efficiently promotes skill mastery. In the context of EBP, clinicians must consider whether the clients' physical environment (e.g., family, foster, and group home; classroom; day care; and senior's facility) is conducive to a specific training approach, whether they have the specific expertise to train caregivers, and whether the approach matches caregivers' resources, perspectives, and preferences [2]. Two well-researched, commonly used training approaches include didactic and competence-based training.

Didactic Training

Didactic lessons aim to provide learners with theoretical knowledge on targeted subject matter. Information can be presented through written text (e.g., manuals, books, and reference articles) or a meeting, seminar, and/or lecture-based format. Typically, this approach is most appropriate when the training goals include teaching *knowledge* of concepts or principles [3]. Didactic training literature may not include performance-based objectives, thus producing outcomes demonstrating positive training effects. For example, researchers exploring the utility of a didactic training component, in isolation, may have the participants' complete written

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evaluations to demonstrate obtained knowledge in a specific content rather than demonstrating the skill in practice. Specifically, a frontline staff member may be able to recite/write the components of a clients' behavior support plan. If this were the research objective, mastery would have been demonstrated without the staff member every having to apply the skill in practice. These objectives typically dominate the didactic training literature base. Alternatively, if the goal is for a front-line member to apply the behavior support plan in practice, a didactic training approach is unlikely to produce desired outcomes (e.g., accurately implementing the behavior support plan) (see below). Unfortunately, appropriately matched training objectives with the training mode may not be considered by service providers. Thus, ease of delivery combined with a literature base supporting didactic delivery as an effective knowledge training mode may explain why it continues to be the most commonly used form of training [4]. However, didactic instruction shows substantial limitations in the learner's inability to consistently translate knowledge to practice in context and maintain newly acquired target skills [5•]. Ultimately, lasting change in trainee on-the-job performance may be unlikely with didactic training alone. For example, Davis, Thomson and Connolly [5•] conducted a component analysis of a training package used to teach volunteers how to support people with developmental disabilities in a physical education setting. Results demonstrated that the use of instructions alone was sufficient to obtain immediate performance improvements in the volunteers, but they were unable to maintain these results at post-training follow-up. Ultimately, the volunteers were provided with a comprehensive performance-based training approach that appeared to promote performance maintenance. Training outcomes may be improved by using the didactic approach concurrently with competence-based components, which are better at targeting caregiver performance.

Competence-Based Training

Competence-based training with a focus on skill performance may offer a solution to the knowledge-skill application gap. The goal of this training approach is to ensure that learners gain subject-specific knowledge, as well as, performance proficiency [6]. Performance refers to trainees actively performing skills during training [7]. Competence-based refers to trainees' ongoing practice of target skills until meeting a predetermined performance criterion [7]. As previously described, selected training approaches need to appropriately prepare learners to accurately and consistently perform target skills in the settings in which they are needed. Inadequate training procedures produce ill-prepared trainees, which could lead to poor implementation integrity and/or may adversely impact trainees' on-the-job experience. The overall effectiveness, efficiency, and acceptability of training programs may be generally considered critical to its overall success.

Behavioral Skills Training

Behavioral skills training (BST) is an example of an evidence-based, competence-based approach to teaching skills [8•]. It is a multistep training approach traditionally comprised of four components: instructions, modeling, rehearsal, and feedback [9]. Typically, trainers will first provide clear and concise instructions on how to perform the target skill, which may be accompanied by a rationale. This is followed by a demonstration on how to complete the target skill. Third, trainees are offered opportunities to practice the target skill, typically under simulated conditions. Finally, trainers provide encouragement or constructive feedback on trainee performance practicing the target skill. The final two steps are typically repeated until trainees demonstrate the skill to a predetermined performance criterion [7]. The evidence-base across different caregiver groups is not uniform. However, research generally suggests that BST may be effective in training skills across various personnel, including the following: students (e.g., [10, 11]), teachers (e.g., [12, 13]), volunteers (e.g., [5•]), support staff (e.g., [14, 15]), and caregivers (e.g., [16, 17]). Research has also shown that participants often rank the BST approach as highly acceptable (e.g., [18, 19]). This is important because perceived acceptability often impacts protocol adherence by implementers applying specialized programing [20].

Skill Performance Generalization

As previously mentioned, BST is often provided to the trainee under simulated conditions or settings (e.g., role-play exercises and using confederates). While this may minimize training costs, it may also have important generalization implications. Generalization refers to trainees performing a target behavior for which direct training has not been provided and/or outside of the training context—i.e., in the natural environment [21]. To promote generalization, training should be provided in a way that prepares the trainee to apply skills in the actual situations and potentially perform related skills without requiring additional training. For the former, in-situ (on-the-job) training is an extension of BST that refers to providing competence-based training in the environment that trainees will need to apply target skills. This training extension may increase the likelihood that trainees will proficiently perform target skills within a typical situation [7]. Overall, generalization is relatively understudied in this area [22••]. However, there are general recommendations around how to facilitate generalization [23•], including the following: (1) sequential

modification, (2) training loosely, (3) programming common stimuli, (4) mediating generalization, and (5) training multiple exemplars and training "to generalize." In 1992, Ducharme and Feldman examined the effectiveness of different approaches for facilitating generalization. Nine direct-care staff learned how to teach self-care routines to client with IDD [24]. The authors found that general-case training was more effective at promoting generalization across clients, settings and client programs than written instruction (didactic), single case practice, and programming common stimuli. In the general-case training, researchers presented participants with many programming examples from 12 different self-care domains (e.g., hygiene and dressing). This important, early demonstration of staff training generalization is encouraging; however, generalization is not featured as frequently as skill mastery in the staff training literature [22••]. Therefore, generalization within the context of caregiver training should be featured in most BST research moving forward.

Skill Performance Maintenance

In addition to skill acquisition and generalization, skill maintenance is also important. Specifically, trainees need to continue demonstrating their newly acquired skills in the relevant environment long after training has concluded. Brock and colleagues conducted a comprehensive review and meta-analysis on research on mediator training using BST. The studies meeting inclusion criteria typically featured researchers acting as trainers and in-service special education teachers or paraprofessionals participated as trainees. They reported that over half of the featured studies evaluated skill maintenance with many studies continuing to collect follow-up data points up to 6 months post-training [22••]. Of the studies that reported on performance maintenance, 77% reported successfully maintained target skills. It is possible that the maintenance probes described in BST research may be analogous to intermittent on-the-job performance evaluations. As such, promoting performance maintenance may include conducting regular check-ins or intermittent on-the-job performance evaluations. More informally, intermittent supervisor feedback may also be helpful in promoting maintenance. Specifically, if supervisors frequently engage with clients and staff in the setting, this may provide many naturally occurring feedback opportunities—that may be more acceptable to caregivers than targeted formal evaluation processes. In cases of performance maintenance-failure, one may consider conducting additional training sessions, often referred to as a "booster session." These sessions are typically condensed performance- and competence-based trainings and serve as a refresher for the trainee. Despite the demonstrated utility of performance- and competence-based training methods, such as BST, it is important to continue to expand upon these training procedures to refine them and develop more effective and efficient procedures.

Caregiver Training Advancements

While substantial empirical support exists for the standard BST approach, there are several practical concerns. First, the amount of time required by an expert trainer can be burdensome, especially if the trainer is a clinician and responsible for overseeing programming for a large contingent of consumers (e.g., patients and clients). Second, associated fees related to bringing in expert trainers for extended periods may be cost prohibitive for human service agencies, particularly when high staff turn-over necessitates training new hires regularly [25]. Third, a standard BST approach may not be feasible for remotely located caregivers. Last, training large groups of people at once can be difficult when few expert trainers are available to conduct sessions, leaving a substantial proportion of caregivers untrained. These limitations may be in part why didactic training continues to dominate the human services sector [4] even though BST may be more established as necessary to achieve performance outcomes [5•, 26, 27]. To address some of the logistical training barriers mentioned above, BST has been used in combination with training advancements [22••, 28].

Pyramidal Training

An approach called pyramidal training, also referred to as "train-the-trainer" or "peer-to-peer training" may minimize expert trainer time required. The medical profession first described this approach, which was an attempt to streamline and promote efficient training. The process typically involves an expert responsible for training a small group of trainees, often referred to as Tier 1 trainees. Tier 1 trainees are responsible for training other caregivers, often referred to as Tier 2 trainees. In the context of human services training research, including front-line staff and supervisors supporting individuals with IDD, Tier 2 trainees are often taught skills to improve their capacity to support consumers, referred to as Tier 3 participants.

Notably, a pyramidal training model, using the BST approach, also necessitates Tier 1 trainee developing competence in additional skills beyond simply mastering the target skill they will be training others to perform (e.g., intervention implementation). These additional skills may include the following: providing feedback to Tier 2 trainees, collecting data on Tier 2 trainee integrity, monitoring Tier 2 trainee progress, and determining when trainees demonstrate performance mastery, generalization, and maintenance. Therefore, we recommend incorporating initial training sessions that teach Tier 1 trainees to use BST framework, as well as relevant target skills. Finn and Sturmey provided an example of pyramidal training to increase interactions and positive statements made

by habilitation specialists working in a day program supporting adults with dual diagnosis [25]. The authors employed a multiple-baseline design across four pairs of direct support staff serving as trainer-trainee dyads. After collecting baseline data, the experimenter taught trainer-participants (Tier 1) how to teach trainee-participants (Tier 2) each target response across three stages. Examples of positive interactions may include staff making complimentary statements (including manual sign) about a client's behavior or attempting to engage the client in a discussion about a preferred activity. Increased interactions may include an invitation for a "high-five" initiated by the staff member or prompting the client to ensure that they can successfully complete an activity (e.g., setting the table). The authors concluded that introducing the peer-to-peer training program coincided with improved frequency of interaction and positive statements with clients by Tier 2 trainees. Parsons, Rollysons, and Reid expanded on this research by teaching specific "additional" skills (e.g., providing constructive feedback to trainees), as well as client-centered skills (e.g., providing descriptive praise to consumers and using most-to-least prompting) [29]. The authors trained 10 human services practitioners (Tier 1) on the BST framework, and then evaluated the capacity of Tier 1 participants to use BST to train Tier 2 participants on non-targeted relevant client-centered skills. Tier 1 participants included seven teachers, two teaching assistants, and two technicians; all with a range of educational backgrounds and experience. The study's purpose and research methodology enabled authors to tentatively conclude that pyramidal training may promote generalization. Specifically, their results indicated that generalization may be achieved by training Tier 1 trainees on the BST framework, rather than simply using BST to train Tier 1 trainees on selected target skills, which they would then train Tier 2 trainees on.

More recently, Andzik and Cannella-Malone conducted a comprehensive review of the pyramidal training literature. They analyzed 14 articles that fit their inclusion criteria. Studies included in this review suggest that pyramidal training is effective within the evaluated parameters and may hold promise across unevaluated sectors, including a wider range of disability populations [30]. Although the authors concluded that pyramid training is effective, they also suggested that the entire body of research may be weaker methodologically given none of the featured articles evaluated the fidelity of "expert" trainer delivery. Second, it is unclear whether changes in Tier 2 trainees directly benefitted Tier 3 participant (consumers) because few studies examined Tier 3 target behavior in relation to Tier 2 trainee target skill mastery. Finally, generalization and maintenance were infrequently targeted across featured articles. We recommend future research to examine whether pyramidal training impacts generalization and maintenance. It is possible that the continued presence of Tier 1 trainees in Tier 2 trainees' workplace could promote maintenance. Thus, researchers may also consider exploring whether pyramidal training differentially impacts skill maintenance compared with the standard BST approach.

While pyramidal training may solve some of the cost and resource limitations associated with a standard BST approach, it may also have some limitations and/or risks. First, the increased time requirement for Tier 1 trainers is needed to teach them how to train Tier 2 staff. For example, scheduling conflicts resulting from ongoing, repeated trainings may interfere with existing job duties [31•]. This may make staff reluctant to take on Tier 1 trainer roles. Another limitation may be the possibility that Tier 1 trainers overextend their "expertise" by attempting to address clinical issues exceeding their capacity as trainers. For example, they may be viewed by colleagues as "experts" and asked to weigh in on clinical issues, when the situation warrants expert input. Despite these limitations, current pyramidal training research suggests that this may be a promising approach.

Telecommunication Models

As access to technology improves, telecommunication models (TCMs) of training represents another advancement in caregiver training that has gained attention across clinical services. Higgins and colleagues demonstrated the use of a TCM platform to deliver BST to direct support staff [28]. Results of the training showed an immediate and robust impact on the support staff performance in correctly implementing a multiple stimulus without replacement preference assessment. In addition, the direct support staff reported a high acceptability with the TCM training model. Although TCM research is still emerging and will likely continue to evolve as communications technology becomes more advanced, it retains a few important advantages over the standard BST approach. First, it affords increased caregiver access to professional skill development, which could result in an increased availability of trained staff while reducing the financial burden associated with training for support organizations [32]. Second, it may improve access to training for those living in remote and rural areas [33]. Finally, it may facilitate skill generalization and maintenance by offering quick and convenient access to in situ trainings and booster sessions.

Staff Performance and Client Outcomes

tImproved client outcomes (e.g., quality of life) and substantial fiscal restraints in human services are two important reasons to develop effective and efficient caregiver training that not only improves caregiver performance but may also reliably produce improved client outcomes [34–36]. The relationship between improved staff performance on target skills and coinciding client improvements remains relatively understudied, and the

literature reporting on this relationship has generally indicated mixed results [22••]. For example, Bethune and Wood examined the effects of coaching on five special education teachers implementing function-based interventions [37]. Coaching sessions comprised of an initial model on intervention implementation, followed by immediate in situ feedback on teachers' accurate intervention use. Researchers recorded student instances of problem behavior and replacement behavior at baseline and post-training. Outcomes revealed substantial improvement in implementation fidelity coinciding with zero or near-zero rates of student problem behavior, as well as increases in students' primary replacement behaviors. By contrast, Mouzakitis, Codding, and Tyron examined whether performance feedback was required to improve treatment fidelity of four teachers implementing behavior intervention plans [38]. Student target behavior was percentage of on-task behavior. The authors concluded that performance feedback was necessary to improve treatment fidelity of three out of four teachers. However, fidelity improvement did not coincide with improvements in target students' on-task behavior.

In summary, caregiver implementation accuracy does not always guarantee client improvement. Given the contrasting outcomes, we recommend researchers to always consider evaluating not only caregiver implementation fidelity but also client outcomes. Moreover, we recommend researchers to begin examining data trends in this literature. Specifically, which variables are reliably present in articles demonstrating client improvement coinciding with improved caregiver performance? It is likely that participant characteristics, caregiver characteristics, client target behavior, and caregiver target behavior (including the targeted intervention being taught) may impact whether this relationship is observed. Isolating these trends may facilitate creating training approaches more likely to produce improved client outcomes, as well as improved caregiver performance. This work may also indirectly speak to the evidence-base coinciding with the intervention caregivers are being trained on. For example, training caregivers using BST on an intervention that does not address the correct challenging behavior function (i.e., training staff on planned ignoring for escape-maintained challenging behavior) would not likely reduce challenging behavior instances, even when caregivers were performing the intervention accurately.

Our Conclusions on the Current Status of Caregiver Training

The current report is not a comprehensive literature review; instead, we began by describing EBP to suggest that not all popular training approaches, like didactic instruction, may be appropriate for every situation. We recommend clinicians to apply EBP and consider whether a training approach matches the skills or outcomes being sought prior to training.

Overall, using the standard BST approach to establish initial target, skill mastery has a large and growing literature base, with a deep history of research dating back many years (e.g., [8•]). In certain populations for certain personnel, it has earned "empirically supported" status [37]. However, limited training budgets in the human services sector may make a BST approach unfeasible to sustain over the long term. Therefore, research initiatives exploring BST variations, such as pyramidal training and TCMs, are positive developments that may increase the likelihood of reliable uptake by human services agencies. Currently, the true potential of BST variations (pyramidal training and TCMs) has not been fully explored and maximized, while research examining the standardized BST approach on skill generalization, maintenance, and client outcomes is relatively understudied.

Compliance with Ethics Guidelines

Conflict of Interest The authors declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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