

Abstract

The increasing prevalence of autism spectrum disorder has led to a growing demand for accessible and scalable behavioral health services. Previous research has demonstrated that incidental teaching is an effective naturalistic intervention for increasing communication skills in children with autism and that behavior skills training is an effective method for teaching caregivers to implement evidence-based practices. More recently, studies have shown that telepractice can be a viable modality for delivering caregiver training; however, additional replications are needed to strengthen the evidence base and examine caregiver and child outcomes across various participants and trainers. The purpose of this study was to replicate and extend prior research by evaluating the effectiveness of delivering BST via telepractice to train caregivers to implement incidental teaching procedures. Three caregiver-child dyads and one trainer participated in the study. The trainer provided caregivers training through synchronous videoconferencing sessions. The researchers used a multiple baseline single-case design to evaluate changes in caregiver procedural fidelity and child communication outcomes. Following training delivered via videoconferencing, all caregivers demonstrated improved procedural fidelity, reaching 100% accuracy across two consecutive sessions. In addition to improvements in caregiver fidelity, all caregivers increased the number of communication opportunities offered during naturalistic teaching, resulting in a corresponding increase in child mands above baseline levels. These outcomes support that caregiver implementation of incidental teaching, when taught via telepractice, is an effective and efficient method for training caregivers to implement evidence-based interventions while reducing common barriers. Overall, the findings contribute to the growing literature establishing telepractice as a viable model for caregiver training and communication intervention. Implications for practice and directions for future research are discussed.

Key Words: autism spectrum disorder, incidental teaching, caregiver-mediated intervention, BST, child communication

Caregiver Behavior

The primary dependent variable was *caregiver fidelity of implementing incidental teaching procedures*. Researchers used a 10-step fidelity checklist to measure the percentage of steps implemented correctly by the caregiver for each communication opportunity (see Table 1). These procedures were adapted from Neely (2016) as originally designed by Franzone (2010) and Hart and Risley (1968). The fidelity checklist included arranging the environment, following the child's lead, providing prompts as needed, waiting for child responses, and delivering appropriate reinforcement based on the incidental teaching protocol. Each step on the fidelity checklist was marked as occurred, not occurred or not applicable based on the caregiver's behavior. The rater determined the correct marking based on if the target behavior was observed or not observed.

Table 1

Anticipated caregiver behavior during incidental teaching trial

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- 1 Does the caregiver start the opportunity by asking "what do you want?"
 - 2 Does the caregiver wait 3-6 seconds after asking "what do you want?" (or 1st prompt) before prompting again?
 - 3 If the child does not correctly respond to "what do you want?" (or 1st prompt), does the caregiver provide a clear vocal model at the target communication level?
 - 4 Does the parent wait 3-6 seconds after the first vocal model before prompting again?
 - 5 If the child does not correctly respond to the first vocal model, does the parent provide a second vocal model at the target communication level?
 - 6 Does the parent wait 3-6 seconds after the second vocal model before prompting again?
 - 7 If the child does not correctly respond to the second vocal model, does the parent provide a final vocal model at the target communication level?
 - 8 If the child provides a correct response, does the parent repeat and expand within 3 seconds?
 - 9 Does the parent provide no more than 3 vocal models in a single opportunity?

10 Does the parent wait at least 3 seconds before starting another opportunity?

A *communication opportunity* was recorded when the caregiver modified the environment to prompt interaction. This included placing a desired item within view but out of reach (e.g., on a high shelf), interrupting task completion (e.g., providing some but not all puzzle pieces), or acting in an unexpected way during routines (e.g., stopping in front of a door without opening it (Neely et al., 2016). To confirm the presence of the relevant motivating operation, a communication opportunity was only recorded if the child initiated toward the communication opportunity. Child initiations were defined as physical initiations (e.g., reaching toward, pointing, attempting to grab, exchanging a sentence strip “I want __”) or verbal initiations (e.g., requesting with or without the targeted mand). Multiple communication opportunities could occur within a 1-min session (Neely et al., 2016).

The researcher calculated the fidelity scores for each communication opportunity as the number of correctly implemented steps, divided by the total number of steps, and multiplied by 100 to obtain a percentage. The researcher then calculated the average session fidelity by dividing the total number of percentages of steps implemented correctly by the total number of communication opportunities. For example, if the caregiver offered three communication opportunities during a session, with resulting 90, 95, and 95% of incidental teaching steps implemented correctly, the overall percentage of steps completed correctly would be 93.3% for the session.

Child Behavior

The third dependent variable was the frequency of child mands within the one-minute session. Child mands included vocalizations directed toward the caregiver to request items, gain

attention, or express needs. Target vocal-verbal mands were individually defined, in collaboration with the child's caregiver, based on their current level of communication. Child A's target mand was a three-word request (e.g., "I want bubbles"). Child B's target mand was a three-word request (e.g., "I want ball"). Child C's target mand was a three-word request (e.g., "I want cookie").

Results

Caregiver Behavior

Percentage of Incidental Teaching Steps Performed Correctly

The percentage of incidental teaching steps performed correctly is represented by the closed circles in Figure. 1 and corresponds to the left y-axis. Before training, the caregiver's implementation of incidental teaching was at low levels with moderate to high variability across all caregivers. During the baseline condition, Caregiver A had a mean of 20% steps performed correctly (range 0-40%), Caregiver B had a mean of 42% steps performed correctly (30-67%), and Caregiver C had a mean of 17% steps performed correctly (0-70%).

All caregivers reached criteria of 100% fidelity for two consecutive sessions during the training phase. Caregiver A reached the performance criteria within two sessions, Caregiver B within seven sessions, and Caregiver C within eleven sessions. The high variability in the training phase for Caregiver C could be from multiple factors such as having different target mands, changing environments, and individual caregiver training.

Frequency of Communication Opportunities

The number of communication opportunities offered by the caregivers is displayed as the gray bars in Figure. 1 and corresponds to the right y-axis. During the baseline condition, the

caregivers offered very few communication opportunities with a mean of one opportunity for Caregiver A, 1.1 opportunities for Caregiver B (range 1-2), and 0.3 opportunities for Caregiver C (range 0-1). During the training phase, all the caregivers increased the number of communication opportunities they offered. Caregiver A offered a mean of 2.6 opportunities (range 2-3), Caregiver B offered a mean of 2.5 opportunities (range 2-4), and Caregiver C offered a mean of 1.1 opportunities (range 1-2).

Child Behavior

Figure 1 displays the occurrence of the child mands during each phase of the study (black bars corresponding to the right y-axis). During the baseline condition, Child A had a mean of 0.6 targeted mands per session (range 0-1 mands). Child A increased the use of his target mand to a mean of 2.6 times per session (range 2-3 mands).

Child B used his target mand a mean of one time during the baseline sessions (range 0-2 mands). During the training phase, Child B increased the use of his targeted mand to a mean of 2.4 times per session (range 1-4 mands).

Child C used her target mand a mean of 0.1 times during the baseline sessions (0-1 mands). During the training phase, Child C increased the use of her targeted mand to a mean of 0.5 times per session (range 0-1 mands). The frequency child mands are at low levels also due to the caregiver usually only providing one opportunity in the 1-minute sessions.

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