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Building Sustainable Models of Research Practice Partnerships within Educational

Systems

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24   **Abstract**

25   *Purpose:* To describe the nine-year journey of a group of language and literacy researchers in

26   establishing and cultivating Research Practice Partnerships. Those interested in incorporating

27   implementation science frameworks in their research may benefit from reading our exploration

28   into this type of work and our lessons learned.

29   *Method:* We showcase how a group of researchers, who are committed to collaboration with

30   school practitioners, navigated building and scaling Research Practice Partnerships within

31   educational systems, necessary for our long-term implementation work. We provide details and

32   illustrative examples for three, distinct, mutually beneficial, and sustainable partnerships.

33   *Results:* Three different practice organizations are represented: (1) a single metropolitan school,

34   (2) a small metropolitan school district, and (3) a large metropolitan school district, highlighting

35   specific priorities and needs depending on the type of practice organization. Each partnership has

36   distinct research and practice goals related to improving language and literacy outcomes in

37   children. We describe how the researchers assisted with meeting the partner practice

38   organizations' goals and engaged in capacity building while producing rigorous scientific

39   knowledge to inform clinical and educational practice. Additionally, we discuss how research

40   priorities and strategies were pivoted in the past year due to the COVID-19 pandemic,

41   illustrating our commitment to the partnerships and how to respond to challenges to guarantee

42   long-term sustainability.

43   *Conclusions:* By discussing three distinctive partnerships we demonstrate the various ways

44   researchers can approach Research Practice Partnerships and grow them into mutually beneficial

45   collaborations and support implementation goals.

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47   **Building Sustainable Models of Research Partnerships within Educational Systems**

48   As discussed in the prologue of this clinical forum and other recent special issues or

49   supplements, there is great momentum in the field of communication sciences and disorders to

50   close the research to practice gap, specifically through the incorporation of implementation

51   science (Douglas et al., 2015; Goldstein & Olswang, 2017; Olswang & Goldstein, 2017;

52   Olswang & Prelock, 2015). Evidence-based practices that are proven to be efficacious by

53   researchers are only likely to be effective and sustainable in settings where implementation of

54   these practices is explicitly targeted in a collaborative and focused way. The field of

55   implementation science studies the strategies that facilitate the adoption of evidence-based

56   practices into routine practice. Ideally, assessment and intervention research should include

57   simultaneous or subsequent implementation science methods to identify the implementation

58   practices that best meet the needs of the settings and practitioners. This requires researchers to

59   engage in building equitable and sustainable research collaborations with key stakeholders. As

60   such, the current paper will specifically review one framework for creating collaborative

61   research opportunities, Research Practice Partnerships (RPPs, Coburn et al., 2013). In this paper

62   we describe how we applied an RPP framework across diverse educational settings throughout

63   the United States to successfully build collaborative relationships that have resulted in

64   implementation science outcomes such as the development of infrastructures to support universal

65   screening and promote early identification of students who may be at risk of language and

66   literacy difficulties. Additionally, these partnerships have generated mutually beneficial joint

67   research objectives that have led to ongoing federally- and privately-funded longitudinal and

68   cross-sectional research studies.

69   **Research-Practice Partnerships within Implementation Science**

70   An important aspect of implementation science is the incorporation of relevant stakeholders,

71   also referred to as "operational partners" by Bauer and Kirchner (2020). These operational

72   partners can be found at multiple hierarchical levels within an organization and serve to

73   contextualize and inform practice needs where change may occur (Huang et al., 2018; Proctor et

74   al., 2009). The individual-level operational partner is the consumer or provider of evidence-

75   based practices or practice innovations (e.g., interventions, assessments, service delivery

76   models). In the field of communication sciences and disorders, this would be the patient, client,

77   student, family/caregiver, the individual speech language pathologist (SLP) or teacher. The team-

78   level operational partner would include the delivery system or practice setting of the evidence-

79   based practice or practice innovation such as the clinic, hospital, or school. Lastly, the

80   organizational-level is the larger administrative system in which the team is situated to support

81   and sustain the evidence-based practice or innovation for long-term implementation. Some

82   organizational-level operational partners could be a large school district or healthcare network in

83   which the team operates. Importantly, when conducting clinical research, inclusion of

84   operational partners at all levels is ideal to best align researcher priorities and practitioner

85   expectations and needs.

86   In implementation research these stakeholder partners play critical and active roles where

87   they assist with designing or implementing the study. This contrasts with more traditional

88   clinical practice research where operational partners typically play more distal roles as either

89   facilitators of the study or those observed in the study. In recognition of this key ingredient to

90   successful dissemination and implementation efforts, several frameworks for initiating research

91   partnerships with stakeholders at various levels have emerged. Huang and colleagues (2018)

92   conducted a review to summarize frameworks and methodologies for development of

93 partnerships, engagement, and collaboration strategies in dissemination and implementation

94 research in healthcare. They report essentials for positive partnerships include a shared

95 understanding, a community of trust, and operationalizing shared decision-making processes.

96   Understanding and improving "real-world" practice outcomes is foundational to

97 implementation science, and RPPs help connect practice outcomes by engaging in stakeholder

98 collaborations (Coburn et al., 2013; Tseng et al., 2017). Henrick and colleagues (2017) proposed

99 five critical dimensions for successful partnership building that could be useful in assessing

100 RPPs applied in education. These include but are not limited to: (1) building trust and cultivating

101 partnership relationships; (2) conducting rigorous research to inform action; (3) supporting the

102 partner practice organization in achieving its goals; (4) producing knowledge that can inform

103 educational improvement efforts more broadly; and (5) building the capacity of participating

104 researchers, practitioners, practice organizations, and research organizations to engage in

105 partnership work (Henrick et al., 2017; see Figure 1).

106   RPPs differ significantly from traditional collaborations between researchers and practice

107 partners. Unlike traditional research collaborations that typically have a short-term focus to meet

108 the narrow goals of a researcher, RPPs are (1) long term; (2) mutualistic; (3) intentional; (4)

109 focus on problems of practice that include investigative solutions to improve outcomes; and (5)

110 produce original analyses (Coburn et al., 2013). RPPs have primarily been applied in education

111 and social work settings for university partnerships with educational and/or state agencies to

112 address the associated challenges of practice (Coburn & Penuel, 2016; Goldstein et al., 2019;

113 Joubert, 2006).

114   Farrell et al. (2018) conducted a descriptive study on RPPs applied in the educational setting

115 and funded by the U.S. Department of Education's Institute of Education Sciences to determine

116   the potential benefits of such collaborations. Overall, nearly all the surveyed researchers and

117   practitioners reported that their partnerships provided new ideas or frameworks for

118   implementation and/or support by local policymakers. Moreover, these partnerships helped

119   support the development of professional development, programming, and/or practices that were

120   designed to fit the unique needs of the educational stakeholders. Additionally, practitioners

121   reported that they (1) would participate in another RPP in the future, (2) shifted in their

122   engagement with research, and (3) had a new and better understanding of how to incorporate

123   research into their practice. Similarly, researchers reported that they (1) would also participate in

124   RPPs in the future, (2) shifted in their understanding of the contextual factors faced by

125   practitioners, and (3) increased their understanding of the value of including practitioner

126   perspectives in the research process. These findings highlight the significant contribution of

127   RPPs in implementation science. RPPs provided the opportunity for researchers to understand

128   the real-world needs of practitioners, including the supports needed and barriers to be eliminated

129   for successful implementation of evidence-based practices.

130   In addition to insights of the benefits of informal collaboration, Farrell and colleagues (2018)

131   found that the overwhelming majority of RPPs (26 of 27 RPPs) had formalized infrastructure

132   agreements, and these structures were often set up well before formal grant-funding was secured.

133   The commonly reported elements of these infrastructure agreements included data-sharing plans,

134   memorandums of understanding, broad research agendas, and decision-making boards. These

135   findings were reported to be useful for researchers and practitioners who, although interested in

136   engaging in partnership research endeavors, were initially concerned that funding would need to

137   be in place to launch and maintain successful collaborations. This formal agreement structure

138   was related to Farrell and colleagues (2018) additional findings that the top two conditions for

139   successful implementation of an RPP were mutual organizational interest and trust among the

140   partners. These findings are in line with Coburn et al.'s (2013) findings that maintaining

141   mutualism and building trust were necessary strategies for tackling challenges faced by RPPs to

142   sustain them long-term and essential for RPP success.

143   Overall, the findings of Coburn et al. (2013) and Farrell et al. (2018) provide insights to how

144   RPPs can be useful frameworks for creating bi-directional relationships with mutual benefits

145   such as knowledge transfer and improved implementation outcomes (as outlined in Proctor et al.,

146   2011). These partnerships can support improved understanding by both researchers and

147   practitioners to help close both the research-to-practice and practice-to-research gaps.

148   **Practical Considerations when Engaging in Research-Practice Partnerships**

149   Building sustainable RPPs can be challenging and require considerable commitment from

150   both researchers and practitioners. It is especially difficult when practitioners are practicing

151   within organizational systems that have multiple stakeholders' interests to consider. Schools

152   within the United States have federal and state regulations they must follow, and local school

153   board and parent demands they must attend to. Funding for public education is tied to

154   performance on high stakes assessments and yet practitioners are struggling to meet these

155   demands due to a myriad of challenges with limited organizational support (Christian-Brandt et

156   al., 2020). Exacerbating challenges include alarming rates of secondary trauma and burnout by

157   educators and service providers alike due to working with children who are experiencing a high

158   incidence of adverse childhood events such as food insecurity and domestic violence (Borntrager

159   et al., 2012; Caringi et al., 2015; Hydon et al., 2015). Contrastively, researchers have academic

160   institutional productivity demands to obtain extramural research funding and continuously

161   publish rigorous scientific journal articles. These research output expectations can impede the

162 desire to initiate and nurture time-consuming RPPs as they may not yield publishable scientific

163 data for many years. Moreover, despite its potential for high clinical practice impact, there have

164 historically been few funding mechanisms to support long-term RPP work.

165   Although we recognize that the constraints on practitioners and researchers can stifle interest

166 and capacity to participate in RPPs, we believe the promising outcomes of RPPs are worth the

167 effort. We submit that taking risks to explore collaborative research frameworks such as RPPs

168 can have high-impact payoffs for the students, families, and language and literacy providers and

169 educators. Further, committing to engage in collaborative research efforts, such as RPPs,

170 provides opportunities for researchers to engage in implementation research. Like the examples

171 discussed regarding school practitioner experiences and expectations, RPPs provide

172 opportunities to directly examine various determinants acting as barriers to evidence-based

173 practice implementation. Additionally, RPPs have the potential to improve practitioner

174 participation in research in both traditional and implementation research.

175   A familiar lament of researchers is the difficulty in identifying and recruiting potential

176 research participants (see Gul & Ali, 2010). For communication sciences and disorders

177 researchers we see similar challenges recruiting in our local communities despite tremendous

178 efforts to send out recruitment notices via SLPs, educators, local schools, libraries, social media,

179 and online parent groups. To those who are on the receiving end of these recruitment efforts,

180 these calls for participation can feel overwhelming and misguided when they are struggling to

181 meet their everyday demands. Yet, many do heed the call and will assist in recruitment or

182 participate in research but then find themselves disappointed if there is no follow-up or

183 maintenance of the relationship once the recruitment or study has commenced. This inability to

184 maintain relationships could be the result of various demands on researchers as previously

185 described or lack of support and infrastructures necessary for sustainability. Unfortunately, these

186 researchers can be seen as "drive-by" researchers versus invested community partners and can

187 color potential future collaborations or participation even if researchers want to create lasting

188 collaborations.

189   Given the research supporting RPP and the importance of implementation science for the

190 integration and sustainability of evidence-based practice in the fields of education and

191 communication sciences and disorders, the researchers in this paper chose to apply an RPP

192 framework in their own educational research agendas. The following is a description of how the

193 key elements of an RPP framework were applied across a variety of school settings over

194 differing periods of time and most recently through a large-scale, multi-site, longitudinal

195 educational research study across two states. We begin by describing the researchers and three

196 practice organizations who came together to create and nurture partnerships. We then discuss

197 how we used the five dimensions of RPPs (Henrick et al., 2017) in building our partnerships, our

198 successes and challenges, as well as the lessons we've learned along the way.

199 **Research-Practice Partnerships: A Look at Sustainable Examples**

200 *The Researchers*

201   Our commitment to prioritizing partnering with educational systems is borne from the

202 fact that all the lead researchers served as clinicians, conducted clinical practice research, and/or

203 worked actively in schools prior to serving in their current university-level research positions.

204 Though not a necessary component for successful RPPs, this group believes that our knowledge

205 and recognition of school-based ecosystems and their relevant stakeholders was and continues to

206 be a key guiding factor in our record of successful RPPs. As highlighted in Douglas & Burshnic

207 (2019) and any determinant framework used in implementation science (see Nilsen, 2015), a

208 necessary and important component to implementation science is seeking out the practitioner's

209 perspective to understand the unique contextual factors that support or hinder the uptake of

210 clinical practice. Having experienced some of these contextual factors ourselves provides us

211 unique insights that can lead to an understanding and respect of the practitioners' experience.

212 We believe the respect and understanding has helped us in forming successful RPPs. By

213 acknowledging the complex nature and demands on the key players of these systems, we build a

214 greater capacity for science-based innovation to improve outcomes for children with language

215 and literacy difficulties.

216 *Identifying Practice Partners*

217 　　　When seeking operational partners to engage in an RPP, it is important to identify

218 potential change agents. Change agents are an individual or group who facilitates and manages

219 planned change or innovation brought about through a deliberate process intended to increase the

220 likelihood of acceptance and implementation and the potential benefit (Havelock, 1973). These

221 change agents can be found at many levels in educational settings such as in administration or

222 staff working with individuals, teams, or organizations. A knowledge broker is one type of

223 change agent who promotes, facilitates, and supports knowledge translation efforts (Dobbins et

224 al., 2019). One way in which a knowledge broker may function is to provide links between

225 researchers and practitioners—essential in facilitating communication and knowledge sharing

226 among the relevant stakeholders. In educational systems, knowledge brokers might be at any of

227 the three organizational levels. One example of a knowledge broker might be a single SLP who

228 attends a continuing education event and presents current empirical findings and resources

229 related to curriculum or assessment that were shared at the event to her colleagues at a single

230 school. Another example might be a school district administrator who sits on steering

231 committees or task forces with university faculty for planning and roll-out of state education

232 legislation. Both examples illustrate how these individuals could be open to collaborations if

233 approached by researchers.

234   When forming our RPPs we first identified and contacted potential knowledge brokers at

235 targeted practice organizations. Importantly, some RPPs are not formed to target a specific

236 research question in mind, instead they may have the shared goal to identify problems of practice

237 and seek out and test potential solutions. In the examples that follow, the researchers and practice

238 organizations shared interest in improving general and special education practices for children

239 with language and literacy difficulties. Specifically, the practice organizations were seeking

240 assistance with addressing new legal requirements around early identification and support of

241 students with literacy disabilities like DLD and dyslexia. They deemed our research timely,

242 relevant, and useful for their staff and students. This was important because, we, the researchers

243 seek to create partnerships that not only further our own research agendas, but also address

244 problems of practice and promote positive change in educational systems.

245   For our purposes, we sought knowledge brokers who were already serving in roles that

246 assisted with cultivating a culture which valued evidence-based practice or facilitated capacity

247 building in their teams or organizations. It is important to note, however, that not all contacts

248 with knowledge brokers were successful. The main reason for this was that the priorities of the

249 practice organization did not immediately align with those of the researchers. This is a valuable

250 reminder that, although all educational systems in the US aim to provide high quality language

251 and literacy instruction and intervention, not all schools may be interested in or have the capacity

252 and support to engage with the specific curricular programs or interventions proposed by

253   researchers. For this paper, we focus on three practice organizations we built RPPs with

254   successfully.

The Practice Organizations

256   Each practice organization had unique needs and student populations that they served.

257   They spanned two distinct regions of the United States, an expansive metropolitan region in New

258   England and a smaller metropolitan region serving the rural Northwest. The student populations

259   across these practice organizations included the full spectrum of socioeconomic status, race,

260   ethnicity, and language status. Teacher training was also varied in that one region required

261   master's degrees for teaching certifications and the other only required a bachelor's degree.

262   Overall, the practice organizations represented diverse populations and voiced distinct needs.

263   Though the start of these partnerships varied, all the partnerships we highlight in this paper

264   engaged in current studies investigating long-term outcomes of young school-aged children with

265   and without developmental language disorder (DLD) and/or dyslexia. The timing for the start of

266   these studies was favorable for two main reasons. First, the Science of Reading movement

267   (Defining Movement, 2021) has made great advances in promoting evidence-based practice in

268   language and literacy, pushing school districts to improve their practices. Second, most states in

269   the U.S. passed special laws that mandated early screening and support of students with learning

270   disabilities such as dyslexia. These reasons contributed to the practice organizations' interest in

271   our studies and how we could support their language and literacy practices.

272   Each practice organization resulted in a distinct partnership with different beginnings,

273   unique requirements and commitments, variable levels of interaction, and potential long-term

274   trajectories. Despite the varied engagements and objectives in all three partnerships, we chose to

275   highlight these three because they all successfully met one specific objective, that is, the early

276   identification of students who may be at risk of DLD and/or dyslexia. They did this by

277   committing to participate in our ongoing large National Institute of Health (NIH) multisite grant

278   where we administered researcher-developed language and literacy classroom-based screenings

279   to all their kindergarten classrooms.

280   Although each operational partner discussed is at the organizational level, we chose to

281   discuss these partnerships in chronological order, which also highlights that over time they have

282   increased in size (e.g., from a single school to a large metropolitan school district). For many, the

283   entry point for creating RPPs may be small, with a single school. Over time, with experience and

284   alignment of priorities, RPPs can be expanded to include larger organizations and secured grant-

285   funding to support these collaborative efforts. Highlighting this will hopefully encourage

286   researchers interested in pursuing this type of work to start where they are, even if it is reaching

287   out to a single knowledge broker and getting that first meeting with leadership in a small

288   organization. Further, our RPPs illustrate how to start a research partnership and adjust

289   expectations as needed to promote mutual trust, sustainability, and shared outcomes.

290   **Practice Organization 1: A Public Elementary School.** This operational partner was at

291   the team level; a single pre-kindergarten through 5th grade elementary school (~4,000 enrolled

292   students) in a small urban city (~20,000 population). Our initial knowledge broker was a veteran

293   SLP at the school who was also an alumnus of one of our institutions and worked as a site

294   clinical supervisor for SLP graduate clinicians. One of our researchers initiated a meeting with

295   her and the school principal in 2012 to discuss mutual language and literacy interests and

296   potential research collaborations. This SLP subsequently served as a liaison during the first

297   research project at this school from 2013-2015. Our initial knowledge broker eventually retired,

298   and we were able to sustain this RPP by continuing to build our relationship with the school

299   leadership team, the principal and vice principal, who have been in these positions since the start

300   of the RPP in 2012. Overall, this ongoing partnership has spanned nine years and three different

301   grant-funded (by the Institute of Education Sciences, NIH, and a local accounting firm) research

302   projects.

303   **Practice Organization 2: A Small Metropolitan Public School District.** This

304   operational partner was also at the organizational level however this time it was a school district

305   for pre-kindergarten through 12th grade (~9,200 enrolled students) in a small metropolitan city

306   (~ 70,000 population). Our initial knowledge broker was a district administrator, with SLP

307   experience, whose oversight included the elementary school special education branch of the

308   district. Starting in 2016, we initiated meeting on a regular basis (approximately one time each

309   semester) over two years to discuss needs of the school district and areas of mutual concern.

310   Over the course of 2018, additional knowledge brokers, the district lead SLP and district special

311   education director, were added to the conversations and have continued as our initial knowledge

312   broker retired. Overall, this ongoing partnership has been thriving for five years and has resulted

313   in collaboration on a large, NIH-funded research project.

314   **Practice Organization 3: A Large Metropolitan Public School District.** Most recently,

315   in 2018, we formed a partnership with a large metropolitan school district (~95,000 enrolled

316   students) in a large urban city (~185,000 population) to improve educational practices for

317   children with language and literacy difficulties. Our initial knowledge broker was a district

318   administrator who attended a presentation given by one of our researchers at a local conference

319   and initiated the partnership by putting us in touch with district leaders who were interested in

320   forming a partnership with experts in language and literacy. The connection was timely for both

321   the district and the researchers as we had just been awarded a large federal grant and were

322 looking for additional school partners to conduct research on long-term outcomes in children

323 with DLD and/or dyslexia and the district was seeking expert support for the new state mandate

324 on dyslexia screening. Thus far, this partnership has been ongoing for three years and we have

325 worked collaboratively on one large, NIH-funded research project and have begun a second

326 NIH-funded research project.

327 *Assessing Partnerships using the 5 Dimensions of Effective RPPs*

328   Based on the needs of these operational partners, our paths for each partnership have

329 looked different, yet throughout, these partnerships have aligned with the five dimensions of

330 effective RPPs proposed by Henrick et al. (2017) and shown in Figure 1. These dimensions can

331 guide researchers and practitioners in their relationship building and collaboration. In this section

332 we unpack each dimension, summarizing key ingredients we have identified for each (see Figure

333 2) and providing exemplars from our three RPPs to illustrate how these dimensions can be

334 achieved and how they might look different depending on the partnership.

335   **1. Building Trust & Cultivating Partnership Relationships.** Repeatedly it has been

336 reported that building and maintaining trust between partners is a key indicator of successful

337 partnerships. Mutual respect, effective communication, and a willingness to adapt are integral to

338 building trust. In each of our RPPs a trusted member of the organization was identified and

339 helped us to establish trust within the organization and its leaders. For example, with the first

340 practice organization, our initial contact was to the school's SLP who was an alumnus of one of

341 our academic institutions and a leader in the school. For two of our practice organizations, we

342 initially and strategically reached out to stakeholders who were familiar with the scope of

343 practice of SLPs and potentially interested in discussing how to improve language and literacy

344 outcomes for students. We hoped this common understanding and shared interest would promote

345   relationship-building with these potential knowledge brokers and in-turn increase our credibility

346   when they facilitated meetings with school and district leadership. With the third practice

347   organization, initial connections were made due to our outreach and dissemination efforts we

348   routinely engage in. Presenting our research at local conferences provides opportunities to share

349   our expertise and meet practitioners who are interested in our work. Once we were able to

350   establish mutual trust and understanding of our goals this knowledge broker facilitated meetings

351   with district leaders. Overall, it was important to focus on building trust and strong relationships

352   among all team members at the outset for each of our partnerships regardless of the initial

353   practitioner connection.

354   The goals and priorities of each practice organization also influences the cultivation of the

355   relationship. With the first practice organization, the goal of supporting students in their

356   language and literacy development has remained over the years but the focus on specific

357   priorities in support of this goal has pivoted as necessary throughout our partnership. Through

358   open and frequent communication, we have established trust within this partnership to support

359   and meet shifting research and practice goals. Most recently, we have shifted to providing

360   supplemental language comprehension interventions to 2nd graders because the practitioners felt

361   they were seeing positive outcomes in their decoding instruction but needed targeted support to

362   improve comprehension outcomes. For practice organization 2, we began by meeting regularly to

363   discuss needs leading to the formation of a panel of district representatives who could meet to

364   outline plans and goals over the long-term. However, after several months of meeting and

365   planning language and literacy intervention trainings and potential research projects, our

366   priorities had to quickly shift to meet the immediate district need of assisting with universal

367   dyslexia screening due to the passing of state legislation. This was not a specific research goal

368   for us but could easily be incorporated into a recent NIH-funded research project on early

369   identification of children with DLD and/or dyslexia. With practice organization 3, the priorities

370   of the practice organization (i.e., assistance with dyslexia screening) prompted their reaching out

371   to us at a conference. Their needs led to establishing the relationship quickly but trust-building

372   efforts such as solicitation of feedback from the organization and frequent meetings were

373   continuous. Now that a trusted and sustaining partnership has been established, new discussions

374   around potential solutions for meeting the needs of dual-language learners and systematic

375   pathways to bridge general and special education instruction are the focus of future collaborative

376   work. In all cases, the emphasis on clear communication of our respective priorities and

377   supporting the practice organization's goals has assisted in building trust.

378   For all our RPPs we cultivated these relationships using the following steps. First, we

379   decided to schedule frequent meetings (usually monthly) with our partners to support progress,

380   make decisions, and solve problems. Second, we aimed to create an open and safe space for all

381   team members (e.g., knowledge brokers, organizational leadership, practitioners, researchers,

382   and research staff) to share their opinions and perspectives, to cultivate respect, and to recognize

383   the value of varied expertise—researchers know science, and practitioners know practice. Third,

384   it was important for all team members to understand each other's work demands and to set

385   realistic goals. This last condition is particularly important during unexpected circumstances that

386   may affect the progression of a partnership.

387   One example of unexpected circumstances is the COVID-19 pandemic that forced most

388   schools to shut down and pivot to virtual or hybrid learning and paused many in-person research

389   activities. The pandemic has changed the educational and research landscapes and overwhelmed

390   many school districts. However, amid so much uncertainty, one thing remained constant: it was

391 imperative to continue efforts in improving general and special education practices to support all

392 students. Understanding the demands of our partners led to our decision to pivot to online

393 kindergarten screening to identify DLD and dyslexia risk. Adjusting our routines, process, and

394 research activities as needed was imperative for continued success in our partnerships. These

395 endeavors would not have been possible without trust and continuous understanding of each

396 other's needs and challenges.

397   In summary, we learned through our three RPPs that every practice organization will have a

398 different level of interest and capacity for engaging in partnership work as well as varying

399 practice priorities that will impact the initiating and building of trusting relationships. Our

400 experiences also suggest that it is important for research partners to understand that for some

401 practice organizations their needs might necessitate immediate focus on the organization's

402 practice goals and/or engagement in research. While for other practice organizations, extensive

403 meetings and discussions surrounding needs, barriers, and facilitators to practice may be

404 necessary before launching research projects or producing knowledge to inform practice broadly.

405 And yet for some practice organizations, engaging in partnership work may not be a current

406 priority despite researchers having funding for research or support and knowledge to give in the

407 organization's practice goals. Our RPPs have taught us that the key ingredients to building trust

408 and cultivating relationships includes: (1) efforts to identify and initiate contact with a

409 knowledge broker who can facilitate trust-building with organizational leaders, (2) engaging in

410 consistent and open communication via meetings and soliciting feedback, (3) honoring each

411 partner's knowledge and needs, demonstrating a commitment to working together to meet both

412 research and practice goals, and (4) responsive and agile solutions to challenges or changes in

413 priorities.

414   **2. Conducting Rigorous Research to Inform Action.** Effective RPPs include a research

415   focus that balances rigor with feasibility in the practice organization. Finding the right balance

416   between scientific rigor and feasibility is a necessary component to maintaining a mutually

417   beneficial partnership. Without it, we cannot expect that schools will successfully implement and

418   sustain practices that benefit students with learning disabilities.

419   For our partnerships, the question of balancing rigor and feasibility became especially

420   relevant during the implementation of whole-classroom screeners to identify kindergarten

421   students who may be at risk for DLD and dyslexia for one of our federally funded grants. While

422   we aimed for rigor in our methods by standardizing our administration protocols, we also needed

423   to ensure that screening was feasible in all classrooms. The schools in our practice organizations

424   varied greatly across and within the districts in terms of their characteristics and capacity to

425   support universal screening practices. Whole-classroom screening can be a quick way to screen

426   all students at once, however, contextual factors that are not reflected in administration protocols

427   may hinder successful implementation. For example, many kindergarten classrooms had larger

428   than usual enrollments that required additional staff and support to facilitate implementation of

429   the screening. Further, teachers had to introduce additional elements during administration to

430   support students who needed breaks or were inattentive, such as interrupting administration or

431   using additional prompts. These shifts in the research protocol illustrate the importance of

432   adaption of clinical practices for adoption in real-world settings and how to balance scientific

433   rigor and fidelity with adaption necessary for high levels of implementation.

434   One meaningful way for achieving implementation outcomes such as acceptability,

435   appropriateness, and feasibility is to seek input from practitioners who are more knowledgeable

436   than researchers about the environments they work in and populations they serve. For example,

437   we solicited input from teachers to determine facilitators and barriers to the implementation of

438   our screeners during COVID-related remote learning (Komesidou et al., 2021). Teachers

439   reported that the screeners were quick, easy to use, and readily accessible. In addition, they

440   appreciated that students could complete them independently and that parents could experience

441   this process. Teachers, however, raised concerns about the screening timing, preparation

442   required, specific technical features, and appropriateness for certain populations (e.g., bilingual

443   students). Overall, these findings demonstrate the need to collect feedback from teachers and use

444   it to tailor screening practices to unique settings. In doing that, we can achieve a balance between

445   rigor and feasibility and guarantee the uptake of universal screening in schools.

446   In summary, we learned through our three RPPs that researchers must align scientific rigor

447   with practice realities to increase the likelihood of feasibility and generate useable results. Our

448   experiences also suggest that it is important to solicit perspectives of school staff around practice

449   implementation in the planning, piloting, and execution phases of research to better understand

450   their routine practice and specify strategies for adaptation. This intentional act has the potential

451   to improve implementation outcomes in our field to close the research to practice gap. Our RPPs

452   have taught us that the key ingredients to conducting rigorous clinical-practice research includes:

453   (1) efforts to identify partners with shared clinical practice research interests and mutually

454   beneficial goals, (2) commitment to balancing adaption and feasibility with rigorous research and

455   implementation fidelity, and (3) solicitation of feedback from practitioners to learn about the

456   barriers and facilitators to implementation.

457   **3. Supporting the Partner Practice Organization in Achieving its Goals.** RPPs provide

458   research and evidence to support improvements by identifying strategies and informing

459   implementation of strategy deployment. During partnership meetings, the goals of both the

460 researchers and the partner practice organization need to be discussed to ensure that efforts are

461 mutually beneficial. Practitioners will be more willing to engage in RPPs if they know that

462 researchers are willing to support them in achieving their goals and not just research agendas.

463 For example, recent state legislation in the states where our partners resided, required schools to

464 screen all kindergarten children for dyslexia. However, our partner practice organizations

465 requested more guidance on identifying evidence-based screening tools for the age range and

466 disorder and on the subsequent implementation of a universal screening process. State mandates

467 gave very little guidance for schools on how to select and administer appropriate screening tools.

468 We surveyed empirical literature and advised our partner practice organizations on currently

469 available screening tools for dyslexia along with their pros and cons. Additionally, we proposed

470 to use our researcher-developed screening instrument which showed promising results for

471 identifying children at risk for DLD and dyslexia in kindergarten. Ultimately, our partner

472 practice organizations decided to administer our screening tool in their kindergarten classrooms

473 which ensured they would meet the new legal requirements for screening while simultaneously

474 assisting us in validating it.

475   Another example in our pursuit to support the goals of our partners was through the creation

476 and provision of professional development to help staff expand their knowledge and use of the

477 Science of Reading (Defining Movement, 2021). All three practice organizations were interested

478 and helped facilitate professional development seminars for their teachers, speech-language

479 pathologists, special education service providers, instructional aides, and administrators.

480 Additionally, these seminars provided an opportunity to engage with practitioners to determine

481 the social validity (i.e., acceptability) of our screening instrument in the practice partner

482 organizations. Although, feasibility is an important marker for potential uptake of an evidence-

483   based practice, social validity of the practice is necessary for successful and sustainable

484   implementation (Miramontes et al., 2011; Strain et al., 2012). Comparatively, social validity

485   relates to the professional goals and ideologies of practitioners. Professional development

486   seminars assisted us in gauging their beliefs, values, and goals within the context they practice.

487   Using this information, we adapted our measure as needed to reach the highest possible

488   implementation fidelity. This in turn assisted the practice organizations in meeting their practice

489   goals of abiding by the state requirements to screen children in kindergarten for dyslexia using

490   psychometrically sound measures.

491   In summary, we learned through our three RPPs that supporting our partner practice

492   organization is an ongoing process and one that relies on careful planning, implementation, and

493   evaluation of proposed activities. Our experience also suggests that it is possible to support the

494   practice goals of the practice organization in mutually beneficial ways, such as our screening tool

495   validation efforts that also met the legal requirements for universal screening. Additionally,

496   providing professional development events can help practice organizations meet their practice

497   goals while also providing opportunities for researchers to seek out important practitioner

498   perspectives. Our RPPs have taught us that key ingredients to supporting the partner practice

499   organization in achieving their goals include: (1) engaging in strategic brainstorm meetings to

500   identify clinical practice goals that can be supported by researchers, and (2) soliciting ongoing

501   input from the practice organization to edit and refine goals and actions.

502   **4. Producing Knowledge to Inform Educational Improvement Efforts Broadly.**

503   Dissemination plans are integral to RPPs and should be developed together to ensure

504   dissemination to the broader research community *and* to support scale up of the rigorous research

505   at the partner practice organization and similar targeted settings. In all our RPPs, not only are the

506   researchers committed to publishing and disseminating their research findings in traditional peer-

507   reviewed forums—deemed important in the university and grant-funding worlds—but the

508   researchers also worked with partner practice organizations to disseminate in contexts considered

509   important in their worlds. These efforts included, but were not limited to, presenting the

510   partnership results to relevant stakeholder groups and organizations that directly affect policy

511   and curriculum for the schools and districts within their state and regions. With these

512   partnerships, we are in a unique position to advance work on real-world implementation and

513   reduce the research-to-practice gap.

514   In one RPP, the findings of the large multi-site randomized control trial supported the

515   creation of a free classroom-based (tier 1) language comprehension curriculum to improve

516   reading outcomes (Language And Reading Research Consortium, n.d.) available for easy

517   download from the internet by any practitioner. Additionally, it resulted in scientifically

518   published research on the language basis of reading highlighting the dissemination of our project

519   findings in both practitioner and research contexts. Subsequent projects utilized this curriculum

520   to study its effectiveness as a small group (tier 2) and intensive (tier 3) intervention further

521   informing clinical practice. Most recently, this led to the dissemination of our methods through a

522   paper under review (Curran et al., 2021) discussing the use of the Minimal Intervention Needed

523   for Change (MINC) approach (Glasgow et al., 2014) to design studies or adapt interventions to

524   real-world clinical settings.

525   In relation to our large NIH multi-site grant work across all three practice organizations, we

526   have found that we have sufficient knowledge about the benefits of universal screening, but we

527   do not have enough evidence on how to implement and sustain screening practices in a diverse

528   range of schools. As part of our efforts to promote scale up, we have also created professional

529   development sessions to train practitioners in our partner organizations to implement screening

530   practices. Additionally, thanks to our recent efforts we are now starting to gain insight into

531   barriers and facilitators for sustainable screening practices (Komesidou et al., 2021). To our

532   knowledge, ours is the first study to discuss specific factors that can hinder or facilitate

533   implementation of DLD and dyslexia screening.

534   These past few years have reiterated that the translation of research findings into routine

535   practice is a complex task requiring systematic methods of inquiry aimed at improving the fit of

536   a program within the local context. This includes personalized dissemination attempts such as

537   community-based presentations and professional development events. In these localized contexts

538   we can incorporate knowledge gleaned from the partnership showcasing the utility and feasibility

539   of our screening and intervention practices for adoption and potential scale-up. Additionally, the

540   knowledge produced from these partnerships have resulted in conducting two large scale

541   federally funded research grants focused on understanding the mechanisms related to language

542   and literacy development, screening, and intervention for literacy disabilities; one small business

543   funded intervention study; and commitment to extend the work by partnering on a newly funded

544   federal grant to study small-group language intervention.

545   In summary, through our three RPPs, we learned a lot about the how to produce and

546   disseminate knowledge that can lead to educational improvement efforts. In fact, this paper

547   serves one of our goals to disseminate this knowledge to assist others who wish to engage in

548   similar work and influence much needed change in research, practice, and policy. Our RPPs have

549   taught us that the key ingredients to producing knowledge to inform educational improvement

550   efforts broadly requires thoughtful dissemination plans that include: (1) consideration of

551   contextual factors that may accelerate or impede implementation of clinical practices, (2)

552   cultivating relationships with our practitioners with an emphasis on amplifying their voices, (3)

553   understanding of elements of effective professional development, and (4) targeting both

554   scientific and practice outlets at both scale and local venues.

555   **5. Capacity Building of Participating Stakeholders to Engage in Partnership Work.**

556   Successful and sustainable RPPs reflect a partnership culture in which there is a shared

557   commitment to both research and practice success across all stakeholders: researchers,

558   practitioners, practice organizations, and research organizations. Practitioners and practice

559   organizations need to see the benefit of engaging in rigorous research and translating that

560   research to improve practice and outcomes for their patients or students. Researchers need to see

561   the value in understanding the perspectives and contexts of the practitioners and the

562   organizations they practice in so that practices can be made accessible, feasible, and maintain

563   adequate fidelity.

564   In all three of our RPPs, our practice partners were engaged in and provided support for

565   scheduling, space, and coordination of research, and felt ownership in the successful

566   implementation and results of the researcher-driven clinical initiatives. Similarly, the researchers

567   were committed to building the capacity of the partner practice organizations through ongoing

568   and open discussions and more formally through the creation and deployment of professional

569   development series which met some of the practice goals of the practice organizations. These

570   extensive researcher-developed continuing education opportunities resulted in helping the

571   partner practice organizations and practitioners to better understand the science of reading and

572   how to administer language and literacy screening, assessment, and interventions accordingly.

573   As for the researchers, we developed useful skills in managing partnerships, communicating

574   with stakeholders, and mitigating conflicts. These partnerships also provided opportunities for

575   undergraduate and graduate communication sciences and disorders students as well as doctoral

576   and postdoctoral research fellows to engage in and lead various research and practice activities

577   while learning about the unique ecosystems of schools in the United States and gaining an

578   appreciation of the intricacies of implementation in real-world practice settings. Finally, this

579   work has solidified the urgency of preventive frameworks for the timely identification and

580   support of students with language and literacy disabilities and long overdue changes in

581   traditional research methods for both the researchers and practitioners involved.

582   In summary, over the last nine years and three RPPs we learned that building the capacity of

583   both research and practice partners to engage in partnership work is an ongoing and dynamic

584   process. Our experience also suggests that when both partners feel that the partnership is

585   mutually beneficial, they are more likely to sustain and expand the partnership long-term. Our

586   RPPs have taught us that the key ingredients to building capacity for and engaging in partnership

587   work includes: (1) authentic and frank conversations about stakeholder priorities and bandwidth,

588   (2) frequent check-ins with all stakeholders to revisit goals and their mutuality, and (3) efforts to

589   disseminate the outcomes of the partnership work to highlight the mutual benefits of this type of

590   work and encourage continuation.

591   **Discussion**

592   Overall, these three partnerships have resulted in (1) the finalization of a free and

593   effective language comprehension whole-classroom curriculum for prekindergarten through 3rd

594   grade (https://larrc.ehe.osu.edu/curriculum/), (2) efforts to early identify children at risk for

595   language and literacy difficulties by piloting a researcher-developed screening tool (Hogan et al.,

596   2021), (3) new initiatives to bring implementation science into schools, (4) increased knowledge

597   among practitioners about the science and practice of reading, and (5) a newly funded federal

598   grant using a randomized control trial to establish the efficacy of a small-group (tier 2)

599   intervention for 1st and 2nd grade students at-risk for language and literacy difficulties (NIH R01

600   DC018823). In our work, it is important to maintain some flexibility in our planning to meet our

601   research goals and our partners' practice goals. Flexibility balances rigor with adaptability and

602   ensures that RPPs are indeed mutually beneficial. Using this approach, we have sustained our

603   RPPs through the strain of COVID-19 pandemic school closures. Most notably, the COVID-19

604   pandemic has illustrated the importance of the commitment of research partners to support

605   practice partner organizations in achieving their goals. The ever-changing experiences and

606   challenges faced by schools during the pandemic were at best overwhelming and at worst a crisis

607   to education and learning. Certainly, the changes to instruction impacted research agendas. By

608   pivoting to support our practice organization partners in their needs to meet legislation

609   requirements despite being virtual or hybrid, however, we were able to also advance our research

610   by trialing new digital methods that could improve reach and feasibility overall.

611   Our RPPs showcase three district partnerships that exemplify long-term and sustainable

612   research-practice collaborations and the potential ripple effects in the community, based on

613   professional development, clinical training, and dissemination of knowledge to improve clinical

614   practice. Thus far, these organizational level RPPs have spanned three distinct projects across

615   multiple tiers of instruction and modalities. They have created opportunities for graduate

616   students in our research and clinical training programs to receive practical experiences in

617   assessment, intervention, and interprofessional collaboration. They also informed similar projects

618   in other school districts to address the needs of students with language and literacy difficulties.

619   Most importantly, these RPPs demonstrate the need for consistent and honest interactions with

620   school administrators and relevant stakeholders, in times of funding and no funding, to create

621   system-level changes and achieve mutual goals.

622   Researchers and practitioners interested in building partnerships in service of improving

623   implementation of clinical practice processes can use Henrick's five dimensions of RPPs as a

624   guidepost for initiating and sustaining such partnerships. Starting with the first dimension of

625   building trust by having open and frequent conversations, managing both partners' expectations,

626   striving for aligned goals and mutual benefits and keeping the relationship health as central to the

627   partnership are foundational to successful collaborations.

628   **Conclusions**

629   In this paper, we discussed our continuous efforts to build and sustain RPPs with schools

630   across the United States. These RPPs have resulted in improved practices for researchers and

631   practitioners and have yielded usable knowledge to inform others who may be interested in

632   conducting similar work. We detailed three unique examples of RPPs and their partnership

633   activities as well as showcased specific examples using the five dimensions of RPPs to illustrate

634   the effectiveness of these partnerships. In addition, we discussed the impact of the COVID-19

635   pandemic on our work and how we continued meeting our research priorities while supporting

636   our partner organizations' goals. Overall, our collective efforts have yielded improved early

637   school-age language and literacy screening procedures as well as classroom and small group

638   language interventions with potential for not only implementation but also sustainable adoption

639   by our partner practice organizations and beyond. The benefits of these RPPs extends beyond the

640   immediate impact on the research and practice partners. By engaging in these partnerships,

641   several insights have been gleaned that we believe can be generalized to other contexts.

642   Practitioners and researchers working in settings different than educational systems can apply the

643 five RPP dimensions when assessing their partnerships and may find collaboration principles and

644 examples discussed relevant and useful in their work to close the research to practice gap.

645 **Acknowledgements**

652 **Tables & Figures**

653 Figure 1. The five key dimensions of Research Practice Partnerships

654 Figure 2. Key ingredients for accomplishing the Research Practice Partnership dimensions

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