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Research Note

Less Is More: Implementing the Minimal Intervention Needed for Change Approach to Increase Contextual Fit of Speech-Language Interventions

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ABSTRACT

Purpose: Speech-language pathologists (SLPs) and researchers face difficulties in moving evidence-based practices from clinical research into widespread practice, in part due to a mismatch between the design of typical intervention research studies and the realities of clinical settings. SLPs must adapt interventions from the literature or established programs to fit the needs of specific clients and settings. Researchers must design studies that better reflect clinical practice.
Method: Here, we provide an overview of the Minimal Intervention Needed for Change (MINC) approach, a systematic approach to developing and adapting interventions that focuses on achieving meaningful outcomes within specific contexts. We outline the principles of MINC and illustrate this process through the use of a case study.
Results: MINC can support systematic development and adaptation of interventions in clinical and research settings, particularly settings with resource limitations.
Conclusions: Researchers should work to align research intervention work with typical clinical settings. This involves both targeting outcomes that are functional and clinically significant and acknowledging resource limitations. SLPs should adapt evidence-based interventions systematically and carefully to meet the needs of clients and settings while retaining the core components of intervention that result in meaningful change for clients.

The process of translating intervention research into practice is complex. This is, in part, because intervention research frequently does not align well with the realities of clinical practice settings. In real-world clinical practice, intervention planning and delivery is complicated by the varied resources and inherent limitations facing clinicians and clients. Intervention requires time, materials, trained staff, and resources. For children, teachers, and speech-language pathologists (SLPs), intervention also requires an investment of time, effort, and resources. The mismatch between intervention design and the realities of clinical settings often lead to slow or limited adoption of research findings into clinical practice. A frequently quoted statistic illustrating the research-to-practice gap states that it takes 17 years for only 14% of research evidence to be translated into practice (Green, 2008). If, as a field, we wish to better support the use of interventions that are both effective and adaptable to the needs of a specific clinical setting, we need to examine how we can better translate research findings into clinical practice—and how we can better align research to meet the needs of practicing clinicians and their clients.

The challenge of aligning intervention research with the real world of clinical and educational practice—and of achieving widespread dissemination of best practices identified by research—is not unique to speech-language pathology. Implementation science is a field of study that tries to address this challenge. More specifically, as outlined by

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Eccles and Mittman (2006), implementation science is "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice and, hence, to improve the quality and effectiveness of health services." A common challenge that arises when trying to align intervention research with real-world clinical practice is reconciling fidelity and adaptation. On the one hand, it is critical to implement an evidence-based intervention as intended, with fidelity, to produce expected outcomes in target populations. On the other hand, making adaptations to an intervention are necessary to make it fit in different contexts, such as clinics and schools. The latter is particularly true if we consider that many evidence-based interventions were developed under "ideal conditions," which do not necessarily exist in routine settings. Thus, moving a program from ideal to not-so-ideal conditions could be problematic for its feasibility and ability to meet local needs. The fidelity–adaptation dilemma has drawn increased attention by experts in implementation science and has led to the development of several frameworks and approaches that offer guidance for making adaptations while preserving fidelity (Glasgow et al., 2014; Kirk et al., 2021; von Thiele Schwarz et al., 2021; Wiltsey Stirman et al., 2019). Using these frameworks and approaches, stakeholders can maintain a balance between program fidelity and adaptation, by making systematic decisions over modifications that do not compromise a program's effectiveness and, instead, promote its uptake in heterogeneous and often, low-resource settings. For example, Kirk et al. (2021) discuss their adaptation process for an evidence-based intervention that aims to improve referral to hospice care for terminally ill patients. They distinguished core components, defined as components that make the intervention effective (e.g., how the intervention produces change), and forms, defined as components that can be adapted without compromising fidelity (e.g., who is delivering the intervention, when, where, and how).

Another example of a useful framework is the "Minimal Intervention Needed for Change (MINC)" approach (Glasgow et al., 2014). MINC refers to "the minimal or lowest level of intervention intensity, expertise, and resources needed to achieve a clinically significant improvement in a specified outcome for a particular target population under a particular set of conditions, when delivered by a specified type of staff or interactive modality" (Glasgow et al., 2014, pp. 26). MINC principles provide a way to clearly delineate both the effect of an intervention on outcomes for clients and the demand an intervention places on limited resources. More specifically, MINC principles hold that any intervention should target clinically meaningful improvements (rather than just statistically significant group differences), and interventions should be assessed in terms of gains for a well-defined population, within a specific context, with specific staffing and supports.

Researchers and clinicians can use MINC principles to design or adapt an intervention to fit the needs of their clients and settings. In terms of designing a new intervention, MINC principles may serve as a structured way for researchers to ensure the intervention aligns with the restrictions inherent in real-world settings such as public schools. If the intervention then proves effective, researchers can clearly demonstrate how to integrate it into existing service delivery systems. Clinicians could use MINC principles as a structured, systematic guide for how to adapt an evidence-based intervention from the literature to their clients, settings, and resources. MINC approaches focus on several areas surrounding real-world interventions including *the goal of intervention, intensity, complexity,* use of *strategies and techniques,* and *cost*.

Goal of Intervention

Within traditional clinical research, the success of an intervention may be measured through comparing the degree of difference on target outcome measures for an intervention group (who received the treatment) and a control group (who received no treatment or an alternative treatment). Researchers report a p value—the probability that observed group differences are due to random chance alone. A low p value ($< .05$) provides evidence that apparent intervention effects (or other differences) are not simply statistical noise, but true differences. Researchers can also examine effects sizes, a statistical technique to determine how *big* differences are between groups. They can even then rate the effect size using a standard descriptive term according to the magnitude of the effect—small, moderate, large. In typical intervention research, researchers may wish to include enough participants, high intensity of intervention, and careful control of techniques and implementation of intervention to maximize the chances of detecting intervention effects using statistical methods such as these. This does not mean that researchers are attempting to manipulate their results. It simply means that a great deal of control and careful analysis is required to determine the effect of intervention on outcomes. This approach helps determine the effect of an intervention without potential confounds: Can the intervention work if delivered at an appropriate intensity, in an ideal situation? It also helps determine the mechanism by which an intervention may work; tightly controlling all variables makes it easier to examine potential active ingredients in an overall intervention approach. Once an intervention has been established as effective based on tightly controlled studies (i.e., efficacy studies), researchers may expand into more typical clinical practice (i.e., effectiveness studies) and it is common to observe a decline in the effect of intervention

as this shift occurs. Note that, although the determination that an intervention was "successful" within this traditional framework is tied to obtaining clear differences between groups that did and did not receive the target intervention, it is not directly linked to changes that would be perceived as meaningful by clients or clinicians within a broader context.

In contrast to traditional approaches, within MINC approaches, the goal of intervention is to achieve meaningful clinical change within a specified clinical context. For example, Glasgow et al. (2014) examined changes in behaviors related to diabetes health in the context of programs that varied in individualization and contact needed with patients (and thus, the resources required to administer the programs). The process of analyzing gains within specified contexts may not sound new, especially to clinicians; the ultimate goal of intervention *is* to achieve meaningful progress for clients. The use of MINC principles simply makes this explicit and provides a way to relate goal setting to other aspects of clinical practice in a systematic way. However, especially for researchers, selecting goals that reflect true clinical progress within authentic settings can be challenging because it requires deep understanding of the priorities, needs, and challenges faced by clinicians and clients relative to the specific area under investigation. This deep understanding requires that researchers communicate with and learn from clinicians, clients, and others in the community while determining the goal of an intervention study. Researchers and clinicians must always interpret the importance and acceptability of any likely outcomes from intervention in the context of the resources required to achieve them (Rapport et al., 2018). For example, a researcher who wished to examine the effect of brief teacher training on the communication of students using augmentative and alternative communication (AAC) in a classroom setting would likely need to ensure that clinicians, children who use AAC, teachers, and school-based SLPs agreed the goals and likely degree of gain for a potential new (or new-to-them) intervention were worthwhile.

Because the focus is on *clinically* significant outcomes, within a MINC approach, statistical analyses are a welcome tool for determining the effect of an intervention, but results must be interpreted in context. A low p value, or a large effect size, is not enough to indicate that an intervention has had the desired outcome unless the outcome reflects a difference that will truly affect individuals outside of the research context. This does not always mean gains must be *larger* within a MINC approach. In fact, an intervention that results in a minimal difference between groups in terms of effect sizes may be interpreted as highly desirable if the small effect is meaningful for participants and requires an acceptable level of resource investment (McCartney & Rosenthal, 2000). In the example above, stakeholders may interpret gains as highly meaningful if they can be achieved following one or two sessions of teacher training, but as unacceptable and not meaningful if the same changes emerge only after a 20-session course of intervention. Again, the key here is that the effectiveness of an intervention must be rigorously tested in terms of the impact on meaningful clinical outcomes in the context of the resources required to achieve those gains. The remainder of the MINC principles explicitly address the resources required by an intervention in a specified clinical context.

Intensity

MINC approaches specifically call for interventions to provide the *minimal* intervention needed to achieve meaningful clinical change. For example, researchers using an MINC approach in the health care field may examine whether brief trainings or daily e-mails combined with incentives for success can result in weight loss (Almeida et al., 2015) but would be unlikely to examine the effect of a daily session with a personal trainer. In the context of speech and language intervention, intensity can be conceptualized as the number of teaching episodes an individual has accumulated by the end of a course of intervention (Warren et al., 2007). In addition to this total intensity, interventions can differ in intervention duration (i.e., time elapsed from first session to final session), number of sessions, and length of sessions (e.g., 30 vs. 60 min). While factors such as number and length of sessions *can* broadly align with total intensity, this is not always the case. For example, similar intensity in terms of teaching episodes for word learning could be achieved by presenting 30 clinician models of a target word over the course of a single session, or at a rate of three models per session for 10 sessions. Traditional intervention research may consider questions of dose and intensity, such as by comparing two different levels of intervention dose (eg., Balthazar & Scott, 2018; Fey et al., 2013). However, there is not a consistent presumption that intervention service delivery approaches within research mimic the intensity and structures available in clinical contexts.

MINC approaches typically target low to moderate intensity in terms of the cumulative intensity of an intervention and in terms of the length and frequency of intervention sessions (Glasgow et al., 2014). The precise dosage that falls within the range of low to moderate intensity will vary across interventions and populations. The overall goal is that intervention should be sufficiently intense that meaningful gains can be anticipated following intervention but should not go further than this. There is a growing literature surrounding intensity and the question of how intense an intervention must be for clients to make progress (e.g., Segura-Pujol & Briones-Rojas, 2020). This literature can provide guidance in terms of minimal levels of

intervention required for different target outcomes and different client populations. For example, if a clinician wanted to target the minimum intensity necessary to achieve meaningful gain in terms of word learning, the number of exposures required to learn new words would differ quite drastically for a typically developing child and a child with developmental language disorder (DLD; Justice et al., 2005; Storkel et al., 2019). Thus, an intervention regarded as low intensity (but sufficient to expect gains) for the child with DLD would be regarded as excessively intense for the typically developing child. The necessary resources for intervention will be addressed in the Costs and Resources section. At this point, the key is to identify how to minimize intensity while still achieving meaningful progress.

In terms of clinical research, interventions using MINC principles should be tested at an intensity that is feasible for adoption or maintenance in clinical and educational settings. This refers both to the total intensity (i.e., number of teaching episodes) and the structure of the intervention program required to achieve that total intensity (e.g., number of sessions per week for a certain number of weeks). The need to align with realistic levels for intensity of intervention may mean that there are cascading differences in terms of goals, strategies, and other aspects of the intervention under investigation. Clinicians and researchers engaging in designing and evaluating interventions using MINC principles should review the expanding literature surrounding dosage effects as noted above. However, researchers should also engage stakeholders and community members who are aware of the state of clinical services and context-specific limitations.

Complexity

Within MINC approaches, intervention design should minimize complexity; intervention programs should have only the minimal number of components necessary to achieve meaningful change. Complexity can define characteristics of an intervention (e.g., duration, target goals) and its implementation process (e.g., number of steps required to implement an intervention, number of decisions required at each step, number of stakeholders involved in implementation; Damschroder et al., 2009; Greenhalgh et al., 2004; Kochevar & Yano, 2006). For example, an MINC-style intervention focused on diabetes health would be more complex if it involved individualizing components for each patient and including more components and actions, whereas a less individualized program with fewer components would be simpler (e.g., Glasgow et al., 2014). A complex intervention may be perceived as difficult to implement—and may, in fact, be difficult to implement with fidelity. In contrast, a simpler intervention is one that involves a limited number of well-defined target outcomes, a small number of decision points, and few processes and steps to complete the program. Note that simplicity, here, does not mean an avoidance of necessary details or lack of specificity. In fact, clearly described and explicitly identified intervention components and processes are ideal for an MINC approach—but they must be presented within a framework that is focused and streamlined to the extent possible.

Especially for researchers, it is essential to note that the aim to reduce complexity includes a requirement to minimize theoretical complexity as it relates to the intervention design (Glasgow et al., 2014). Of course, researchers should have an underlying theory guiding intervention design, particularly an idea of how their intervention will bring about the desired change for participants. However, MINC approaches require that only the aspects of theory that are necessary and relevant are retained in these intervention efforts. For example, if a well-developed theory suggests multiple potential intervention targets related to the outcome of interest, a researcher designing an intervention within an MINC approach would carefully determine which of these targets are essential and are likely to result in the greatest functional gain. Potential intervention targets that do not meet these criteria would be dropped. Across both theoretical and applied aspects of complexity, MINC approaches favor interventions that require a small set of well-justified components tied to a clear intervention goal.

Strategies

An intervention designed around MINC principles should use a small number of effective strategies and should avoid having numerous, overly complicated strategies in use. As with the reduction in complexity inherent in MINC approaches, the reduction in the number and complexity of strategies are intended to limit the intervention to the core necessary components for clinical use. For example, Duong et al. (2019) discuss how they deliberately linked each phase of intervention to strategies that were concrete and easy for interventionists to learn during development of a teacher-administered intervention for student–teacher relationships. The goal within an MINC approach is to identify and retain only those strategies that have been proven useful and that can be used with fidelity by clinicians or others engaged in provision of intervention. This means that strategies should be effective for the target outcomes and/or within the setting for intervention. Each strategy should be clearly linked to the target intervention outcome in some way.

Researchers and clinicians should also attend to type an amount of training required by different strategies. For example, one approach may be fairly easily implemented by any well-trained SLP while another may require several multiday trainings and intensive study. In general, strategies that require minimal training are preferable to strategies

that require significant training. However, there may be cases where the target outcome can be achieved only with highly specialized strategies that require significant training. In these cases, researchers and clinicians should reflect on how training and use of these strategies will be supported in a feasible way within the clinical context.

Costs and Resources

When using MINC principles, the cost and resources required for an intervention should be minimized and should be feasible within target clinical settings. Resources here include physical resources (e.g., therapy materials, space), financial resources associated with training and staffing (e.g., person–hours from a trained SLP), and ancillary supports (e.g., technical support). Cost refers to the financial cost of the program. The resources and resource limitations evident in different clinical settings vary quite widely, and this variability should be considered as well. For example, a private clinic addressing stuttering would experience different resource limitations and costs than a school-based intervention setting, even if the same client received intervention in both locations. At the most basic level, adherence to this MINC principle means that clinicians and researchers should determine the typical resources and limitations surrounding cost and materials in clinical contexts and account for these restrictions in the design, evaluation, and selection of interventions.

MINC approaches are often thought of as particularly helpful in resource-poor settings, where attention to minimizing costs and leveraging existing resources is essential. In such cases, it may simply not be feasible to initiate or maintain a program of treatment that is effective if it requires overly costly staffing, materials, space, or other limited resources. Because the resources and limitations experienced across settings will vary, the specific restrictions around cost and materials will also vary. For example, whether it is more cost-effective to create or purchase new materials may depend on staff availability, the complexity of the materials, and budgeting around staff pay and purchasing.

Table 1 below provides a checklist of the steps required to design an intervention that aligns with MINC principles. It could also be used to adapt an existing intervention.

An Example of the MINC Approach in Language Intervention

Here, we will provide an illustration of how and why to adapt an intervention to follow an MINC approach. First, we will outline the intervention as administered prior to use of MINC approaches. Then, we will discuss how we addressed limitations in our clinical context by following MINC principles. We first engaged in adapting an existing intervention to follow MINC principles out of necessity; we were providing intervention in a public school at the time that schools shut down due to COVID-19, and we needed to adapt our approach or discontinue intervention entirely. Note that, although our use of MINC approaches occurred in a highly specific situation, the principles are universal. Thus, this example serves as an illustration of a process that could be employed across a range of contexts, interventions, and populations.

Example Program: Raising Educational Achievement in Charlestown

The Raising Educational Achievement in Charlestown (REACH) program was funded through a small grant from a local company, RSM US LLP (https://rsmus.com/), with the goal of supporting reading comprehension in first and second graders at a local elementary school through a partnership with the Speech and Language Literacy Lab (https://www.mghihp.edu/research/speech-and-language-literacy-sail-lab). The school is a Title 1 public, urban elementary school with a primarily low-income, racially, and ethnically diverse student body. We initially designed and implemented a traditional intervention, and later adapted our approach to align with MINC principles. This shift provides a clear illustration of how MINC principles may guide planning or adaptation of an intervention in response to resource restrictions in a clinical setting.

Original Program

Prior to school shutdown, we were actively engaged in providing small-group intervention using the Let's Know! curriculum (Language and Reading Research Consortium et al., 2019) and multisensory, explicit phonics instruction (Blachman & Tangel, 2008; Kilpatrick, 2016) to a total of 32 first and second graders. All participants were referred by our school partners. They were a diverse group: Some (but not all) had Individualized Education Programs, some (but not all) were English language learners, and most lived in poverty. Using the Simple View of Reading (SVR; Gough & Tunmer, 1986; Hoover & Gough, 1990) as our guiding theoretical framework, we selected students by combining information from school-based benchmark assessments, teacher referrals, and standardized assessments of language and reading. The SVR defines reading comprehension (i.e., the ability to understand what one reads) as the product of language comprehension (i.e., the ability to understand oral language) and word decoding (i.e., the ability to decode letter strings into pronounceable words). Moreover, the SVR helps us both understand why some children have reading difficulties and tailor intervention to their needs

Table 1. Checklist for adapting or designing an intervention using Minimal Intervention Needed for Change principles.

Area	Suggested steps
Intervention goal(s)	
	1. Identify your target goal(s) for intervention outcomes broadly. You will revise these later. Include goals for participant-level outcomes and program-level outcomes. 2. Define "meaningful" intervention outcomes for your population in your intervention. 3. Develop specific goals and objectives based on (1) and (2). 4. For each step below, review in the context of your goals. For each, determine if changes in intensity, complexity, strategies, materials, and costs are feasible while meeting your goals.
Intensity	
	1. Identify limitations and supports for service delivery in your setting. Focus on competing demands on staff, participants, and others involved. 2. Identify a minimum level of intervention intensity that is likely to bring about meaningful change in participants. 3. Determine how to structure intervention to ensure that you can meet the needs identified in both (1) and (2). 4. If there is a conflict such that you cannot address the limitations identified in (1) while reaching the intensity identified in (2) consider whether this intervention is feasible at all.
Complexity	
	1. Identify the key concepts and underlying principles of your intervention. 2. Identify details or concepts within (1) that are not core to your goals, or that are overly complicated and not relevant. 3. Determine how to simplify your intervention while respecting (1) above. Simplify by omitting or adapting elements from (2) if possible.
Strategies	
	1. Identify a short list of strategies that are proven and essential to your intervention. 2. Identify strategies that are typically included in your type of intervention but may be overly complex or not necessary to your core goals. 3. Determine which strategies from (1) require extensive training to implement or are challenging to administer faithfully in the moment during treatment. 4. Retain a small number of strategies, each of which meet (1) and does not meet (2). Only retain strategies from (3) if essential to the intervention program.
Materials and costs	
	1. Identify the materials and other resources required to administer the intervention program. 2. Identify materials and other resources that may limit feasibility or pose challenges to your intervention program. Include resources that are costly in terms of money, space, or time. 3. If a type of material fits both (1) and (2) determine if a substitute type of resource can be used or if the resource-heavy material truly does need to be in place. 4. Adjust requirements for materials as much as possible so that you can meet materials identified in (1) without exceeding financial, time, or other limitations. Where possible, minimize, change, or adapt the materials identified in (2).
Final reflection	
	1. Revisit your goals for the intervention program. Confirm goals are feasible within the intervention program you have planned. If not, return to prior steps to better align intervention design and outcomes. 2. If necessary, consult with stakeholders and confirm that your final plan is feasible and meets the identified needs of your population.

by looking at their strengths and weaknesses in language comprehension and word decoding. For REACH, we selected students who scored below the 30th percentile on the Test of Narrative Language–Second Edition (Gillam & Pearson, 2017) and/or below the 30th percentile on the Test of Word Reading Efficiency–Second Edition. We also accepted students who scored in the typical range if teachers relayed significant concerns regarding academic functioning in a classroom setting. After determining students' needs, we completed pretest measures specific to intervention targets (e.g., comprehension monitoring). We planned to readminister the pretest measures after the intervention ended to examine growth. Our goal was to advance the language and phonics skills of participating children sufficiently to detect gains following intervention—preferably gains that were large and clearly distinct from pretest performance.

We had seven interventionists, each of whom met with small groups of children 3 times per week after school hours. During each session, they completed 30 min of a language lesson and then 30 min of a phonics lesson. We assigned children to groups based on their grade and testing results. We constructed groups separately for language and phonics so that we could match children based on skill level and individualize supports and strategies. Thus, many children changed groups between these two lessons.

Language Intervention

We used lessons from the Let's Know! program (Language and Reading Research Consortium et al., 2019). Let's Know! is an evidence-based language and literacy

intervention for students in pre-K to Grade 3 focused on comprehension, designed to supplement standard classroom curricula. This intervention was developed and tested through a grant from the Institute of Educational Sciences (Grant R305F100002) as part of the Reading for Understanding Initiative. The Let's Know! curriculum can be downloaded for free using the following link: https://larrc.ehe.osu.edu/curriculum/downloads/. It was originally designed for whole-classroom instruction provided by classroom teachers, and we were implementing it as a more intensive, small-group intervention for children at risk for language and/or literacy difficulties. Let's Know! focuses on specific skills that are key to reading comprehension including grammar, vocabulary, inferencing, text structure knowledge, and comprehension monitoring. There are two versions of Let's Know!: (a) broad and (b) deep. We used the deep version of the program: This includes three types of lessons focused on gaining extensive practice with specific subset of skills. Let's Know! has four units per grade level, designed to be administered over a school year; we selected the two nonfiction units for each grade. We planned to complete all 24 lessons in each of the two units we were covering (*Animals* and *Earth Materials*). Each lesson is considered soft-scripted—interventionists are provided with tasks, suggested (not mandatory) wording at key points, and guidance regarding how to conduct a session. Lessons are structure around a release of responsibility, moving from "I Do" to "We Do" then "You Do" as children gain independence.

Phonics Intervention

In terms of the phonics intervention, we developed multisensory, explicit phonics lessons that targeted phonemic awareness, decoding, spelling, and early writing skills. We used evidence-based, commonly used approaches throughout these lessons (e.g. Kilpatrick, 2016). A reading specialist selected tasks and adjusted difficulty level based on initial testing and feedback from interventionists. Because the phonics intervention was individualized in terms of difficulty across groups, not all children completed the same activities on the same day or in the same order. For example, some children worked on consonant–vowel–consonant words during each phonics lesson while others had mastered this skill prior to intervention. Overall, the intervention as administered prior to adaptation was intensive, mandated use of highly specific materials, and required interventionists to provide highly accurate language and phonics intervention using multiple strategies during each session.

Motivation for Change

Following school closures due to COVID-19, we had to redesign our intervention for online administration. During this process, we realized that we had to shift more than our service delivery setting (live to online) to meet the needs of our population. Our school partners, students, families, and our own staff were facing challenges in terms of time, access to materials, and other resources. We consulted with our school partners and developed a modified intervention program aligned with our new clinical context. Specifically, to address our mission of supporting the language of at-risk children, we shifted from a standard intervention program based on prior work to a program largely aligned with MINC principles. While our motivation for aligning with MINC principles was tied to a highly specific situation, there are several elements of this decision that reflect the broader purpose of MINC as an approach; we had to actively align our intervention plan with the realities of resource restrictions to meet our intervention goals within our context.

Goal of Intervention

Under MINC principles, the goal of intervention is to achieve clinically meaningful change while minimizing the resources required and respecting the competing demands inherent in real-world clinical settings. In our case, we could no longer target our original intervention goals as our measure of "success" following school closures—providing intensive intervention to bring about change that we could detect with our outcomes measures was no longer feasible. The sudden shift from traditional in-person instruction to remote instruction overwhelmed staff, families, and researchers with competing demands on time, effort, and access to materials. We were not likely to achieve the same intervention intensity as before, and we did not have access to all the resources we did before.

Given these pressures, the goal of the program itself and our definition of a successful intervention changed. Within online REACH, our goal was to provide ongoing intervention to at-risk students to assist them in maintaining or starting to learn new language and comprehension skills. However, we did not set an expectation of achieving the maximal intervention outcome possible or to adhering as closely as possible to the published protocol. Rather, our goal was to provide sufficient intervention to bring about at least minimally meaningful gains (or maintenance of skills) in language while ensuring children had a positive experience with caring adults during a difficult time. Our measure of success in online REACH also included the ability to provide treatment without placing an undue burden on staff, students, or families participating in the program. Thus, within an MINC approach, we sought to balance provision of meaningful intervention with acknowledging and addressing restrictions within our clinical context.

We identified mechanisms to measure these goals without formal testing of participants through a combination

of interventionist observation and consultation with our school partners. Interventionists completed a note for each child following each session. These notes included several rating scales (e.g. "How much do you think the child learned?" rated on a scale from 1 to 7) and two open-ended questions: "Do you want to share any thoughts on this child's session?" and "Is there anything you would change?" We benefited from the fact that all of the four interventionists delivering online REACH had delivered live REACH prior to school shutdown and could compare the two. We consulted with our school partners on an ongoing informal basis and in more structured Zoom meetings prior to the new school year to discuss perceptions of the program and how to minimize burden while providing meaningful support.

Intensity

MINC principles require interventions to target low to moderate intensity so that they can support growth or maintenance of skills while limiting the demands on staff, clients, and families. This was not our mindset in designing the original intervention; our goal was specifically to provide intense intervention because we wished to ensure maximal gains if possible. However, the MINC approach to intensity better fit the postshutdown environment.

When planning around intensity, we considered both the actual time required (minutes/session; sessions/week) and other aspects of scheduling and formatting. During online REACH, our service delivery consisted of Zoom video calls. Due to school district requirements, a school staff member hosted each call and interventionists and children were able to meet in breakout rooms for one-on-one or small group therapy. The need to have at least two staff members on each call (school staff + interventionist) meant that calls were resource intensive and needed to be scheduled with care. In addition, families were feeling overwhelmed and expressed to the school that they did not want excessive appointments for children over Zoom in addition to the already-busy school schedule. Thus, we could not simply schedule Zoom sessions as we had scheduled our live sessions. Scheduling proceeded with the understanding that we needed to balance the intensity necessary for intervention to be effective with the restrictions we experienced around availability and frequency of sessions.

We targeted 2–3 times per week in terms of number of sessions during online REACH. This was identified as the level at which we believed children would benefit while limiting staffing challenges and avoiding undue pressure on families. We knew families were unlikely to attend all scheduled meetings and explicitly planned for this. We endeavored to be as flexible as possible in meeting varied needs within the school and utilized two approaches to scheduling. One teacher reported that she could host intervention calls during her regularly scheduled small-group classroom instruction time. She felt that this was the easiest way for her students to participate without changing their individual school schedules. For students in this class, we scheduled one-on-one intervention twice per week, for half an hour per session during a pre-established small-group time. Although intensity was reduced from the live program in terms of the frequency and length of sessions, children also shifted from receiving small group intervention during live REACH to individual intervention during online REACH.

Further discussion revealed that the remaining three teachers did not have similar availability in their schedules to host these calls given the makeup of their classrooms and structure of their school days. Thus, for these three classrooms, we invited children to call during a regular set of 1-hr time slots 3 times per week. A school staff member hosted the call, and children participated in one-on-one or group intervention depending on the number of children and interventionists present on the call on a particular day. Individual children generally participated for about half an hour per session and did not generally participate 3 times per week as they had when we were live. Again, intervention was reduced in terms of intensity as far as the number and length of sessions per week children received, though the size of groups (or intermittent receipt of individual sessions) was reduced from the live program. For both approaches, we first consulted with school staff, reviewed demands on families and our own staff, and then attempted to schedule in a way that balanced the need to provide regular-enough intervention for gain with the needs of staff and participating families.

Complexity

Under MINC approaches, interventions ought not to draw on an overly complex framework or require numerous components that are difficult to implement. Recall that the goal is to provide a focused intervention that can be implemented in a real-world context, not to provide every aspect of an intervention that may theoretically be of assistance at some level. In our case, interventionists in the live program were delivering two types of intervention during each session: (a) language intervention from the Let's Know! curriculum and (b) phonics intervention using multisensory, systematic instruction. Each of these interventions involved strategies, techniques, and expectations that did not entirely overlap with each other. In addition, each set of intervention lesson plans would have to be adapted for online administration.

We realized that we had to simplify the demands of our intervention on the interventionists and children so that we could be successful. During discussion with our school partners following school closure, we determined that classroom teachers and other school staff were providing phonics

instruction already, but that the Let's Know! language support would be a unique benefit of our program alone. Given the potential overlap with classroom teachers, the need for a decreased complexity of intervention, and our reduced time for treatment compared to the live program, we dropped all phonics intervention from the online intervention program. This enabled us to focus solely on ensuring that Let's Know! was well done and effective.

The original Let's Know! curriculum provided lesson plans for each lesson with scripting, activities, target learning goals, and materials for use during the session. Where appropriate, interventionists were instructed to read passages from books. When moving online, we wanted to leverage the already-developed lesson plans while adapting them to reduce the complexity and demands on interventionists where possible. The original curriculum has a PDF for each unit that can be printed, with lesson plans for each session. For online REACH, we developed a PowerPoint for each lesson, with scripting included in the "Notes" for each slide. Each PowerPoint included a visual schedule for the lesson, and activities adapted for use in a video chat setting. We simplified activities that originally including crafts, games, or other specific activities that required a lot of directions. Despite simplifying these activities, we deliberately retained the core concepts, vocabulary targets, and background knowledge as the original intervention, so we had reason to believe that we were still teaching the same skills.

Strategies

An additional area addressed by MINC principles includes limiting the number and difficulty of strategies to be used within the intervention itself. An intervention that requires numerous strategies, each of which needs to be implemented in a precise, difficult-to-learn manner, is at risk of failure in demanding real-world clinical settings. However, an intervention that leverages a small number of simple and effective strategies can result in change with a reduced investment of time, effort, and staffing.

During online REACH, we continued the use of the strategies identified as essential in the original intervention but pared back on other demands on interventionists. We identified essential strategies from the review of the original intervention materials (e.g., strategies outlined in the curriculum manual and related research publications) and through piloting our lessons. For example, in live and online REACH, interventionists engaged in actively monitoring children's comprehension (and teaching children to do so themselves) and supporting rich discussion of the material. However, during the online intervention, we were concerned that the children became more easily distracted and that interventionists had a harder time monitoring if the children were listening and understanding. Thus, during the online intervention, interventionists were instructed to increase the frequency of cues to participate and chances for children to successfully respond to questions during sessions. This change allowed us to keep the children engaged during the online sessions and provided interventionists with additional feedback regarding what the children understood or where they needed help. In contrast, we omitted strategies that were less essential and feasible in our new context. For example, during the online intervention, children were rarely asked to discuss responses with a peer prior to talking with the group or adult. Overall, our mix of reducing the number of strategies required (e.g., no longer supporting dyadic discussion between students prior to group responses) and encouraging frequent use of strategies that were effective in an online context (e.g., comprehension checks) illustrates how an intervention can be adapted to adhere to MINC principles around focusing on a small number of generally effective strategies.

Costs and Resources

Use of MINC principles includes an awareness of the need to address restrictions in terms of materials and costs. An intervention may be highly effective but require highly specific and expensive materials. If materials or other resources are hard to obtain or require resources that are greater than those available, it may not be possible to deliver the intervention as planned.

Our original intervention did not require obscure or expensive materials—primarily such commonly available items as papers, pencils, and whiteboards, as well as photocopies of worksheets, and use of specific children's books used within the curriculum. Online REACH also required access to Wi-Fi and use of Zoom. We were lucky in that the district was already engaged in a program to provide Wi-Fi and devices where needed to students, and teachers were engaging in Zoom calls with our students multiple times per week. On the other hand, despite the fact the intervention materials are fairly commonplace, we could not ensure that each child would have the required set of materials for each lesson at the time they called us for online sessions. Thus, we instructed interventionists not to assume children had any specific materials beyond the device used to call in to the Zoom sessions.

In addition, we identified access to the children's books used during the intervention as essential—but purchasing these books as a barrier to implementation. Many were out of print, or few copies were available. Thus, our adapted lessons included new books selected for online REACH. Our criteria for selecting books consisted of the following: (a) age appropriate, (b) addressed the topics and concepts from the Let's Know! lessons (e.g., frog life

cycles), and (c) available for immediate purchase in bulk quantities. Prior to the launch of online REACH, we purchased the new books and adapted the lessons to specifically reference these new materials. We delivered the books to the school, and the principal and staff hand delivered them to children's homes. Each interventionist was provided with a copy of all the texts used in online REACH. We asked children to have their books available, and each lesson included explicit identification of the book in use that day. In cases where children could not find the book, interventionists were asked to hold up their copy often while reading aloud or working through examples. This is a fairly straightforward example of following MINC principles: We limited the resources required for participation to the absolute minimum to engage in a lesson. Where we required materials to participate (e.g., books), we ensured they were distributed and easily accessible. When necessary, we modified the intervention to align with the materials we were able to obtain.

Review of Results

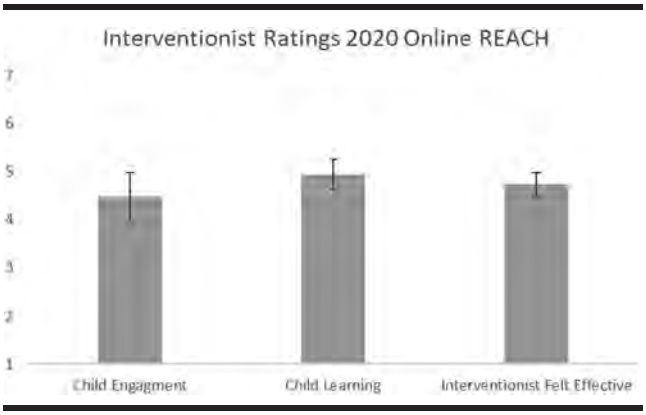
Interventionist Ratings

We reviewed our findings using the MINC framework and used these results to shape the next steps of the program. Results from interventionist ratings are presented in Figure 1 below. Ratings indicate that there was some variability, but that interventionists observed evidence of learning and child engagement with the material.

Open-Ended Responses

Responses to open-ended questions provide evidence that online REACH was successful, but also provided guidance regarding areas to address in future iterations, using the MINC framework. For example, we received multiple comments specific to our materials and book distribution approach, such as "(Child's Name) did a great job! She had the book and followed along." We also received more global comments regarding growth in the program such as "the students had the ideas from the live sessions reinforced and they were further able to build on their reading and language skills." Comments around our intensity and service delivery provided guidance for future planning, such as outlining the need to "...make sure students are on the same page at the beginning of each lesson." We also received comments that compared online and live REACH, or which discussed the transition from one to the other. For example, one interventionist reported "...in the online sessions I believe the students had the ideas from the live sessions reinforced and they were further able to build on their reading and language skills."

Figure 1. Interventionist ratings during online Raising Educational Achievement in Charlestown (REACH).



School Partners

In terms of school partners, one key indicator of their approval of the program was Fall 2020 enrollment. During Spring 2020, 15 children participated regularly in online REACH. During Fall 2020, 40 children participated. Each participant was referred by the school partner. School partners also explicitly requested that the program continue to focus on the language skills addressed in online REACH as they had been helpful to children. We did make a key change in intensity and service delivery as we moved ahead with online REACH; we entered Fall 2020 planning regularly scheduled small groups at set times with specific teachers, and no longer held open calls. This both accounted for changing school conditions over the course of the pandemic and responded to observations during our Spring 2020 sessions regarding the difficulty in delivering lessons to groups that were not consistent from day to day.

Implications for Researchers

Researchers who conduct intervention research can leverage MINC principles to design and test interventions within a framework that accounts for the supports and restrictions of clinical practice and educational settings. Through this process, the research-to-practice gap may be lessened and findings from clinical research may better reflect the complexity of applied practice. Researchers who engage in studies using MINC principles can deliberately plan new interventions in this way or work to modify existing interventions. Through integrating considerations around goal of intervention, intensity, complexity, strategies, and costs, researchers can also reflect on what makes

up the core aspects of an intervention program and what can be omitted based upon specific needs and situations.

Implications for Clinicians

The MINC framework provides a structured way for clinicians to reflect on evidence-based interventions and determine how to adapt these practices to meet the needs of their specific clinical settings. Clinicians frequently engage in adaption and modification of established interventions already, simply through the process of engaging in therapy in a real-world setting that does not directly mimic the original research studies surrounding many of our interventions. However, the use of an explicit set of guidelines like the MINC principles may allow for more deliberate decision-making around how to match an intervention with the needs of the client, setting, and system to achieve meaningful outcomes within a context that has finite resources.

Conclusions

The COVID-19 pandemic and its impact on education forced us to acknowledge two things: (a) Often, evidence-based clinical or instructional interventions do not reflect the realities and demands of routine practice and require some degree of context-specific adaptation to promote desirable outcomes, and (b) if we want to ensure that individuals with communication disorders continue receiving essential services, we must shift from "letting it happen" approaches to "making it happen" approaches (Greenhalgh et al., 2004) and step in the uncomfortable but necessary world of adaptation. In this research note, we discuss how the MINC approach enables us to closely examine real-life contexts and their inherent complexity and limitations and proceed with necessary adaptations to increase contextual fit of evidence-based interventions. In our example, we demonstrated how we used MINC principles to examine components of the Let's Know! language curriculum (i.e., goal of intervention, intensity, complexity, strategies, and cost and resources) and implement necessary changes to continue supporting students with language difficulties in the midst of the pandemic. We believe other researchers and clinicians may use similar steps in adapting a range of communication interventions to real-world clinical contexts.

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