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Article

State Deafblind Technical Assistance Project Staffs' Reported Use and Perceived Skill of Implementing the System of Least Prompts with Students Who Are Deafblind

Chevonne Sutter, Ph.D.

University of Nevada, Reno

MaryAnn Demchak, Ph.D., BCBA-D

University of Nevada, Reno

Abstract: *This study evaluated state deafblind project technical assistance providers (TA) reported use of systematic instruction, specifically the system of least prompts (SLP), and examined perceptions of implementation and accuracy of description of components. In a census, 151 TA providers were asked to report instructional methods used. A majority of respondents reported using systematic response prompting historically. Fewer than half reported providing TA with the goal of increasing others' use; of this group, 78.9% rated themselves as confident that they could coach others in use of the SLP. Only one respondent accurately answered all questions about components of the SLP. TA providers reported emphasizing modifications and adaptations to the environment based on child characteristics. Instructional methods reportedly employed highlighted child-guided methods. Overall, responses suggested systematic instruction is not commonly or accurately used. We discuss implications of limited use for children with deafblindness, make suggestions to increase use, and suggest future research.*

Keywords: *deafblind, system of least prompts, technical assistance, instructional methods*

State Deafblind Technical Assistance Project Staffs' Reported Use and Perceived Skill of Implementing the System of Least Prompts with Students Who Are Deafblind

A key aspect of providing technical assistance (TA) and training to families and service providers is the sharing of knowledge and provision of instructional coaching to positively affect student outcomes. It is essential that assistance and training consist of strategies and interventions that have an evidence base supporting their effectiveness. However, within the field of deafblindness, there are currently no identified evidence-based practices (EBPs) and limited research guiding intervention strategies (Bruce et al., 2016; Ferrell et al., 2014).

A federally grant-funded special education project, the state deaf-blind technical assistance project currently serves children, birth through 21 years with deafblindness, in each U.S. state and territory. Project staff provide technical assistance and training to families and service providers to meet the specialized educational needs of these children. In order for these project TA providers to build local capacity for change, they must be knowledgeable about effective instructional methods to teach and support students who are deafblind and be able to teach others to implement effective instructional methods in teaching these students. Clearly, the identification of EBPs in the field is imperative.

The recent trend in the identification and implementation of EBPs in the field of education has highlighted the distinction among best practices, recommended practices, research-based practices, and evidence-based practices. Each of these terms is intended to denote practices that are effective; yet, they differ in the level of rigor of supporting research (Cook & Cook, 2013). EBPs have the highest level of empirical support, and they are supported by a body of research demonstrating positive outcomes, with individual studies meeting quality indicators for methodological soundness.

In the field of deafblindness, there is a call for research evaluating instructional practices across domains. An examination of research across multiple domains found that “there is a dire need for research in the content areas of literacy, science, and mathematics. There is also a high level of need for further research in assessment, AT, communication, and specialized orientation and mobility techniques” (Ferrell et al., 2014, p. 85). They found no domains with the highest level of support associated with EBPs. Another review in the field of deafblindness focused on intervention studies that taught augmentative and alternative communication (Sigafoos et al., 2007). While improved outcomes were reported for 90% of participants across 17 studies, the authors found that 11 of those studies had significant methodological weaknesses. Parker (2009) reviewed research evaluating orientation and mobility interventions with individuals who are deafblind. Between 1965 and 2007, only 13 studies were identified (Parker, 2009). A recent review examining the state of research on communication and literacy in deafblindness (Bruce et al., 2016), concluded that much research needs to be done in the area of communication, including “how to teach a variety of communicative functions,” and that there is a “dramatic

need for research on literacy” (p. 440). The small amount of research, in general, and the even smaller amount of research with a high level of rigor, has led to the use of instructional strategies with limited empirical support with children with intensive support needs.

Although there is limited rigorous research to identify EBPs in the field of deafblindness, there is more evidence in the related field of severe disabilities. Response prompting methods are an integral part of systematic teaching of students with complex learning needs and are supported by methodologically strong studies documenting positive outcomes for students with intellectual disability. The system of least prompts (SLP) is a response prompting method that has been used with learners with a wide range of learning characteristics, including multiple disabilities and complex support needs, and to teach a variety of skills across domains (Browder et al., 2011; Manley et al., 2008; Mims et al., 2009; Skibo et al., 2011; Smith et al., 2013; Taber et al., 2003).

The SLP is an instructional procedure in which a specified hierarchy of prompts is delivered beginning with the least intrusive prompt, with subsequent prompts increasing in level of assistance, and ending with the most intrusive prompt required for the child to emit the target response. The final prompt in the hierarchy is a controlling prompt, a prompt that will result in the correct response. For each instructional trial, the child first has an opportunity to respond to the instructional cue independently. For no response or incorrect responses, the next most intrusive prompt in the hierarchy is delivered. There is strong evidence that the SLP can lead to improved outcomes in numerous domains for students with an intellectual disability (What Works Clearinghouse, 2018), such as listening comprehension in a literacy activity (Browder et al., 2011; Mims et al., 2009); communication skills (Manley et al., 2008; Taber et al., 2003); numeracy skills (Skibo et al., 2011); and independent living skills (Smith et al., 2013).

Implementation of instructional strategies with rigorous empirical support, such as the SLP, may lead to better outcomes for students with deafblindness. However, anecdotal observations and informal questioning suggest that state project staff responsible for providing TA and training to families and service providers have limited knowledge of this instructional method. It is imperative to examine project TA providers’ knowledge and use of systematic response prompting methods to determine the current state of the field. The present survey was designed as a census to measure project staffs’ knowledge and perception of their own use of response prompting methods. It also assessed their perceived ability to teach these methods. It further evaluated whether they reported using and teaching these methods, as well as other instructional methods. Specific research questions were:

1. Do project TA providers report using systematic instruction, specifically the SLP? Do they report teaching others to use the SLP? What are project staffs’ perceptions about their correct implementation of the SLP?
2. Do project TA providers who report competency in use of the SLP accurately describe key components of the SLP?
3. If systematic instruction is not used, what other instructional methods do project TA providers report using or teaching?

Method

Participants

The population of state deafblind project staff is small, with approximately one to five staff who provide TA in each state. Each US state and territory has a statewide project, with some projects serving two or more states or territories jointly. Because the population is small and there are few TA providers in each state, a census was employed to get representative answers from across the US about the use of response prompting methods with children who are deafblind. All members of the target population were selected as potential respondents. Names and emails of current state project staff were found on the website for the National Center on Deaf-Blindness (NCDB). Current project staff who provided TA for each statewide deafblind project at the time of the survey received an invitation to complete an anonymous online survey about their use of systematic instruction, specifically the SLP.

The survey was sent to 151 potential respondents. All project staff across 52 states and territories, who potentially provided TA based on their titles, were sent the survey. The overall return rate was 45%. However, these respondents represented 81% of the total number of states and territories. That is, project staff that provided TA in 42 of the 52 states and territories with a state TA project responded to the survey. Some of the initial survey respondents held administrative or other positions, that did not include TA as a job description, and so, did not complete the survey. While a return rate of 45% is considered high (Clearinghouse for Military Family Readiness, 2016), representation of the much higher 81% of US states and territories is likely indicative of what is happening nationwide. Of the 68 respondents, 43 held a master's degree, 16 held doctoral degrees, two held professional doctorates, three held bachelor's degrees, one held an education specialist degree, one completed a graduate certificate, and two did not specify their highest degree. Respondents held degrees in a variety of fields, including special education, deaf studies and deaf education, vision science, speech and language sciences, community health, curriculum and instruction, school counseling, education administration, audiology, child and family studies, occupational therapy, arts management, and educational leadership. Those who reported degrees in special education had a range of emphases such as deafblindness, severe disabilities, visual impairments, and early childhood education. Respondents reported completing their degrees in a period ranging from 1972 to 2020. Project staff most frequently reported that their state deafblind projects were housed at a university (44.1%, $n=30$), while 25% of projects ($n=17$) were reported as housed at schools, and 16.2% ($n=11$) reported that they were primarily housed in their state department of education. The remaining 14.7% of projects ($n=10$) were reportedly at various other locations, including a hospital, colleges, service agencies, a school district, and a community location. Two staff reported not working from a central project location. Of the 68 respondents, 89.7% ($n=61$) reported providing TA to families and service providers. The remaining respondents currently served their projects as state project director ($n=4$), state project coordinator ($n=2$), and educational consultant ($n=1$). The three respondents who did not serve in the role of state project

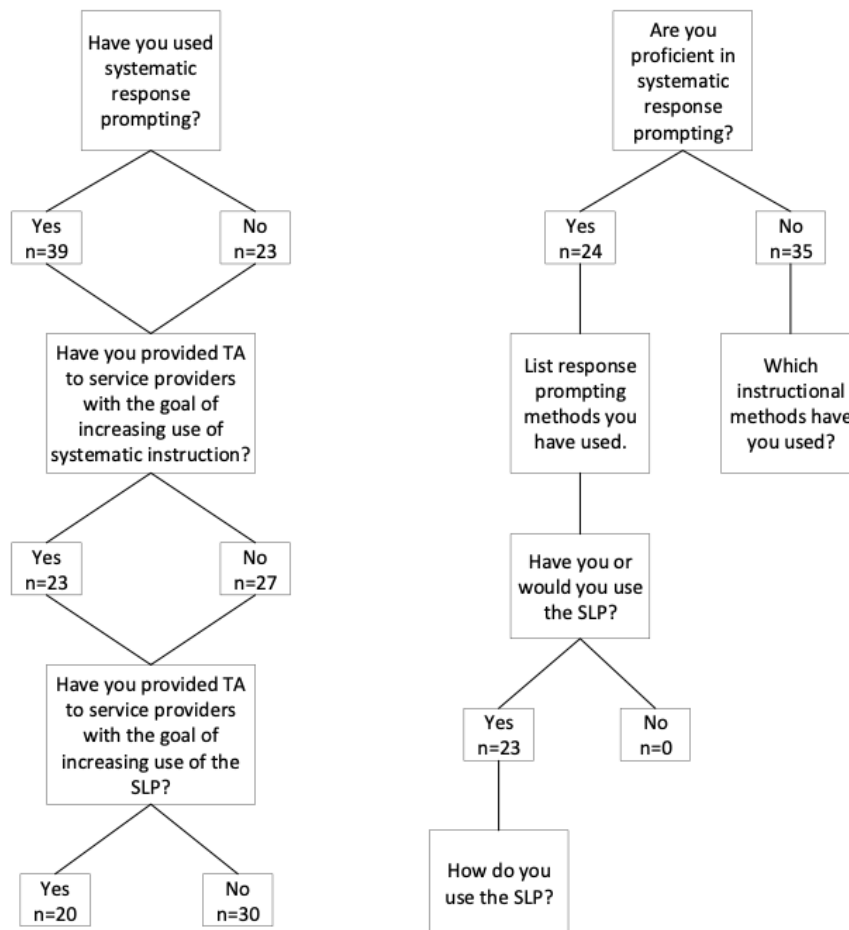
director and did not provide technical assistance to families and service providers were not asked questions about their use of instructional strategies as they did not deliver TA.

Survey Development and Design

A study-specific survey was designed to gather information about state project staff members’ use and provision of TA related to teaching systematic response prompting methods to teach children with deafblindness. The survey asked questions in a branching format (see Figure 1) that composed two major topics: (1) use of systematic response prompting strategies to teach children who are deafblind and to coach families and service providers to use systematic instruction to teach children who are deafblind, and (2) proficiency in use of systematic response prompting strategies and other instructional methods used to teach children who are deafblind. Survey logic made many questions available only upon responses to previous questions; however, respondents were not required to answer any questions in order to progress through the survey. That is, respondents were not required to answer all questions to proceed and could answer later questions even if prior questions were skipped. Survey branches were comprised of both close-ended and open-ended questions.

Figure 1

Flowchart for Branching Survey Design



All respondents were asked whether they previously used or would use systematic response prompting methods to provide instruction to children who were deafblind. Those who indicated “yes” were asked if they were currently using systematic response prompting strategies. If they reported that they were not currently using systematic response prompting strategies, they were asked why they were not. All respondents were then asked questions about whether they ever had a goal of TA to increase service providers’ or families’ use of systematic response prompting procedures. Respondents who reported targeting the SLP while providing TA were asked to rate their confidence level in coaching others to use the SLP correctly on a 5-point Likert-type scale. The scale ranged from “not at all confident” to “very confident,” with “unsure” marking the middle point of the scale.

All respondents were also asked if they were proficient in systematic response prompting, the initial question of the second branched topic. Those who reported proficiency in using systematic response prompting were asked to list which response prompting methods they had used. They were asked specifically about their implementation of key components of the SLP and their use of student performance data. These respondents were also asked to rate their confidence in using the SLP to teach children who were deafblind on a 5-point Likert-type scale identical to the one respondents used to rate their confidence in coaching families and service providers to use the SLP. Those who reported that they were not proficient in using systematic response prompting were asked to (1) describe instructional methods that could be appropriately used to teach children who are deafblind and (2) how they determined which instructional methods to use or helped a service provider determine which instructional methods to use. All respondents were asked to provide any additional important information about the instructional methods they used or assisted others in using in an open-ended format.

Prior to distributing the survey, it was piloted with two retired state deafblind project directors who had roles and backgrounds similar to those of potential respondents. The purpose of this pilot was to get feedback on the survey that could be used to improve and clarify questions before distributing to state project staff. The pilot respondents both completed the survey and provided feedback on specific questions that led to a change in the wording of one survey question. The two individuals reported that the survey was “short” and “elegant.” One suggestion was that a definition of “instructional methods” should be incorporated into a question asking respondents to list instructional methods they previously used or would use. This definition was added before the survey was shared.

Data Collection and Survey Distribution

Current email addresses for all state deafblind project staff are maintained by the NCDB. Contact information for all project TA providers was obtained from the NCDB state project website. Project directors and other project TA providers received a series of four contacts via email. The initial recruitment email was sent to all 151 potential respondents asking individuals to follow the embedded link to complete the survey. SurveyGizmo (now Alchemer) was used to

administer the survey. As surveys were completed, SurveyGizmo used a unique code to anonymously track which surveys were completed, how many were completed, and who opted out of receiving further correspondence. This ensured that respondents did not receive further contacts and reminders following survey completion.

The second contact was an email reminder sent 8 days later to potential respondents who did not respond to the initial message. Potential respondents could, again, follow the link to respond directly to the anonymous online survey. Seven days later, a third email reminder was sent with a message explaining that it was important for as many states as possible to be represented by responding to obtain a comprehensive picture of how systematic response prompting procedures were used to teach children who are deafblind nationwide. A week after the third email contact was sent, respondents who started but did not complete the survey were sent emails reminding them that they could still login to the survey with their unique identifiers and anonymously complete their responses. Upon survey completion, each respondent received an automatically generated response thanking them for participating.

Research Design and Data Analysis

The research design was a census of all state deafblind project staff who provided TA or were in leadership roles. Rather than surveying a sample of the target population, every member of the target population was asked to respond (Dillman et al., 2014). Descriptive statistics were used to analyze responses to close-ended questions. Frequencies of responses to each question, including responses to questions rated on a Likert-type scale, were counted and reported. Yes/no questions and multiple-choice questions were reported as percentages of the total respondents for the survey item.

Narrative responses to open-ended questions were analyzed for themes and used to corroborate respondent self-report regarding the use of the SLP. Responses to open-ended questions were organized by categories of responses. When two or more respondents provided the same or similar response, they were tallied and counted to determine how many respondents responded in a similar manner. Multiple similar responses to the same question constituted a theme. Because respondents were asked to self-report their own behavior, as well as their perceived confidence in performing tasks, it was anticipated that there would be some discrepancy between accuracy in answers to questions about key components of the SLP as compared to reported behavior and confidence. The survey included questions designed to assess respondents' knowledge of key required elements of the practices about which they were asked. Respondents who reported that they were proficient in using the SLP were asked additional questions about how they would implement key components of the SLP. Correspondence between responses to these multiple types of questions pointed to the increased internal validity of the survey instrument and increased reliability of the responses.

Results

Survey results are grouped by the two main topics of questioning, consistent with the two major branches described previously. Responses to the second topic, proficiency in systematic response prompting, are further grouped by respondents' self-reported proficiency as "yes" or "no." The analysis of survey responses is presented accordingly.

Analysis of Survey Responses

Using and Coaching of Systematic Response Prompting Strategies

Of the 64 respondents who were asked, 60.9% ($n=39$) reportedly previously used systematic response prompting to provide instruction to children who were deafblind, but only 40% ($n=14$) of respondents reported using systematic instruction at the time of the study. They provided a number of reasons for no longer using systematic response prompting including (a) no longer providing direct services to children ($n=14$); (b) not currently working directly with children due to COVID-19 ($n=3$); (c) not having a student who uses systematic response prompting strategies ($n=1$); (d) not being familiar with the methods ($n=1$); (e) difficulty getting teachers to do things differently ($n=1$); and (f) focus on other instructional strategies ($n=1$).

Respondents were asked if they had ever provided TA to service providers designed to increase their use of systematic response prompting to provide instruction to children who are deafblind. Fewer than half of the 50 respondents, 46%, who reported on coaching service providers to use systematic response prompting affirmed that they provided TA with the goal of increasing this behavior. Only five respondents reported having provided TA designed to increase systematic response prompting by families. When asked specifically about providing TA to increase the use of the SLP, one method of systematic response prompting, 40% ($n=20$) reported "yes" in reference to service providers, and 32.7% ($n=16$) reported "yes" in reference to families. The majority of these TA providers rated themselves as confident (52.6%, $n=10$) or very confident (26.3%, $n=5$) that they could coach others in the correct use of the SLP. A smaller percentage (15.8%, $n=3$) was unsure if they could coach others in use of the SLP correctly, and 5.3% ($n=1$) were not confident.

Respondents who reported providing TA to service providers to increase their use of systematic response prompting were asked to list response prompting methods they targeted as part of providing TA. Ten of these 23 respondents identified response prompting methods, including the SLP, decreasing assistance, time delay procedures, and graduated guidance, indicating that they were, in fact, familiar with response prompting methods. An additional five respondents identified specific types of response prompts (e.g., tactile prompts, physical prompts, verbal prompts, hand-under-hand prompts), indicating they had some experience with prompting. Other responses listed strategies related to assessment, physiological characteristics

of the child, or child preferences, suggesting the TA providers might be incorrectly defining response prompting methods. For example, one respondent described response prompting strategies used as “assessing learner interests and preferred sensory modalities.” Another listed “the student’s knowledge of routines.” While these are related to instructional variables commonly considered in the field of deafblindness, they are not systematic response prompting methods.

Proficiency in Systematic Response Prompting

Over half of respondents, or 59.3% ($n=35$), reported that they were not proficient in systematic response prompting procedures. The remaining 40.7% ($n=24$) of respondents reported that they were proficient in using systematic response prompting procedures. Questions were designed to ask how the SLP was being used by those who had used it, and what other instructional methods were being used by those who had not used it.

Proficiency in Systematic Response Prompting. Respondents that reported proficiency in systematic response prompting were asked a number of questions to increase reliability in this self-reported proficiency. While it was not possible to observe each respondent implementing response prompting procedures, it was possible to ask specific questions about how respondents would implement components of the SLP. The nature of these questions allowed the scoring of responses as correct or incorrect. That is, respondents’ answers provided additional information about whether they would correctly implement critical components of the SLP. If questions about key components were answered incorrectly, the reliability of the self-reported proficiency in the implementation of the SLP was decreased. If questions about key components were answered correctly, there was a higher likelihood that the respondents would implement the SLP correctly.

Respondents who reported proficiency in systematic response prompting to provide instruction to children who are deafblind were asked to list any response prompting methods they had used. Nine TA providers (42.9%) listed response prompting strategies, including the SLP (identified by respondents as “least to most prompts,” “system of least prompts,” “increasing assistance,” “least intrusive prompting,” and “least invasive to more invasive”), graduated guidance, decreasing assistance or system of most-to-least prompts, time delay, and constant time delay. Many respondents (47.6%, $n=10$) did not list response prompting methods, but did list types of prompts (e.g., hand-under-hand prompts, touch prompts, partial physical) or other procedures related to or often used simultaneously with response prompting procedures. Some examples were, “fading,” “chaining,” “prompt hierarchies,” “task analysis,” and “positive reinforcement.” Two respondents listed activities unrelated to response prompting, such as “co-created language and meaning,” “identifying objects in the environment through touch,” and “conversational strategies.” Overall, fewer than half of respondents who reported proficiency in

response prompting methods actually listed response prompting methods they had used, as the question asked.

Respondents who reported both proficiency in response prompting methods and having used the SLP ($n=23$) listed a wide range of demographic characteristics. Their state projects were housed at universities, schools, and state departments of education. They had master's degrees or doctorates, including a professional doctorate in law with a bachelor's degree in education. The most frequent degree area was special education (73.9%, $n=17$), with some having additional training in educational leadership, early childhood, visual impairments, and deafblindness. Other respondents held degrees in each of the following areas (i.e., one or more respondents per area of study): law and education, elementary deaf education, deafblindness, child and family studies, audiology, and speech and hearing sciences. Degrees were earned between 1983 and 2018. All respondents ($n=23$) reported that they would use, or had used, the SLP to provide instruction to children who are deafblind and were subsequently asked specific questions about how the SLP is used. That is, they were asked questions about key components of the response prompting method. On a 5-point Likert-type scale, 95.5% of respondents reported that they were confident ($n=16$) or very confident ($n=5$) that they could implement the SLP correctly, and 4.5% reported being unsure ($n=1$).

One respondent did not provide any information about how components of the SLP would be implemented. The remainder of the respondents answered some or all questions about key components of the SLP (see Table 1). All respondents correctly described some of the key components of the SLP, indicating that they all had some experience with the response prompting method. Three TA providers accurately answered questions about key components of the SLP in such a way that it was evident they were very familiar with the SLP. One respondent answered all questions correctly and two others answered all, but one, question correctly. These two respondents provided responses that were not fully correct and would have led to errors in implementation in some cases. Each of these three respondents worked at projects housed at universities, had a background in special education, and earned their degrees in 1995 or prior. Others responded in a way that indicated misperceptions about the implementation of the SLP. For example, 10% ($n=2$) of respondents reported that a child should be given an opportunity to respond independently after participating in a set number of trials and 5% ($n=1$) reported that a child should be given the opportunity to respond independently when the child did not resist participating in the activity. However, a critical component of the SLP is providing an opportunity to respond independently prior to providing assistance in each teaching trial.

Table 1

Questions About Key Components of the SLP

1. How many different response prompts, or levels, could you use in each instructional plan when using the system of least prompts? Check all that apply.

 2. When using the system of least prompts, in what order would you implement the types of prompts specified?

 3. When using the system of least prompts, when would you provide a child with an opportunity to respond independently?

 4. When using the system of least prompts, what is the purpose of the most intrusive prompt in the hierarchy?

 5. Would you provide error correction for incorrect responses when using the system of least prompts?

 6. What corrective feedback would you deliver if a child responded incorrectly on an instructional task or did not respond?

 7. Would you collect student performance data when teaching using systematic response prompting?

 8. How would you determine whether a student was making progress when taught using systematic response prompting?
-

When using the SLP, the most intrusive prompt in the hierarchy should be a controlling prompt. That is, the highest prompt level should provide enough assistance to ensure that the child correctly performs the targeted skill. This component was also misperceived by some respondents. One TA provider commented about the most intrusive prompt, “There is no purpose. At that point, the teacher becomes the doer of the activity and the learner is passive and is learning nothing.” Another commented that the purpose was “to communicate with the student that you are following through with the task or activity at hand, meaning if the least restrictive prompt still left the child not willing to participate in the task, then I would do the next stage of prompting.” Others described the purpose as “full physical assistance” or to “initiate action.”

Error correction is another critical component of the SLP. To learn a new skill, it has to be practiced correctly so that the child knows what is expected and also so that they can access any reinforcement contingent on performing the skill. When a child responds incorrectly or does not respond, error correction procedures are to provide the next highest prompt in the hierarchy accompanied by the instructional and/or natural stimulus, again giving the child opportunity to respond. In this manner, the least amount of assistance necessary to help the child perform the skill is provided. This component of the response prompting method was widely mischaracterized, with 40% of respondents ($n=12$) reporting that they would not provide any error correction. Other respondents reported that corrective feedback would be the “least intrusive prompt,” “telling them the correct answer and using the highest level of prompting,” and “show the proper way if done wrong.”

One-third of TA providers ($n=7$) correctly identified how many response prompts, or levels, could be used in an instructional plan when using the SLP, or responded in a way that implied they understood how the number of prompts to be used would be identified. Respondents were asked to select the number of prompts that could be used from a multiple-choice list, with an option to write in a response. Instructions indicated that they should select all that apply. When using the SLP, a minimum of two prompts needs to be identified for the hierarchy; additional prompts should be used in the hierarchy, as needed to match the characteristics of the student, task, and interventionist. One respondent selected two, three, and four prompts as an appropriate number of prompts for the hierarchy, in accordance with the requisite number of prompts to be used with the SLP. Other respondents wrote correct responses indicating that the prompt number varied. For example, one individual commented that “it depends completely on student need and the skills of the data collector.” Several others wrote that “it depends on the child.” The other two-thirds of respondents typically selected a single number of prompts as appropriate for use with the SLP, such as two, three, or four.

All respondents ($n=20$) reportedly proficient in systematic response prompting who used the SLP indicated that they would collect student performance data when teaching using the SLP. In order to determine whether a student was making progress using the SLP, 68.4% ($n=13$) of TA providers described evaluating data for increased levels of independence and less prompting or assistance in performing the skill. Five respondents made general comments about data analysis or collection, although it was unclear how student behavior change would be determined. A final respondent described the determination of student progress in unmeasurable terms, saying, “The teacher and student both need to make progress toward a mutually understood topic. The child should have equality in the act of creating a formalized language and mutually understood dialogue...I would feel progress is being made when these things start to converge in mutually understood conversation-both dynamic and statically.”

Not Proficient in Systematic Response Prompting. One of the research questions was to find out what instructional methods TA providers used and taught others to use if they were not using systematic response prompting methods. To answer this, respondents who were reportedly

not proficient in systematic response prompting procedures (59.3%, $n=35$) were asked to describe instructional methods that could be appropriately used to teach children who are deafblind. Within the question, instructional methods were defined as *how* one might teach the range of skills identified for instruction and were distinguished from *what* one teaches as well as environmental variables. Respondents listed a large number of items, many of which could not be classified as instructional methods. As seen in Table 2, these items were categorized into three groups: (1) Instructional Methods, (2) Other Teacher Behaviors Not Defined or Replicable, and (3) Instructional Content or Form and Environmental Variables. They were then asked how they would determine which instructional methods to use or help a service provider determine which instructional methods to use. A large majority of TA providers described that a variety of student and teacher preferences, characteristics, and skills would be assessed through a range of direct and indirect methods to determine appropriate instructional methods. Some also indicated that environmental variables should be evaluated. One insightful TA provider commented that the “behavioral characteristics of the student” should be taken into consideration in the selection of instructional methods. For example, one should consider if “they tend to incorporate errors into routines and have a hard time relearning a routine.” This same individual also noted that the “capacity of the providers/program for fidelity with various methods” should be considered. A different individual indicated that instructional methods should be “research-based methods.”

Table 2

Instructional Methods Used to Teach Children Who Are Deafblind as Reported by TA Providers Not Proficient in Systematic Response Prompting

Instructional Methods	Other Teacher Behaviors Not Defined or Replicable	Instructional Content or Form and Environmental Variables
Shaping	Pre teaching target vocabulary	STAR Program
Modeling	Personalized instruction	Pictures, photographs, print
Chaining	Differentiated instruction	Intervenor support
Most to least prompting	Child guided methods	Experience stories/books
Time delay	Play	Communication skills
Hand-under-hand prompting	Direct instruction	Picture Exchange Communication System (PECS)
Wait time	Increasing engagement	Social skills
Prompts (e.g., verbal, tactile, demonstration, visual, touch, haptics)	Scaffolding	Expanded Core Curriculum (ECC)
Allow for repetition and practice	Routine-based instruction	Multi-sensory approach (use touch, smell, movement)
Reinforcement	Reciprocal interaction	Daily schedule
Purposeful pausing	Incidental learning	Natural settings
Maintaining joint tactile attention	Shared interactions	Real-life activities at naturally occurring times
Task analysis	Shared tactile experiences	Highly motivating activities
Pacing	Provide time for exploration	Objects
	Hands-on learning experiences	Braille
	Influence	Various textures
	Coaching	Optimal lighting
	Following student's interests /child's lead	Proximity and side of child to work on
	Imitation	Joint attention
		Tactile sign
		Active learning equipment
		Routines
		Coactive movement
		Name cues
		Tangible symbols
		Pre-Braille strategies
		Calendar systems
		Responsiveness
		Resonance
		Student interests

All survey respondents were asked to share any other important information related to instructional methods they had used or assisted others in using. One theme was a reported goal to limit the prompting of children who are deafblind. Some examples of comments were to use “minimal intervention/prompting” and to teach “least restrictive prompting.” There were also many comments about using hand-under-hand prompting, but no comments related to the rationale for using specific types of prompts. One respondent noted teaching interventionists to

use hand-under-hand prompting when teaching “effective strategies.” Another noted that the project supported hand-under-hand prompting over hand-over-hand prompting as “accessible to a child with deafblindness and did not cause a child to withdraw.” Yet another commented that hand-under-hand instruction was a “best practice in deafblindness,” while one more reported having “worked hard to replace hand-over-hand with hand-under-hand” prompting.

Discussion

Although 62.9% of TA providers ($n=39$) reported having used systematic response prompting, 40% ($n=20$) reported providing TA to service providers with the goal of increasing the use of the SLP, and 40.7% ($n=24$) reported being proficient in the use of systematic response prompting, only a single TA provider accurately described all key components of the SLP about which respondents were asked. These data indicate that, although some TA providers viewed themselves as proficient in the SLP, they held some misperceptions about the implementation of the SLP. It would have been ideal to directly observe all TA providers using or teaching others to use the SLP to obtain more accurate measurements of how the SLP was actually being used in the field. However, logistics made observations of TA providers in applied settings across 52 states and territories impossible. As an alternative, TA providers were evaluated on their knowledge of essential components of the SLP through questions with correct and incorrect answers as part of the survey. Each of the questions related to the components of the SLP that were required to be implemented to teach correctly using the instructional strategy. TA providers who were unable to answer questions about components of the SLP were highly unlikely to correctly implement those same components in an applied setting. That is, a lack of knowledge of the components of SLP likely leads to incorrect use or low implementation fidelity of the SLP.

Drift is one possible explanation for this discrepancy between perceived knowledge and answers to questions about the SLP. TA providers might have been fluent in using the SLP at one time, but forgotten some components over time. This is particularly relevant because, as respondents noted, most were no longer providing direct services to children at the time of the study, but instead, were teaching others to implement educational strategies; many TA providers do not practice the instructional methods that they teach. It is also possible that TA providers were not accurate in their self-reporting of skill in using the SLP, either intentionally or unintentionally. They may have responded as they believed the researchers wanted them to respond.

As is evidenced by the survey responses, many TA providers, who are seen as the experts in the field of deafblindness, had difficulty listing instructional methods. When asked, many listed *what* to teach, or important contextual or student variables, instead of *how* to teach. One hypothesis for this is that the paucity of empirical intervention research in the field of deafblindness (Ferrell et al., 2014) has limited what is known in the field about how to teach. That is, there are few studies using designs from which causal relations can be identified (Odom et al., 2005) investigating instructional methods with children who are deafblind, although there

are other types of articles published in the field of deafblindness that serve a different purpose (Sutter et al., 2020). The field needs research to inform practice. It is noteworthy that one respondent did comment that instructional methods taught to others as a result of TA were research-based methods.

There is considerable focus in the field of deafblindness on valuing children's forms of communication, following their leads, and acknowledging their behaviors as meaningful. Child-guided approaches (Damen et al., 2015; Janssen et al., 2003; Mathijs et al., 2006) are emphasized. This is evidenced by the instructional methods TA providers listed as using in the current study, such as "child-guided methods," "play," "student-directed interventions," "hand-under-hand," "reciprocal interaction," "resonance," "coactive movement," "incidental learning," "shared interactions," "hands-on learning," "experiences that incorporate a multi-sensory approach," and "exploration and play." While many of these activities and approaches may have benefits, they should not be used to the exclusion of systematic instruction. This often appears to be the case in the field of deafblindness. All of the terms listed were offered as instructional methods that were used *instead* of systematic response prompting, not in addition to systematic response prompting. The instructional methods described by some TA providers in the field of deafblindness incorporate some of the components of naturalistic interventions, specifically, strategies to promote engagement, embedding instruction in the child's natural environment, and following the child's lead. However, naturalistic interventions that have been demonstrated to be effective also included systematic response prompting, reinforcement, and shaping as components of the interventions (Dubin & Leiberan-Betz, 2020; Lane et al., 2016). That is, systematic response instruction is integral to naturalistic instruction.

As further evidence of this resistance to using systematic instructional methods by some professionals in the field of deafblindness, one survey respondent reported using the method of "the act of noticing how the student demonstrates interest in an object and then, as unobtrusively as possible, demonstrating to the child your own interest in the same object." A second respondent, when asked directly about response prompting methods used, noted that it was preferred to use "the term interaction and/or conversational strategies," and listed "symmetry in conversation, co-created language and meaning" as response prompting methods. This idea that teachers participate, but do not lead, and that students construct their own meaning is not new, but it is contrary to what educational research points to as effective (Heward, 2003; Kirschner et al., 2006). There is ample evidence that direct instruction, opportunity for practice, and feedback, including error correction, are what constitutes efficient and effective instruction (Ivy & Hatton, 2014; Snell & Brown, 2011; Vaughn et al., 2000). Certainly, children who are deafblind and have limited access to incidental learning through vision and hearing would benefit from direct and explicit instruction and should have access to efficient instruction. In fact, one of the few current textbooks focusing on children with deafblindness references response prompting (Sacks & Zatta, 2016). More work is needed within the state deafblind project network to reduce the disparity between recommended instructional methods based on research and what is happening in practice within the field.

The results of the current survey demonstrate that TA providers provided many ideas to modify the environment, including instructional materials, to meet the unique learning needs of children with impairments in both vision and hearing. That is, they reported ways to adapt materials and the environment to make them accessible to children who rely on alternate or additional modes of sensory input beyond vision and hearing. The survey results also demonstrate that, as a field, additional focus needs to be placed on instructional methods to teach children who are deafblind-specific skills. While increasing exploration and experiences is important, it is not enough to just present object symbols, calendars, and experience books. It is also critical that children are taught to use these materials, that they have a functional use. Efficient procedures must be used to teach targeted and defined skills for which the materials are a tool. Because the goal of TA provided by state deafblind project staff is to build capacity through sharing of information, training, and coaching, TA providers must be proficient in instructional methods used to teach children with deafblindness before teaching others to use those methods.

The SLP is one instructional method that has been demonstrated to be effective across skill areas and across learners with diverse characteristics (What Works Clearinghouse, 2018). Although there is limited empirical evidence with children who are deafblind, this generalizability across populations and learners makes it a good match for the field of deafblindness because of the heterogeneity of characteristics of individuals who are deafblind. Further, many teachers and families are familiar with using a hierarchy of prompts and, anecdotally, find the SLP easier to implement with fidelity than some other systematic response prompting methods. At one time, the SLP was widely used in the field of deafblindness. Experimental studies published in the 1980s and 1990s in the field of deafblindness often used the SLP as a component of the independent variable (see Bennett et al., 1986; Berg & Wacker, 1989; Heller et al., 1996; Strawbridge et al., 1989; Taylor, 1987). As current research in the field is scarce, professionals and researchers in the field of deafblindness, including TA providers, should look to research conducted in the past, as well as to other related fields (e.g., severe disabilities, visual impairments), for practice recommendations related to instructional methods.

There are several possible solutions to increase the current implementation of the SLP with fidelity. An obvious solution is that teachers might benefit from additional coaching and on-site TA from state deafblind project staff who are fluent in the procedure. TA providers might require support from the NCDB in the form of practice and feedback on the performance of the SLP. This intensive TA for state projects would also serve as a coaching model for TA providers intending to coach others in the use of the SLP or other instructional methods. NCDB might also consider universal or targeted TA for state project staff in the form of training and informational sessions on instructional methods, such as SLP, led by experts in those specific strategies.

Even though the response rate of 45% is considered high (Clearinghouse, 2016), it is a limitation of this study as the survey was intended to be a census. It is possible that this group did not serve as a representative sample of the population as a whole; state project staff that did not respond to the survey could have differed substantially in their self-reported use of instructional

methods and proficiency in the SLP. However, the high percentage of US states and territories (81%, $n=42$) that were ultimately represented did encompass a state project TA provider from most states. It is unlikely that practices were highly varied among staff in a single state that worked closely together, given the collaborative nature of the work.

A number of respondents noted that the majority of their TA is centered on basic adaptations for teaching children who are deafblind rather than on instructional methods such as the SLP and other systematic response prompting methods. Arguably, efforts would be better spent, including both adaptations and instructional methods that incorporate the basic principles of learning that hold true for all people. Instruction, or teacher behaviors, is an important part of the educational environment. Instructional methods should consider the selection, shaping, maintenance, and generalization of the target behaviors selected for instruction (Heward, 2003). Teachers of children who are deafblind must do more than adapt materials. They must also teach children what to do with them, which requires knowledge of instructional methods such as the SLP.

Future research in the field of deafblindness must focus on instructional strategies to identify what works for this population. There is a high need for additional research, as evidenced by both the limited number of intervention studies recently published and TA providers' need for research to inform practice. Specific research could focus on the modification of components of instructional methods, such as the SLP, to match the learning characteristics of children with deafblindness. For example, response prompts used within the SLP could be modified to include tactile and physical prompts at each level of the prompt hierarchy. Another possible example is future research focusing on using the SLP to teach skills specific to students with deafblindness, such as tactile scanning.

Conclusion

Although many TA providers for state deafblind projects did report having used the SLP or other systematic response prompting methods themselves or having taught others to use the SLP, only one individual accurately described how all key components of the SLP were implemented. Others accurately reported how some key components were used. The majority of respondents listed many environmental variables, such as modified materials, that could be used with children who are deafblind but did not report instructional methods. In order to deliver effective and efficient instruction to children with dual sensory impairments, additional research must be conducted to guide practice.

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