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## Intervention goals for preschoolers with language difficulties and disorders A scoping review using the ICF framework

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**Title:** Intervention goals for preschoolers with language difficulties and disorders:

A scoping review using the ICF framework

Elaine Kwok, Carly A. Cermak, Kathryn Hatherly, Barbara Jane Cunningham

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38 **Running Head:** SLPs' treatment goals

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## Abstract

**Purpose:** The primary aim of this scoping review was to categorize language therapy goals reported in intervention studies for preschoolers (i.e., children from 0 to 5;0 years old) with language difficulties and disorders within the World Health Organization’s International Classification of Functioning, Disability and Health (ICF) framework. A secondary aim was to determine whether different therapy goals were reported for different language difficulty/disorder subtypes (i.e., comparing language difficulty/disorder associated with a biomedical condition to those without an associated biomedical condition).

**Method:** The scoping review followed Arksey and O’Malley’s (2005) guidelines. Articles were retrieved from speechBITE, with age (under 5), intervention area (language), and study design (all but systematic reviews and clinical practice guidelines) specified as inclusion criteria. Language goals were extracted and categorized into the ICF components. From there, the distributions of these ICF components were compared between intervention studies for different language difficulty/disorder subtype.

**Results:** A total of 287 articles were identified; 140 met inclusion criteria. Of the 293 goals extracted, 48% aligned with the Activities component of the ICF framework, followed by Participation (26%), Environmental Factors (20%), Body Functions and Structures (3%) and Personal Factors (3%). Most participation-focused goals were reported from intervention studies of preschoolers with a language difficulty/disorder associated with a biomedical condition.

**Conclusions:** Few participation-focused goals were reported in intervention studies for preschoolers with language difficulty/disorder without an associated condition. Future work is needed to support integrating the ICF framework in goal setting for both research and practice.

**Keywords:** speech-language pathology; early intervention; therapy goals; ICF; participation

75 **Introduction**

76           The World Health Organization’s International Classification of Functioning, Disability  
77 and Health (ICF) framework is an integrative biopsychosocial model to conceptualize health  
78 (World Health Organization, 2001). The ICF framework goes beyond the traditional impairment-  
79 based medical model by considering how health conditions impact and interact with an  
80 individual’s environment. There are five components described in the ICF framework: (i) Body  
81 Functions & Structures, (ii) Activities, (iii) Participation; and two contextual factors: (iv)  
82 Environmental Factors, and (v) Personal Factors (see Table 1 for descriptions of these  
83 components) (World Health Organization, 2001). Together, these five components contribute to  
84 an individual’s experience with their health condition.

85           The ICF provides a useful way to conceptualize disability and functioning for research,  
86 rehabilitation, and early intervention. Body Functions & Structures” component of the  
87 framework. In the revised manuscript, this paragraph now reads “In contrast to the traditional  
88 biomedical view of disorders that emphasizes impairments at the level of an individual’s body  
89 functions/structures, with the need to intervene at those levels, the ICF framework specifically  
90 considers the impact of health conditions on an individual’s ability to Participate in everyday  
91 situations and recognizes the impact of environmental factors on health outcomes (World Health  
92 Organization, 2001). For pediatric speech-language pathologists (SLPs) who work with young  
93 children and families, the “Participation” and “Environmental factors” components of the ICF is  
94 especially relevant since early communication development occurs primarily through  
95 engagement in a variety of language-rich situations such as parent-child interactions and play  
96 with peers (Hoff, 2014). Further, parenting and the family environment play a significant role in  
97 the facilitation of language development in children (Heidlage et al., 2020; Hoff, 2006; Roberts

98 & Kaiser, 2011). Thus, the ICF framework, which considers multiple interacting factors, can be a  
99 useful framework to understand and treat childhood language disorders (McLeod & Threats,  
100 2008; Westby, 2007).

101 Professional speech-language pathology organizations worldwide endorse and advocate  
102 for interventions that address all components of the ICF framework (American Speech-  
103 Language-Hearing Association., 2016; Speech-Language & Audiology Canada, 2010; Speech  
104 Pathology Australia, 2020). Resources are available to help SLPs apply the ICF framework such  
105 as theoretical publications linking the ICF components to practice (Threats, 2008; Washington,  
106 2007; Westby, 2007) and case examples that explain how to incorporate the ICF framework  
107 during assessment and goal setting (McLeod & Bleile, 2004; Westby & Washington, 2017).

108 Existing literature investigating adoption of the ICF framework in SLP practice suggests  
109 that some components are considered more often than others. For example, in children with  
110 speech sound disorders, McLeod and colleagues reported that all assessment and intervention  
111 approaches aligned with the Body Functions and Structures component (McLeod & Bleile, 2004;  
112 McLeod & Threats, 2008). Similarly, recent work by Cronin et al. (2020) mapped SLPs'  
113 management of young children with cleft lip/palate onto the ICF framework and found that most  
114 services aligned with the Body Functions and Structures component or addressed Environmental  
115 Factors. Furthermore, a scoping review of speech and language assessment tools for preschoolers  
116 revealed that most measures evaluated outcomes within the Activities component (Cunningham  
117 et al., 2017). Together, these studies indicate that some ICF components (e.g., Participation) are  
118 not yet fully integrated into SLP services. Additional work to explore uptake of the different ICF  
119 components in goal setting specific to children with language difficulties and disorders is needed

120 to generate insights into supporting implementation of the ICF framework in research and  
121 practice for this population.

122         The purpose of this scoping review was to summarize the therapy goals reported in the  
123 literature for preschoolers with language difficulties and disorders using a systematic and  
124 rigorous methodology (Peters et al., 2020). A secondary purpose was to compare goals reported  
125 for different subgroups of children with language difficulties and disorders (Bishop et al., 2016,  
126 2017). More specifically, we aimed to compare the ICF categorizations of therapy goals for  
127 preschoolers with language difficulties/disorders associated with a biomedical condition (LD+X,  
128 with 'X' referring to a biomedical condition such as Autism Spectrum Disorder; Bishop et al.,  
129 2017) and those preschoolers with language and communication needs without a biomedical  
130 condition (LD, Language Difficulty). Because of the young age of these participants, the LD  
131 group was heterogeneous and may include children with Developmental Language Disorder  
132 (DLD, Bishop et al., 2017), Late Talkers, or biomedical conditions that have not been diagnosed.  
133 Based on prior literature (Cunningham et al., 2017; McLeod & Bleile, 2004; Mcleod & Threats,  
134 2008), we hypothesized that most reported goals would align with the Body Functions and  
135 Structures and Activities components. Prior review study also found many standardized  
136 assessment tools assessing Participation component of the ICF framework (e.g., social  
137 communication) for children with Autism Spectrum Disorders (i.e., a population within the  
138 LD+X group) (Cunningham et al., 2017), therefore, we further hypothesized that intervention  
139 studies for preschoolers with LD+X would report more therapy goals aligning with the  
140 Participation component compared to intervention studies for preschoolers with LD.

141

142 **Methods**

143 We conducted a scoping review using the methodology first proposed by Arksey &  
144 O'Malley (2005), and further developed by Levac, Colquhoun, and O'Brien (2010). The review  
145 was guided by five steps: (i) identify the research question; (ii) identify relevant studies; (iii)  
146 select studies for detailed analysis using inclusion/exclusion criteria; (iv) chart data according to  
147 key concepts; and (v) collate and summarize the findings of selected studies. Steps are described  
148 in more detail next.

149 *(i) Identifying the research question:* Two research questions were addressed: (1) "What  
150 ICF components were addressed by the therapy goals described in the preschool language  
151 intervention literature?" and (2) "Were therapy goals different between intervention studies for  
152 children with LD+X versus LD?"

153 *(ii) Identifying relevant studies:* Articles were identified using speechBITE  
154 ([www.speechbite.com](http://www.speechbite.com)), a comprehensive database of peer-reviewed treatment studies relevant to  
155 speech-language pathology practice (Smith et al., 2010) that has been used in previous review  
156 studies (e.g., Brogan et al., 2019; Ludemann et al., 2017). To determine whether speechBITE  
157 database can be a reliable source for articles to include in this scoping review, the authors  
158 considered how the speechBITE database was constructed and maintained. First, the authors  
159 considered the comprehensiveness of articles being searched and indexed by the speechBITE  
160 database. Articles in speechBITE came from the MEDLINE, Embase, CINAHL, PsycINFO,  
161 ERIC, AMED, LLBA, and EBM Reviews databases, which are commonly used in systematic  
162 review studies. Next, the authors considered the inclusion criteria of articles being indexed in the  
163 speechBITE database. Articles indexed in the speechBITE database met four inclusion criteria:  
164 (i) published in a peer-reviewed journal, (ii) described an intervention within the scope of SLPs'



165 practice, (iii) describe an intervention for a population of individuals representative of those  
166 SLPs would provide intervention, (iv) reported empirical data regarding intervention  
167 effectiveness (e.g., editorials, qualitative studies were excluded) (Smith et al., 2010). Last, the  
168 speechBITE database is maintained and updated regularly using auto alerts. In fact, at the time  
169 when our search was completed, articles published within the same calendar year was found,  
170 suggesting to us that the database was regularly maintained. Taken together, the authors felt that  
171 the speechBITE database was constructed using databases and inclusion criteria that were  
172 consistent with the purpose of this scoping review and, therefore, would have low risk of  
173 excluding relevant studies.

174         The following specifications, available as search filters on speechBITE database, were  
175 applied during study identification: (i) year of publication (2008 - 2020); (ii) age group (under 5  
176 years old); (iii) type of intervention (language); and (iv) research design (randomized controlled  
177 trials, non-randomized trials, case series, single-case designs). These filters were applied in lieu  
178 of search terms which are typically used in other databases for review studies (e.g., search terms  
179 for “preschool age” and “language interventions”). The year 2008 was the lower range applied to  
180 our inclusion criteria as this aligned with the concerted efforts within speech-language pathology  
181 to introduce the ICF framework into research and practice (American Speech-Language-Hearing  
182 Association, 2008; Mcleod & Threats, 2008; Ministerial Council on Education, Employment,  
183 Training, 2008; Threats, 2008). The speechBITE database indexed participant age of each article  
184 into five categories – under 2, under 5, children, adolescence, and adult. The age group (under 5)  
185 was applied in the search to identify intervention services for infants, toddlers and preschoolers,  
186 but we acknowledge that 5 years old is considered preschool age only in some regions/countries.

187 The search was completed in September 2020 and a total of 287 articles were identified using  
188 these search criteria.

189 *(iii) Study selection:* Studies were included if they met the following criteria during  
190 abstract and full-text screening: (i) had a participant sample of under 5 years of age at the time of  
191 study recruitment (i.e., <5 years; 0 months in age, some intervention studies involved multiple  
192 follow up assessments where children exceeded preschool age); (ii) was published in English;  
193 and (iii) described at least one intervention goal. Two authors (EK, KR) independently  
194 completed abstract screening followed by full-text screening using Rayyan (Ouzzani et al.,  
195 2016), a online platform that organizes bibliographs for review studies (<https://www.rayyan.ai/>).  
196 A random sample of 15% of all abstracts and 10% of all full texts were evaluated by both coders  
197 to establish inter-coder reliability. The agreement between the coders was high during both title  
198 and abstract screening (99%,  $k = 0.71$ , 95% CI = 0.43 – 0.98) and full-text screening (96%,  $k =$   
199  $0.91$ , 95% CI = 0.74 – 1.00). Any conflicts were reviewed and resolved by the second and last  
200 authors (CC, BJC).

201 *(iv) Charting the data:* A data extraction spreadsheet (Appendix 1) was created to extract  
202 the following information from included articles: author(s), year of publication, title, language  
203 disorder category; mean age and age range of children; name of therapy approach; reported  
204 treatment goals. The definition of therapy goals from the Rehabilitation Treatment Specification  
205 System (RTSS) (Hart et al., 2019) was used to support extraction of therapy goals. Therapy goals  
206 were described by the RTSS as the specific aspects of preschoolers' functioning that an  
207 intervention was meant to change (Dijkers, 2014). Often, rehabilitation interventions have  
208 multiple therapy goals (Dijkers, 2014; Hart et al., 2019), therefore we extracted all therapy goals  
209 that were described in the included studies. Therapy goals were extracted by first author (EK), a

210 postdoctoral researchers who was also an SLP with preschool intervention experience and a  
211 Master's-level student in speech language pathology, both of whom were familiar with the RTSS  
212 framework. Only language-related therapy goals (i.e., form, content, and use of language) were  
213 extracted as the primary interest of this review was to understand language goals for children  
214 with language difficulties/disorders; if reported, speech-related or swallowing-related therapy  
215 goals were not extracted. Any discrepancies in therapy goals extraction were resolved through  
216 discussion with second author (CC) or last author (BJC), who were both researchers and SLPs  
217 with preschool intervention experience.

218         Once extracted, therapy goals were categorized into the ICF component(s). To establish  
219 reliability in categorization, three authors (EK, CC, BJC) met and discussed how to categorize 15  
220 randomly selected studies. Then EK and CC independently reviewed all therapy goals to  
221 complete categorization. EK and CC resolved any disagreement through discussion.

222         (v) *Collating and summarizing results*: Findings were synthesized quantitatively in graph  
223 form as recommended by Colquhoun et al. (2014). Specifically, we collated the proportion of  
224 therapy goals reported for each ICF component. Next, we completed subgroup analysis, using a  
225 Chi-square test, to determine whether the proportion of therapy goals was distributed similarly  
226 across ICF components for the different language difficulty/disorder types (i.e., LD+X and LD).

227

## 228 **Results**

229         A total of 287 articles were identified from speechBITE. . Seven articles were removed  
230 during title and abstract screening due to age (i.e., children were over the age of 5 years; 0  
231 months). Following full-text review of 280 articles, 140 studies met criteria for inclusion in the  
232 review (See Figure 1).

233

234

[insert Figure 1 here]

235

### 236 *Characteristics of included studies*

237           Two-thirds of the included studies ( $n = 90$ , 64%) involved children that were described as  
238 having a language difficulty/disorder associated with a biomedical condition (i.e., LD+X; Bishop  
239 et al., 2017). Biomedical conditions included: autism spectrum disorder ( $n = 70$  studies), genetic  
240 syndrome ( $n = 9$ ), cerebral palsy ( $n = 3$ ), sensorineural hearing loss ( $n = 5$ ), and intellectual  
241 disability ( $n = 3$ ). Note that some studies included children with more than one condition (e.g.,  
242 genetic syndrome and intellectual disability).

243           The remaining one-third of studies ( $n = 50$ , 36%) included children that were described  
244 as having a language difficulty or disorder of unknown origin (i.e., LD). Terminology used to  
245 describe children in these studies included language delay ( $n = 24$ ), specific language  
246 impairment/language impairment ( $n = 12$ ), developmental language disorder ( $n = 1$ ), or at risk of  
247 language delay ( $n = 13$ ).

### 248 *Therapy goals reported in intervention studies*

249           Across the 140 intervention studies, a total of 296 therapy goals were categorized. Forty  
250 studies (29%) reported goals that aligned with more than one ICF component (e.g., “to increase  
251 verbal imitation” [activities] and “to make requests for social interaction” [participation]). Most  
252 therapy goals addressed the Activities component ( $n = 140$ , 47.8%), followed by Participation ( $n$   
253 = 76, 25.9%), Environmental Factors ( $n = 58$ , 19.8%), Body Functions & Structures ( $n = 10$ ,  
254 3.4%), and Personal Factors ( $n = 9$ , 3.1%). Cohen’s Kappa was calculated to determine inter-  
255 rater reliability of categorizing mapping therapy goals into ICF component for a proportion of

256 studies (44%;  $n = 62$ ). There was substantial agreement between raters (E.K., C.C.) at 95%  
257 agreement,  $\kappa = 0.92$  (95% CI, 0.84 to 1.00). Examples of intervention goals targeted within each  
258 ICF component are presented in Table 1.

259

260 [insert Table 1 here]

261

262 *Therapy goals reported for preschoolers with different language disorder types*

263 Intervention studies were further separated into two groups, those that involved  
264 preschoolers with LD+X ( $n = 90$  studies) and those that involved preschoolers with LD ( $n = 50$ ).

265 A total of 184 therapy goals were extracted from studies of preschoolers with LD+X. Most  
266 therapy goals aligned with Activities (37.0%) and Participation components (35.9%), followed  
267 by Environmental Factors (20.6%), then Personal Factors (4.3%) and Body Functions &  
268 Structures (2.2%). From intervention studies for preschoolers with LD, a total of 109 therapy  
269 goals were extracted. In contrast to preschoolers with LD+X, most therapy goals for preschoolers  
270 with LD aligned with Activities component (66.1%), followed by Environmental Factors  
271 (18.3%), Participation (9.2%), Body Functions & Structures (5.5%), and Personal Factors  
272 (0.9%). Chi-square analysis revealed a significant difference between goals reported for  
273 preschoolers with LD+X versus LD,  $\chi^2(4, N = 293) = 35.97, p < .0001$ . Studies involving  
274 preschoolers with LD+X reported more goals aligning with the Participation component,  
275 whereas studies for preschoolers with LD reported more goals aligning with  
276 the Activities component (see Figure 2).

277

278 [insert Figure 2 here]

279

## 280 **Discussion**

281 Existing literature on speech sound disorder management (Cronin et al., 2020; McLeod &  
282 Bleile, 2004; Mcleod & Threats, 2008) and speech and language assessment tools (Cunningham  
283 et al., 2017) revealed that some components of the ICF framework (i.e., Body Functions and  
284 Structures, Activities) received more research and clinical focus than others (i.e., Participation).  
285 The objective of this scoping review was to explore how therapy goals reported in the preschool  
286 language intervention literature mapped onto the components of the ICF framework.

287 In the preschool language intervention studies included in this review, approximately  
288 47% of reported therapy goals aligned with the Activities component, followed by Participation  
289 (26%), Environmental Factors (20%), Body Functions & Structures (3%), and Personal Factors  
290 (3%). This finding differs from what is known about the services for children with speech sound  
291 disorders, in which most interventions targeted children’s Body Functions and Structures (Cronin  
292 et al., 2020; Mcleod & Threats, 2008). One reason for this discrepancy may be the differences in  
293 the available measurement tools for these different populations. Assessment tools for children  
294 with speech sound disorders mainly focus on measuring production of phonemes at the level of  
295 Body Functions (Mcleod & Threats, 2008), whereas language assessments focus on morphology,  
296 syntax, semantics, and narrative skills – skills which are categorized within the Activities  
297 component (Cunningham et al., 2017). It is therefore possible that the availability of assessment  
298 tools highlighting impairments in areas of Body Functions and Activities led to goal  
299 development in each respective area (Kerr et al., 2003).

300 A secondary goal of this study was to determine whether therapy goals differed for  
301 studies involving children from different LD subtypes (e.g., LD and LD+X). Intervention studies  
302 for LD+X had a high proportion of goals that aligned with the Participation and Activities  
303 components, whereas intervention the LD group had a high proportion of goals reported within  
304 the Activities component and only few related to Participation. Upon further investigation of the  
305 biomedical conditions in the LD+X group, the majority of included studies ( $n = 70$  of 90, 78%)  
306 involved preschoolers with autism spectrum disorder (ASD). Given that a predominant feature of  
307 ASD is social communication challenges (American Psychiatric Association, 2013), it is not  
308 surprising that these interventions targeted primarily participation-focused goals (e.g., increased  
309 child engagement). Similarly, many children with LD present with primary concerns related to  
310 discrete language skills (e.g., vocabulary, morphology, syntax) (Paul et al., 2017), which makes  
311 goals within the Activities component a more obvious choice.

312 The findings from intervention studies with the LD subgroup are consistent with what has  
313 been reported in the literature; SLPs' literature place more emphasis on impairments and less on  
314 children's Participation (e.g., Cronin et al., 2020; Mcleod & Threats, 2008; Cunningham et al.,  
315 2017). There are many reasons why the ICF framework, specifically the Participation  
316 component, should be incorporated into SLPs' intervention literature. Children with language  
317 difficulties and disorders, even those without associated biomedical conditions, often have  
318 functional everyday impairments that go beyond the primary area of concern (Cunningham et al.,  
319 2019; Pennington et al., 2013; Westby & Washington, 2017), such as participation restrictions  
320 similar to those experienced by children for whom social communication difficulties were core  
321 deficits (Marton et al., 2005; Westby & Washington, 2017). It is therefore critical that language-  
322 based interventions include participation-focused goals for all children (i.e., LD and LD+X),

323 particularly as families report participation as a meaningful and important outcome of  
324 intervention (Lindsay & Dockrell, 2004; Roulstone et al., 2013).

325 An emerging body of literature in childhood disability further supports selecting  
326 Participation-focused therapy goals. For example, in one study, interventions that focused on  
327 improving children's engagement and participation (e.g., becoming involved in community  
328 programs such as swimming programs) resulted in improvements to their Body Functions  
329 (Anaby et al., 2020) suggesting that a focus on participation during intervention may result in  
330 improved skills across other ICF components, even if not directly targeted. On the other hand,  
331 intervention studies that focused on Body Functions and Structures (e.g., improving muscle  
332 strength) or Activities (e.g., improved expressive vocabulary) alone were found to not associate  
333 with gains in participation skills (Adair et al., 2015; Cunningham et al., 2019; Pennington et al.,  
334 2013; Westby & Washington, 2017) suggesting improvements in the Body Functions and  
335 Structures or Activities components of the ICF framework may not generalize to Participation,  
336 thus providing further justification for incorporating Participation-focused goals in childhood  
337 disability research and practice (Rosenbaum & Gorter, 2011).

338 Future intervention research should incorporate an explicit framework in goal selection to  
339 ensure all aspects of a child's condition are being addressed. The ICF framework has been  
340 particularly useful for engaging parents of children with disabilities in collaborative goal setting,  
341 and in ensuring that therapy goals are meaningful to families (Constand & Macdermid, 2014).  
342 Meaningful intervention has been described as starting with a focus on fun and friendships (e.g.,  
343 participation) rather than targeting children's impairments (i.e., Body Functions and Structures;  
344 Activities) (Rosenbaum & Gorter, 2011), and this shift in thinking may prove useful for  
345 supporting goal setting across all ICF components in pediatric speech-language pathology. Taken



346 together, incorporating the ICF framework provides the foundation for family-centered care,  
347 benefitting the child and family within and beyond clinical settings. Findings from this scoping  
348 review suggests a need for future language intervention studies, particularly those involving  
349 preschoolers with language disorders without an obvious biomedical condition, to include  
350 Participation-focused goals, which will also provide evidence to support SLP practice.

351

### 352 **Strength, limitations, and future directions**

353         The results of this scoping review should be considered in conjunction with the strengths  
354 and limitations. One limitation associated with this review was the lack of consistency with  
355 which interventions and goals were reported in the current intervention literature (DeJong et al.,  
356 2004; Dijkers et al., 2014). For example, therapy goals were often reported explicitly in case  
357 studies but were seldom reported clearly in randomized controlled trials. In randomized trials, at  
358 least 2 authors reviewed the introduction section of the paper and carefully considered each  
359 study's hypothesis(es) to derive therapy goals. This inconsistency in reporting made data  
360 extraction challenging, introduced the possibility of bias, and would also limit a clinician's  
361 ability to apply the literature in practice. One specific challenge we had when extracting therapy  
362 goals was to identify discrete goals. For example, studies may report their intervention aimed "to  
363 improve vocabulary, grammar, narrative skills." It was difficult to know if these were four  
364 discrete goals (i.e., should be counted as three activities-focused goals as we did in the current  
365 study) or rather one broad therapy goal which should have been counted only once. To verify  
366 this limitation did not influence our results, we conducted an *ad hoc* analysis where we counted  
367 relevant ICF components only once within the same intervention study (i.e., multiple goals  
368 categorized within the same ICF component was counted as one goal). The results from this *ad*

369 *hoc* analysis revealed very similar findings: goals aligned mostly with Activities component  
370 (45%), followed by Participation (29%), Environmental Factors (21%), Body Functions and  
371 Structures (2%), and Personal Factors (2%). As well, the same group differences in therapy goals  
372 were found for interventions studies for preschoolers with LD+X versus LD. The *ad hoc* analysis  
373 suggested that our main findings were not impacted by the inconsistency in therapy goal  
374 reporting practice within the intervention research literature. However, these inconsistencies  
375 made systematic syntheses of the literature difficult and thereby limiting the use of research  
376 evidence to inform practice. Adopting a standardized system for describing interventions (e.g.,  
377 rehabilitation treatment specification system RTSS; Hart et al., 2019) could prevent this issue in  
378 the future.

379 Another limitation of the current study was that we relied on one database (i.e.,  
380 speechBITE) to conduct the literature search. As speechBITE derives their article collection  
381 from eight major and commonly used databases to identify all articles related to SLPs' scope of  
382 practice, searching within speechBITE significantly improved the efficiency of article screening.  
383 speechBITE was also designed as a free resource for SLPs to read treatment-related articles, so  
384 evaluating articles from this database helps reflect the information available to support SLP  
385 practice. It is, however, possible that our search missed relevant or newer publications that were  
386 not or have not been indexed in the speechBITE database, which limited the comprehensiveness  
387 of this scoping review.

388 The current scoping review considered one factor (i.e., the availability of research  
389 evidence) that may impact SLPs' capacity to implement the ICF framework, particularly in  
390 selecting Participation-based goals. However, other practice-related barriers may also impact  
391 SLPs' capacity to implement the ICF-framework (e.g., whether Participation-based therapy goals

392 can be reimbursed by insurance). To fully support SLPs' practice, these real-world barriers need  
393 to be explored using practice-based research approaches in future studies (e.g., interviewing  
394 SLPs, analyzing government/insurance policies).

### 395 **Conclusion**

396 This scoping review identified a need to further support implementation of the ICF  
397 framework into intervention studies for preschoolers with language difficulties/disorders,  
398 particularly the consideration of the Participation component for children with LD. To date,  
399 interventions studies for children with LD+X placed equal emphasis on the Activities and  
400 Participation components, however interventions studies for children with LD focused primarily  
401 on Activities. Future intervention research could consider using the ICF framework to ensure  
402 participation-focused goals are selected and reported. Generating evidence on how to best  
403 intervene participation-focused goals will support SLPs in helping children with language  
404 difficulties/disorders to engage in everyday activities.

405

406

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537 **Figure 1.** Flow diagram of study selection  
538

539 **Figure 2.** Proportion of total therapy goals reported within each ICF component  
540

541 **Table 1.** ICF components and example goals from the included articles

542

<b>ICF component</b>	<b>Description</b>	<b>Example goals</b>
Body Functions & Structures	<ul style="list-style-type: none"> <li>• physiology and anatomy of the body</li> </ul>	<ul style="list-style-type: none"> <li>• to improve auditory discrimination skills through listening</li> <li>• to improve auditory working memory</li> </ul>
Activities	<ul style="list-style-type: none"> <li>• ability to perform a task or action</li> </ul>	<ul style="list-style-type: none"> <li>• to promote narrative skills, vocabulary and grammar, and phonological awareness and pre-literacy skills</li> <li>• to promote imitation of target semantic relation</li> </ul>
Participation	<ul style="list-style-type: none"> <li>• involvement in life situations</li> </ul>	<ul style="list-style-type: none"> <li>• to target language skills (i.e., emotion vocabulary) that will specifically improve both the ability to learn and offer ways for children to negotiate their personal lives</li> <li>• to verbally initiate a conversation to a peer (e.g., intelligible utterances, directed to the peer)</li> </ul>
Environmental Factors	<ul style="list-style-type: none"> <li>• physical, social, attitudinal environment</li> </ul>	<ul style="list-style-type: none"> <li>• to provide caregivers with strategies and materials to support child language development</li> <li>• to increase parental sensitivity and responsiveness to child communication and reduce mistimed parental responses</li> </ul>
Personal Factors	<ul style="list-style-type: none"> <li>• characteristics of the individual</li> </ul>	<ul style="list-style-type: none"> <li>• to increase child motivation to interact</li> <li>• to build confidence in independent speaking</li> </ul>

543

544 **Supplemental Information**

545 Appendix 1: Descriptions of included studies

546 Appendix 2: PRISMA scoping review reporting checklist