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A journal for physical, health, and multiple disabilities

Council for Exceptional Children

Complex and Chronic Conditions: The Division for Physical, Health and Multiple Disabilities

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The goals of CCC-DPHMD include:

- Promoting the continued development of adequate resources and programs that address the many areas of need associated with serving children and adults with physical and/or multiple disabilities, and special health care needs.

- Sharing relevant and timely information on current issues, instructional strategies, adaptations, and research through the annual CEC convention, professional meetings, training programs, and publications.

- Providing technical assistance and preservice and in-service education.

- Advocating for funds and policies that promote supportive legislation and funding for persons with physical disabilities, multiple disabilities, and special health care needs.

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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

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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
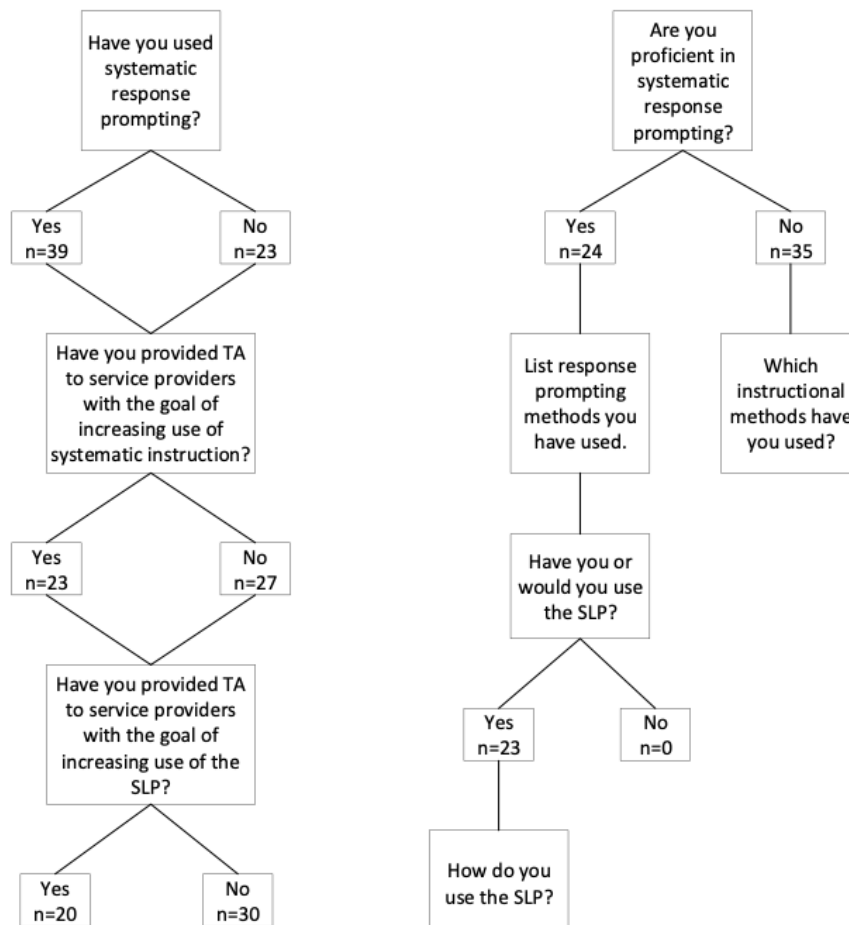
All respondents were asked whether they previously used or would use systematic response prompting methods to provide instruction to children who were deafblind. Those who indicated "yes" were asked if they were currently using systematic response prompting strategies. If they reported that they were 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

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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 & Leiberman-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 is 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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Article

School Reentry Plans for Students with Chronic Illness: A Literature Review

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Abstract: *Students with chronic illnesses benefit from coordinated school reentry plans developed in conjunction with families, school personnel, and medical specialists. A systematic literature review was conducted to study school reentry plans that are specific to students with chronic illnesses. Five studies met inclusion criteria and were synthesized and analyzed based on specific reentry characteristics as well as the overall impact transition plans had on student mental health and academics. Findings suggest that there is little standardization within reentry program research which leads to program variability. Nevertheless, findings also suggest that school reentry programs for students with chronic illness resulted in higher rates of school attendance as well as increased feelings of social connectiveness with their classmates. Further research within the area of hospital-to-school transition procedures for students with chronic illness is needed to establish practice guidelines within the medical and educational communities.*

Keywords: *children, chronic illness, education, school reentry*

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School Reentry Plans for Students with Chronic Illness: A Literature Review

The continuity of schooling for children with chronic illnesses often gets interrupted because of frequent hospitalizations or medical treatments. Many children with chronic illnesses have the cognitive capabilities to academically perform well in school, however their frequent absences put them at risk for poor educational attainment and decreased social and emotional growth (Kearney, 2008; Shiu, 2001). Academic skills, such as fundamental reading skills, build upon each other as reading concepts progress throughout the grade levels. When students with medical needs are chronically absent from school, they are at risk for increased learning and academic difficulties (Wodrick & Cunningham, 2008).

Social skills and cooperative learning concepts are also very important behaviors that children learn through experience in the education setting (Durlak, et al., 2011). Children with chronic illness are at risk for deficits in obtaining mastery in these psychosocial competencies because of a decrease in opportunities to practice social skills in academic settings (Harris, 2009). Students who have been diagnosed with medical conditions frequently miss many opportunities to practice social skills through cooperative learning classrooms as their chronic health conditions cause an increase in school absences.

Pediatric Chronic Illnesses

Chronic illness is defined as a significant medical condition of an extended time period that creates impairments within an individual's academic functioning, communication, daily living, social interactions, and self-care (Notoras et al., 2002). Throughout childhood and adolescence, many students experience illnesses that cause minor disruptions to school attendance. However, students who have been diagnosed with significant chronic illnesses, for example, cancer, cystic fibrosis, cardiac conditions, and blood disorders, are at an increased risk for both academic and social difficulties due to lengthy school absences (Ireys, 2014). Table 1 provides a list of common chronic illnesses and their impact on a student's education.

Total MAS scores were not significantly correlated with any level or quality of exposure. However, when the MAS score was broken down by subscale, the cognition subscale was significantly correlated with the quality of exposure at the elementary level ($r = -.434$, $p = .002$) and secondary levels ($r = -.374$, $p = .008$). In contrast, neither the emotion nor behavior subscales were significantly correlated with amount or quality of exposure at any level. Because a lower score on the MAS represents a more positive attitude toward people with disabilities, a negative correlation involving MAS scores represents a positive relationship between the other variable in the correlation and attitude.

Table 1

Significant Chronic Illnesses: Definitions and Impact on Education

Chronic Illness	Definition	Academic and/or social needs	Average school year absences
Asthma	Chronic lung disease with periods of acute breathing problems including wheezing, coughing, chest tightness, or shortness of breath.	Fatigue, hypoxia, can cause anxiety and confusion.	12-36 days
Blood Disorders, Sickle Cell Anemia (SCA)	SCA is an inherited blood disorder, causes periodic episodes of severe pain.	Difficulties with verbal abilities, processing, attention, and memory. Periodic pain crisis increase risk for missing school days.	20 days
Cancer: Acute Lymphoblastic Leukemia (ALL), Brain Tumors	ALL is a fast-growing cancer of white blood cells. Brain tumors start in the brain or cancer that spreads to the brain.	Fatigue, increased risk for infections, loss of appetite, hair loss, attention difficulties.	25-80 days, depending on specific cancer diagnosis and treatment plan
Cardiac Conditions, i.e.: Congenital heart defects (CHD)	CHD: holes in the heart, obstructed blood flow, abnormal blood vessels, heart valve abnormalities, an underdeveloped heart, and combination of defects.	Some children with CHD have early delays in development, which makes early assessment and support vitally important.	10 or more days per year
Cystic Fibrosis (CF)	CF is a genetic disease that causes persistent lung infections and reduces the ability to breathe over time. There is no cure to the disease.	Stunted height and weight growth, overall pulmonary difficulties, reduction in appetite, academic and social difficulties due to increase absences.	19.5 days
Diabetes	Is a condition that causes a shortage of insulin, a hormone that allows sugar to enter the body's cells and to be converted into energy.	Verbal IQ, visuospatial/nonverbal functioning, memory, attention issues, especially if there is a high prevalence of seizures, unconsciousness, or ketoacidosis.	14 days
Juvenile Idiopathic Arthritis (JIA)	JIA is an inflammation of joints (ages 16 or younger). An autoimmune disorder that causes periodic painful flares.	Children with JIA can experience a decrease in concentration, academic difficulties due to heightened absences, and significant mood	15 days

Note. Information adapted from: American Cancer Society. (2010); National Heart, Lung, and Blood Inst. (1991); Shaw & McCabe (2008); Taras & Potts-Datema (2005).

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Approximately 20% of school-aged children have medical conditions that severely impact their access to education (Compas et al., 2012; West et al., 2013). Advancements with medical treatments have allowed many children with chronic medical conditions to reenter the educational environment after periods of absences. For example, the use of chimeric antigen receptor T cell (CAR-T) therapy for medical treatment of children diagnosed with leukemia has helped to improve the survival rates for children diagnosed with this type of cancer (Wang et al., 2019).

Medical complexities and extended school absences create a unique experience for students with chronic illnesses. Coordinated school reentry plans may prove beneficial after long periods of absences to facilitate the transition from hospital to school setting. Previous research has examined school reintegration programs.

Examination of Literature Review

School reentry for students with chronic illness is defined as the reintegration into the school setting after an extended period of absence due to severe illness or injury (Schilling & Getch, 2018). Although there is a large number of descriptive articles detailing reintegration programs for students with chronic illnesses, a small amount of empirical research exists about the validity of reentry programs (Harris, 2009). Prevatt et al. (2000) reviewed fourteen articles focusing on school reentry programs for students with cancer published between the mid-1970s to the late 1990s. Within the Prevatt et al. review, reentry programs were classified as peer education programs, school personnel workshops, or comprehensive programs. Peer education programs consist of chronic illness education sessions that are directed at classmates of children who have been diagnosed with chronic illnesses. The goals of peer education session are to increase peer knowledge surrounding chronic illnesses which allow for great peer acceptance of children with chronic illnesses. Similar to peer education sessions, school personnel workshops are guided education sessions in which school staff are provided education on chronic illnesses. Goals of school personnel workshops are to increase educator chronic illness knowledge specific to academic and social needs of the students who have been diagnosed with specific illnesses. Finally, comprehensive school reentry programs focus on providing individualized academic and social support services to each child with a chronic illness. While comprehensive school reentry programs may include portions of both school personnel and peer education sessions, the purpose of comprehensive school reentry programs are to provide targeted reentry services specific to each student.

Although the Prevatt et al. (2000) review was the first to synthesize reentry programs into classifications, the authors focused exclusively on reentry programs for students with cancer, which may have overlooked other chronic illness reintegration programs. In addition, the authors acknowledged that small sample sizes limited group comparisons between school reentry programs specific to each cancer diagnosis (Prevatt et al., 2000).

Canter and Roberts (2012) completed a systematic review of 12 research articles targeting school reentry programs for children with chronic illnesses. In the Canter and Roberts review, all research was published between 1983 and 2007 and focused on a variety of different childhood illnesses such as cancer, Tourette's Syndrome, Sickle Cell Anemia, or Burn injuries. Like Prevatt et al. (2000), Canter and Roberts classified the 12 articles as providing school reentry education to either peers or school personnel; however, the components of interventions were not presented or described in detail. Unlike Prevatt et al., Canter and Roberts applied statistical methodologies within the review to determine if the program studies increased illness-specific knowledge and individual attitudinal changes regarding students with chronic illnesses.

Canter and Roberts reviewed school reentry programs for two outcome variables: attitudinal changes and increase in illness-specific knowledge. Although these are two valuable outcome measures—and can ultimately impact the social and emotional needs of children with chronic illnesses—little evidence was given on how the 12 programs addressed academic challenges faced by high rates of absences. Furthermore, the absence of details on program characteristics makes reentry program evaluation challenging for standardization of effective and efficient practice components.

Thompson et al. (2015) completed a literature review of 17 studies focused exclusively on school reentry programs for students with cancer. Research articles included within the Thompson et al. review ranged from 1995 to 2014. Listed article search criteria excluded research published in foreign languages, although a few included studies focused on programs located outside the United States. Thompson et al. reviewed school reentry articles that focused on developing full-school reentry approaches at the time of diagnosis. The authors found that when school reentry programs were implemented, classmates and teachers expressed a greater sense of knowledge regarding cancer as a chronic illness. Limitations with the review showed difficulty in determining specific long-term program metrics due to the lack of standardization of reentry program outcome measures within the field (Thompson et al., 2015).

The three previous reviews of school reentry programs (Canter & Roberts, 2012; Prevatt et al., 2000; & Thompson et al., 2015) contribute to the field of reentry research. The identification of peer, school personnel, and comprehensive programs has provided a general overview of program classifications (Prevatt et al., 2000). However, there remains a need for further and recent investigation into the specific components of reentry programs. Furthermore, previous reviews have included program descriptions or anecdotal evidence (Prevatt et al., 2000; Thompson et al., 2015). Empirically investigated programs provide the greatest confidence in results. In order for detailed analyses of reentry program efficacies, careful exploration of empirically examined program specifics is needed to allow for effective program development and implementation.

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Purpose of this Review

Students with chronic illnesses are a diverse group of learners who experience frequent and consecutive school absences, which put them at risk for diminished social experiences and academic failure (Shaw & McCabe, 2008). This literature review contributes to the field by building on previous research and examining recent empirically investigated school reentry programs for students with chronic illnesses. Systematic comparisons of school reentry programs will allow for the identification of germane and extraneous components. In order to establish effective and efficient reentry programs, hospital and school personnel will benefit from a current review of school reentry program components. The following research questions guided our analysis:

1. What are the characteristics (i.e., components) of reentry programs that have been empirically investigated for students with chronic illness?
2. What dependent variables have been measured with reentry programs for students with chronic illness?

Method

Selection Criteria and Eligibility

Using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) screening tool developed by Moher et al. (2009), a systematic literature review search was conducted to identify research articles focusing on school reentry programs for students with chronic illness. Three eligibility criteria categories were established as a protocol screening tool to identify articles. In order to be included in this systematic literature review, each article was screened by the three categories established exclusively for this research. The three categories are listed as follows: (a) the article must focus on quantitative or qualitative research that investigates a school reentry methodology for students with chronic illness and has reportable outcomes (b) the research occurred within the United States and (c) the article must focus exclusively on students with chronic illness.

Any research that focused on mental health disorders were excluded. Various psychiatric hospitalization programs provide education support to students, however, the model of care for these treatment programs are focused on treatment of acute psychiatric symptoms (DeMaso et al., 2009). Although there are many social and emotional needs that students with chronic illnesses experience, the prevalence of acute psychiatric issues that require psychiatric hospitalizations are low (Wallander et al., 2003).

Any article that focused on school reentry for students with chronic illnesses that were descriptive in nature (i.e., without empirical investigation) were excluded. Finally, to be included within the review, the study must have occurred in the United States. Students with chronic illnesses may be eligible for education support services under the Individuals with Disabilities

Education Improvement Act (2004) or Section 504 Plan accommodations through the Rehabilitation Act of 1973, which is specific to U.S. legislation (Shaw & McCabe, 2008).

Information Sources and Search Terms

A search was conducted of the following databases: Eric (ProQuest), PsycInfo (EBSCOhost), Pubmed and Google Scholar, using search terms relative to each database. The Eric (ProQuest) and PsycInfo (EBSCOhost) databases were limited to peer-reviewed research published between 2000 and 2020. The Pubmed and Google Scholar databases were limited to research published between 2000 and 2020. The year 2000 was set as a beginning search term due to the publication of a literature review similar in scope (Prevatt et al., 2000). This review attempted to build on the previous review by synthesizing recent empirical studies of reentry programs for students with chronic illnesses.

An Eric (ProQuest) advanced search was done using "students with chronic illnesses" OR "children with chronic illnesses" OR "teens with chronic illnesses" AND "school reentry" OR "school reintegration" as key search terms. A search of PsycInfo (EBSCOhost) was completed using "students with chronic illnesses" AND "school re-entry" OR "school reintegration" as search words. Finally, the Pubmed database was screened using the search terms of "students with chronic health conditions" AND "school re-entry" OR "school reintegration."

Additional research articles were found by searching Google Scholar and by ancestral searches. Google Scholar was searched with "students with chronic illnesses" AND "school re-entry" OR "school reintegration" as key terms. Pertinent references found by screening the Canter and Roberts (2012) article, the Thompson et al. (2015) article, and other school reentry journal articles were added to the search total.

The PRISMA identification methodology was applied to each database and revealed a total of 140 journal articles. A screen of the ERIC(EBSCOhost) database produced 23 articles, the PsycInfo (EBSCOhost) search discovered 28 articles that were included in the total, and an examination of Pubmed's database resulted in 27 included articles. A search of Google Scholar resulted in 54 articles that were subsequently screened. Finally, an additional eight articles were found through ancestral searches of the Canter and Roberts (2012) review, the Thompson et al. (2015) review, and other published research on school re-entry.

Article Screening and Coding

After article duplicates were removed, 118 articles remained to be evaluated by the defined eligibility criteria. A total of 62 articles were eliminated during the abstract screening process. Thirty articles were removed because they were written as master-level papers or doctorate theses and not peer-reviewed research. Thirty-two articles were excluded because the research was conducted outside of the United States. The remaining 56 articles were then assessed for full-text eligibility. Eighteen articles were removed due to the focus being on

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specific collaborations between educators and medical professionals rather than identified school reentry programs. Six articles were removed because the study focused on education in regard to pediatric mental health. Five articles were removed as they detailed transitions from secondary education settings to post-secondary or vocational settings for students with chronic illnesses. Finally, two literature reviews were excluded, and three additional articles were removed due to not being within the stated purpose of this review.

The remaining articles were rescreened for study design and for independent and dependent variables. Articles that did not have either a qualitative or quantitative research design methodology with a school reentry focus for students with chronic illness were excluded. Seventeen articles were removed during this portion of the PRISMA screening. After the quantitative analysis was completed, five articles remained to be used in this literature review (see Figure 1).
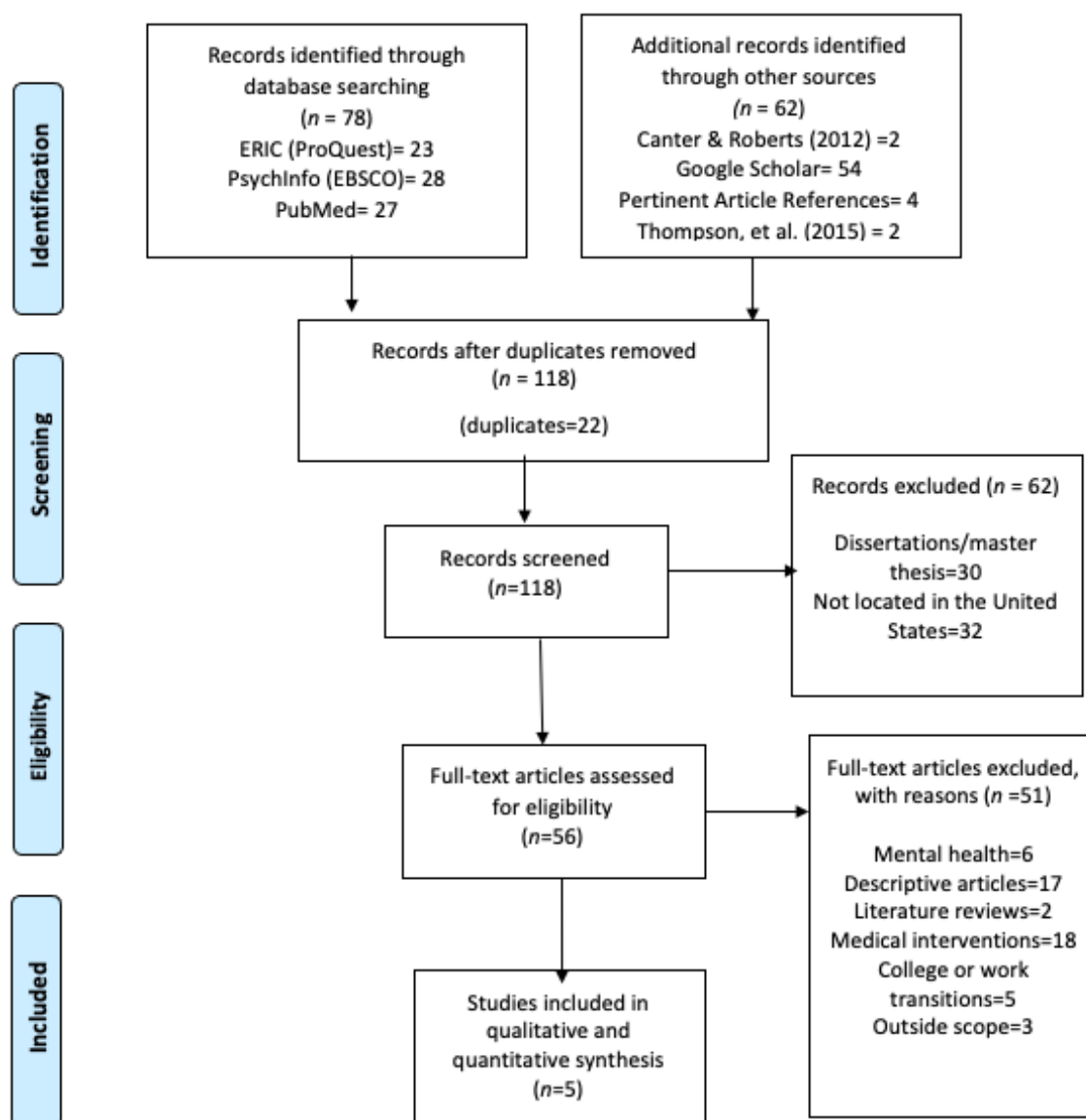

Figure 1. Preferred reporting items for systematic reviews and meta-analyses.

Results

      Five studies identified for review were summarized using the following variables: (a) types of chronic illnesses addressed in the study, (b) participant descriptions, (c) reentry program characteristics (i.e., independent variable[s], and (d) outcome measures (i.e., dependent variables). Results are presented in relation to each research question. Individual study results are presented in Table 2. Specific study results are mentioned whenever there is a need for detailed research outcomes.

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Table 2 *School Reentry Program Studies*

Author (first)	Chronic illnesses	*n*-size	Study participants	Reentry program characteristics	Dependent variables
Colbert (2019)	Various medical illnesses	89	Students with chronic illness ● Mean age = 12.2 yrs. ● Male = 47 ● Female =52	A hospital-based multidisciplinary school program provided individualized reentry programming. Components included: 1. Academic support 2. Medical and psychosocial support	Improve health-related quality of life outcomes for student with chronic illness: ● School absences ● Coping skills ● Medical management of chronic illnesses
Dubowy (2006)	Cancer	41	Teachers ● Mean = 34.5 yrs. old ● Male = 6 ● Female = 35 ● Mean 9.5 yrs. teaching exp.	Web-based training modules on childhood cancer. Each module was 25 minutes in length, completed over 2 weeks. Components of training modules included: 1. Overview of childhood cancer 2. Brain anatomy and cognitive effects 3. Interventions to assist students 4. Special education services & neuropsychological reports	Improve classroom teacher characteristics: ● Teacher knowledge ● Teacher confidence ● Teacher skills in working with students who have been diagnosed with cancer
Duggan (2004)	asthma, cancer, diabetes, sickle cell, AIDS, & fetal alcohol syndrome	91	Teachers & Administrators ● Mean age = n/a ● Male = 11 ● Female = 80	Three-part intervention program addressing students with chronic illnesses: 1. Inservice addressing emotional and cognition needs (one 2-hour inservice) 2. Resource packets with local/national resources. 3. Website with educational materials	Improve teacher and administrator characteristics: ● Teacher and administrator knowledge ● Teacher and administrator confidence ● Teacher and administrator attitudes
Holtz (2007)	Tourette Syndrome (TS)	179	Peers of student with TS ● Mean age = 9.5 yrs. ● Gender = n/a	Recorded video by hospital. Approximately 60 minutes. Components of video included: 1. Explaining of TS 2. Associated behaviors of TS.	Improve social outcomes for students with TS ● Social interactions at recess ● Social engagement during partnered activities
Koontz (2004)	Sickle Cell Anemia (SCA)	24	Students with chronic illness ● Mean age = n/a ● Age range = 8-12 yrs.	Comprehensive program individualized to student with SCA. Components included: 1. School personnel & peer education in-services (one-hour per each in-service) 2. Education consultative meetings with families and school (1x monthly) 3. School medical plans reviewed and modified.	Improve outcomes for students with SCA, families, teachers, administrators, and peer ● Attendance ● Academics (e.g., grades) ● Family knowledge SCA ● Teacher, administrator, and peer knowledge of SCA

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Characteristics of Reentry Programs

Two studies (Colbert et al., 2019; Koontz et al., 2004) used comprehensive study design approaches in implementing school reentry programs concentrated directly on students with chronic illnesses. Two studies (Duggan et al., 2004; Holtz & Tessman, 2007) used combinations of multi-media presentations with education sessions led by trained professionals that focused on specific medical conditions such as Tourette's Syndrome or Traumatic Brain Injury. One study (Holtz & Tessman, 2007) focused on providing chronic illness education to peers through targeted education sessions or workshops. Based on these characteristics and following previous classifications by Prevatt et al. (2000), reentry programs included in this review were classified into three categories: a) student-focused reentry programs, b) school personnel-focused reentry programs, and c) peer-focused reentry programs. The characteristics of each category are described below.

Student-Focused Reentry Programs

Participant and Setting Description. One hundred and thirteen students with various chronic illness diagnosis participated in diagnosis-specific school reentry programs. Participants with chronic illness diagnoses included students with sickle cell anemia (n=24), students with other medical conditions (n=19), students with diabetes(n=14), students with kidney disease (n=9), students with metabolic disorders (n=9), students with cancer (n=8), students with blood disorders (n=8), students with congenital disorders (n=8), students with seizure disorders (n=7), and students with digestive disorders (n=7). Participant ages ranged from 7 to 21 years old, (M=12.22 years). All study settings for comprehensive school reentry programs were conducted in pediatric hospital facilities.

Components of Programs. Students with chronic illnesses in the Colbert et al. (2019) and Koontz et al. (2004) studies received individualized programming directly correlated to specific disease diagnoses. Characteristics of the Colbert et al. and Koontz et al. programs were the development of individualized academic support services, student training on emotional coping strategies and resilience skills, and medication management. The Koontz et al. program specifically included one hour each of peer education sessions and school personal workshops devoted to general Sickle Cell Anemia awareness. Both programs focused on improving health-related quality of life outcomes for students with chronic illnesses by providing in-services to both school personnel and same-aged peers. Families were also highly involved in student-focused reentry programs by receiving education on appropriate school accommodations for their children and disease management support.

Dependent Variables. Both the Colbert et al. (2019) and Koontz et al. (2004) research measured improved health-related quality of life outcomes for students diagnosed with chronic illnesses as dependent variables within the respective studies. Health-related quality of life outcomes within the Colbert et al. and Koontz et al. studies included increases in school attendance, improvement in grades, medical self-management, and emotional regularity. The

Colbert et al. and Koontz et al. research also measured participant chronic illness knowledge as additional dependent variables.

School Personnel Focused Reentry Programs

Participant and Setting Description. Three hundred and eleven school personnel participated in school personnel training workshops with the intended outcomes of increasing chronic illness disease knowledge. Personnel included classroom teachers and classroom assistants (n=119), special education teachers (n=5), classroom teachers in training (n=3), school administrators (n=3), and media specialists (n=2). Teaching experience for school personnel workshop participants varied with a mean of 9.5 years. Public school corporations were the settings where the school personnel workshops were conducted.

Components of Programs. Both the Dubowy et al. (2006) and the Duggan et al. (2004) research comprised of providing chronic illness information through in-person education sessions or through an online education format. Printed materials pertaining to chronic illnesses, development of disease-specific websites, and information regarding chronic illnesses presented in the audio-visual format were main components within both Dubowy et al. and Duggan et al. studies. Program materials and implementation in the Dubowy et al. study was developed and conducted by individuals from the medical community. School psychologists implemented school personnel trainings in the Duggan et al. study. The intensity of trainings consisted of four 25-minute modules (Dubowy et al., 2006) and one 2-hour in service.

Dependent Variables. The Dubowy et al. (2006) and Duggan et al. (2004) studies measured participant chronic illness knowledge, confidence, and attitudinal changes as dependent variables within the school reentry research. Chronic illness factual questions were answered to measure knowledge and self-reported rating scales were used to measure confidence and attitudinal changes.

Peer-Focused Reentry Programs

Participant and Setting Description. One hundred and seventy-nine school aged peers (boys [n=91] and girls [n=88]) participated in peer education sessions on Tourette's Syndrome. Student ages within peer education sessions ranged from 7 years to 15 years (M=9.5 years). Peer education sessions were conducted within school corporations.

Components of Programs. Peers within the Holtz and Tessman (2007) study received in-person chronic illness education sessions in combination with multi-media tools such a videos and printed materials on a specific illness topic. Participants were also given opportunities to ask questions specific to Tourette's Syndrome during an open discussion portion of the program. The intensity of the peer program consisted of a single 60-minute session.

Dependent Variables. The outcomes of the Holtz and Tessman (2007) study were to increase peer knowledge and attitudes. of Tourette's Syndrome. In increasing peer knowledge

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and attitudes, the authors claimed, peers would more likely maintain or initiate positive social relationships with their classmates who have chronic illnesses. The authors reported increases in knowledge and attitudes but did not directly measure changes in student behaviors.

Discussion

The purpose of this literature review was to identify characteristics that are associated with successful school reentry outcomes for students with chronic illnesses. In addressing the diverse health, academic, and social characteristics linked to school-aged children with health conditions, this review contributes to the field by examining what is known from five empirically investigated school reentry programs conducted between 2004 and 2020. The following research question guided our analysis: 1) What are the characteristics (i.e., components) of reentry programs that have been empirically investigated for students with chronic illness? and 2) What dependent variables have been measured with reentry programs for students with chronic illness?

Findings from this review are consistent with previous research that school reentry programs are directed at three audiences: School personnel, peers, or individual students who have been diagnosed with chronic illnesses (Prevatt et al., 2000). All three school reentry programs have reported measures of success in relation to targeted outcomes. Although only one study measured maintenance of intervention and reported decrease use of program strategies, printed materials, and websites devoted to chronic illnesses by school personnel during the two-month post intervention follow-up query (Duggan et al., 2004). Overall, however, the five studies did increase participant knowledge on chronic illnesses and showed levels of improvement for addressing the academic and social needs for students with chronic illnesses.

Examination of School Reentry Programs
School Personnel Programs

School personnel programs are a classification of reentry programs that provide chronic illness education to school personnel (Prevatt et al., 2000). Many school staff feel unprepared to meet the educational and social needs of students with chronic illnesses. During a survey of educators regarding their impressions of students with chronic illnesses, educators rated personal liability concerns stemming from student health emergencies as their greatest concern (Olsen et al., 2004). Personal liability was the greatest concern even though the likelihood that students with chronic illnesses will experience significant medical emergencies in school is very low; however, academic and social needs for students with chronic illnesses are significant (Olsen el al., 2004). There appears to be a disconnect between the content of school personnel programs that educators want (i.e., liability information) and what students with chronic illnesses need (i.e., academic and social support).

Dependent Variables. School personnel programs are beneficial to students with chronic illnesses as both the Dubowy et al. (2006) and Duggan et al. (2004) studies increased

educator knowledge surrounding chronic illnesses. The use of multi-media tools, such as web-based modules and printed materials, can be beneficial in reaching large audiences. However, there is a need for further research into this approach, as the Duggan et al. study reported little educator use of both the website and printed materials at a two-month post-session survey. In addition, researched school personnel programs lacked details as to the content needed to best affect outcomes.

Overviews of illness characteristics provides cursory information and likely increases general knowledge. Increases in knowledge correlated with confidence and attitudinal changes as suggested by the Dubowy et al. and Duggan et al. studies., however, do increases in knowledge, confidence, and attitude correlate with positive outcomes for students with chronic illnesses? The answer to this question is less clear in the literature. Intuitively, knowledge and attitudinal changes among educators should positively affect a student's school experience, yet the direct connection between these two measures has not been empirically investigated. Previous research has implied a connection (Worchel-Prevatt et al., 1998), however, future research should empirically examine correlations between school personnel programs and student with chronic illness outcomes to ensure academic and social needs of these students are met. Furthermore, additional investigation into the content of school personnel programs will allow for more explicit standardization of program and content structure. Current ambiguities in school personnel programs create unclear long-term effectiveness within this school reentry model.

Peer Support Programs

Peer support programs are used to provide age-appropriate education on chronic illnesses to school age students. Peer support programs are like school personnel workshops in that both programs address participant knowledge on chronic illnesses. The Holtz and Tessman (2007) study included in this review suggested increases in knowledge, attitudes, and behavior intentions. The findings from this included study are inconsistent with previous peer support studies that suggest increases in knowledge yet mixed results for changes in attitudes (Canter & Roberts, 2012). It appears programs designed to increase peer knowledge of chronic illnesses are effective, yet researcher have not demonstrated a correlation between peer knowledge and attitudes similar to that of school personnel programs.

Dependent Variables. Peer support programs do show evidence that peers have a greater understanding of chronic illnesses, however persistent attitudes and misconceptions among peers persists. Given that knowledge and attitudes can be used as a predictor of behavior (Ajzen, 1980), it is understandable that some reentry programs target peers of students with chronic illnesses. Peer relationships can greatly impact school outcomes for students with chronic illnesses. For example, positive peer relationships have shown to improve emotional wellness and medical self-management for students with chronic illnesses (Noll et al., 1996; Skinner et al., 2000). Further research concerning peers support programs is needed to more explicitly establish a correlation between knowledge and attitudes. Programs that focus on

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attitudinal beliefs and misconceptions surrounding chronic illnesses may demonstrate more positive increases in these domains, beyond general knowledge.

Similar to school personnel programs, future research should investigate whether changes in peer knowledge and attitudes cause or correlate with changes in peer behavior towards students with chronic illnesses. Acknowledging the role peers play in a student's reentry program is appropriate. Furthermore, intervention programs targeting peer outcomes are worthwhile. However, if the goals of a student reentry program are to enhance the quality of reentry for students with chronic illnesses, then measuring specific student outcomes should be a priority among researchers.

Student Reentry Programs

Individualized and comprehensive school reentry programs are fully inclusive programs that are initiated within the hospital setting by professionals who have knowledge in education and medical methodologies (Northman et al., 2015). Hospital liaisons, who are licensed educators that are employed by hospitals, are typically assigned to work with families who have children with chronic illnesses (Prevatt et al., 2000). The liaisons' main tasks are to increase collaborations between hospitals, families, and schools.

Dependent Variables. Both the Colbert et al. (2019) and the Koontz et al. (2004) studies demonstrated positive outcomes for students with chronic illnesses. Students who participated in the two studies had an increase in chronic illness knowledge and showed marked improvement in school attendance and positive social-emotional growth. Benefits of comprehensive school reentry programs, such as the Colbert et al. and Koontz et al. studies indicate that individualized programming promote positive school engagement for students with chronic illnesses. Although there is a small amount of research available, individualized programming may be able to consider the student's specific illness and medical treatment as well as other psychosocial needs that may impact school attendance or social-emotional outcomes. One advantage of individualized programming is the ability to implement a school reentry plan on specific student variables while also including general chronic illness information to benefit the entire school population.

Additional Considerations

Although evidence suggests individualized and comprehensive school reentry programs are effective in improving academic and social needs for students with chronic illnesses, there are barriers to implementing these programs. One significant barrier is the high costs hospitals incur from implementing school reentry programs and the salaries of educational liaisons who are devoted to this work (Thompson et al., 2015). School reentry programs are non-revenue-generating programs for hospitals, so these programs may be cost-prohibitive (Thompson et al., 2015). Additionally, large pediatric facilities support many patients which

ultimately may lead to hospital liaisons triaging patient school reentry needs so that only a portion of students with chronic illnesses receive reentry services.

One possible solution to overcome cost-prohibitive barriers is the use of telemedicine practices to virtually connect with patients, their families, school personnel, and peers. Many hospitals already use telemedicine practices to connect with patients, therefore, training and software expenses may remain low. The COVID-19 pandemic has essentially normalized the use of virtual mediums for meetings and instruction. Family members and peers may have less reluctance to technological adoptions based on increased familiarity with the technology. Video conferencing could be a more cost-effective way for hospitals to provide chronic illness education by eliminating the need for in-person education (Spaulding et al., 2008). Given that a virtual component of comprehensive student programs has not been empirically investigated, future researcher should consider this when developing efficacious and efficient reentry programs.

There also is a significant need to establish roles within school reentry programming, as there are discrepancies between medical professionals or school personnel who are tasked in leading this work. Healthcare professionals are focused on the medical aspects of children with chronic illnesses and may have little familiarity on school policies, procedures, and educational laws that benefit their patients (Moore et al., 2009). Due to the low incidence of chronic illness diagnosis within the total school population, many educators feel that their lack of knowledge impacts their ability to provide appropriate academic supports (Thompson et al., 2015). A hospital education liaison can serve as the communication facilitator between the medical community, family, and school environment as well as direct appropriate school reentry programs (Moore et al., 2008).

Implications

This review highlights several implications for the need of empirically supported school reentry programs focused on students with chronic illnesses. Studies included within this review demonstrated that school personnel workshops, peer education sessions, and student-focused reentry programs increase participant knowledge surrounding chronic illnesses. Both school personnel programs and peer support programs have not demonstrated a direct effect on students with chronic illness outcomes.

Comprehensive student programs have shown increases in desired student outcomes, yet the multifaceted components of these programs make it difficult to identify specific component effect variance. Furthermore, a small sample size of research within the field creates difficulty in overall program evaluation and standardization for future program developments. Based on the results of this review and previous research we suggest:

1. Individual student programs offer a comprehensive approach to meeting the needs of students with chronic illnesses. Student programs have demonstrated positive effects on

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     student academic and social outcomes. Student programs have the greatest barriers to implementation based on multicomponent programs with a lead personnel. Additional research is needed to investigate components of student programs to identify what really works.

2. School personnel programs are easier to implement than comprehensive student programs and have shown efficacy in increasing knowledge and attitudes towards students with chronic illnesses. School personnel programs have not demonstrated positive effects for students with chronic illness outcomes.

3. Peer education programs increase knowledge about chronic illnesses yet have mixed results for attitude changes. Additional research is needed to assess the extent peer knowledge correlates with changes in peer behavior toward students with chronic illnesses.

The value of comprehensive student programs is that all three groups (peers, school personnel, student) are involved in the reentry process to some degree. In addition, both comprehensive student programs included in this review involved components that worked with family members (Colbert et al., 2020; Koontz et al., 2004). The coordination and implementation of such programs, however, are extensive and likely require a trained professional who is knowledgeable about both the student's medical need educational needs.

Limitations

There are at least three limitations to this review that require discussion. First, the search procedures resulted in a small sample size of empirically investigated school reentry programs for students with chronic illnesses between 2004 and 2020. The small number of included studies limits the generalizability of finding from this review. The search results also suggest additional research in school reentry programs is warranted.

There are high quantities of articles regarding chronic illnesses in children, however, the majority of information focuses on impact of childhood illness on families (e.g., Fairfax et al., 2019). One reason for the depth of literature that focuses on children with chronic illnesses and family outcomes is that many children with significant health conditions previously had not regularly attended school (Lynch et al., 1993). Advancements in medical treatments in the past few decades are allowing many students with chronic illnesses to return to school and are in need of specialized support to address academic and social concerns.

Second, the search procedures did not include reentry programs for students with mental health needs per the rationale as described in the methodology. Including participants with mental health reentry needs was beyond the scope of this review, however, future research should explore evidence from mental health reentry programs. Valuable information from that line of research may contribute to the quality of reentry programs for students with chronic illnesses.

Finally, a lack of maintenance data regarding the long-term impacts of school reentry programs limited our ability to evaluate program longevity. Future research should consider

post-intervention data collection procedures to ensure immediate effects are sustained. Furthermore, an examination of whether school personnel knowledge and attitudinal changes generalize across chronic illnesses may inform whether future programs need to implement a new training per student with chronic illness, or whether one training is sufficient. Overall, maintenance and generalization of school reentry programs need further exploration.

Conclusion

In the late 1990s, the Leukemia Society of America identified the development and evaluation of school reentry programs for children with cancer as a top health priority (McCarthy et al., 1998). The literature suggests school reentry programs show promise of positive outcomes for peers, school personnel, and students with chronic illnesses, however, the results from this review identified a void for empirically studied school reentry programs. A consensus opinion (with some empirical evidence) may be that comprehensive student-focused programs, that incorporate all stakeholders, will result in the greatest outcomes for students with chronic illnesses. We agree. However, the more comprehensive a student program is, the more need there is for resources, training, and implementation fidelity. We encourage the field to continue exploring the balance between effective school reentry programs and practical implementation realities.

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The Membership Committee is responsible for the recruitment of new members and retention of current members for Complex and Chronic Conditions formerly Division of Physical Health and Multiple Disabilities. The committee seeks to identify and address the various needs of our members in serving our diverse target population. Our members are the division's very life blood and we seek to serve them in whatever ways we can through the provision of professional knowledge and support as they serve our students.

The membership committee is looking for division members who are interested in serving on this committee who can assist in the committee work by helping to establish plans for new member recruitment as well as member engagement and retention. If you are interested in joining this committee, please contact Membership Committee co-chairs, Allison Kroesch and Krystal Carrillo.

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