The Role of Culture in Reading Comprehension Interventions for Students with Learning Disabilities: A Systematic Review

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Culture is ubiquitous and plays a significant role in student knowledge development and reading comprehension. Therefore, the purpose of this review was to investigate how culture is considered within reading comprehension interventions for students with learning disabilities (LD) from culturally and linguistically diverse backgrounds. Through a search of five prominent academic journals focusing on LD, we identified 41 studies related to reading comprehension interventions. We coded studies for evidence of culturally responsive pedagogy (CRP) as well as discussion of culture within the manuscript. Findings revealed that while many studies featured evidence-based instructional strategies, researchers often did not explicitly reference culture within their interventions or discuss culture when reporting results. An analysis of studies reporting the use of CRP revealed strategies that value students' linguistic backgrounds and lived experiences. Limitations and implications are discussed, and a call to action in future research is presented.

Keywords: **reading comprehension, learning disabilities, culturally responsive pedagogy, literature review**

INTRODUCTION

Reading comprehension is essential to academic success and long-term personal, social, and economic outcomes (Berkeley & Larsen, 2018). It is a form of social capital (Yosso, 2005) that can promote inequities by providing or restricting access to post-secondary and career opportunities (Ladson-Billings, 2003). Many student populations do not have access to that social capital, thus preventing them from developing the comprehension skills necessary for college and career readiness (Brand et al., 2013).

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Culturally and linguistically diverse (CLD) students now make up the majority of the K-12 population in the United States (US; Irwin et al., 2021), and there are enduring achievement gaps in reading comprehension between CLD students and their White, English-speaking peers. In 2019, 47% of White, 12th grade students scored proficient or above in reading on the National Assessment of Educational Progress (NAEP), while only 17% of Black, 25% of Hispanic, 27% of Native Hawaiian/Pacific Islander, and 24% of Native Alaskan/Indigenous students scored proficient or above (Irwin et al., 2021). Similar achievement gaps are evident between multilingual learners (MLs, i.e., English Learners) and non-MLs (e.g., 3% of 12th grade MLs scored at or above proficient as compared to 39% of non-MLs; Irwin et al., 2021). These trends are consistent across grade levels and historical results for NAEP data.

Students with disabilities have also consistently under-performed in reading comprehension compared to their non-disabled peers (e.g., 10% of 12th grade students receiving special education services were at or above proficiency in reading compared to 40% of their peers not receiving services; Irwin et al., 2021). Students with a Learning Disability (LD) represent the largest category of students receiving special education services and the majority of these students struggle significantly with reading (Irwin et al., 2021). Additionally, 57% of students served under the category of LD are CLD students (Irwin et al., 2021).

CLD students, as identified by race, ethnicity, and/or language status, that *also* have LD may be doubly disadvantaged (Ortiz et al., 2020) as the sources of inequitable education intersect (Trainor & Robertson, 2022). For example, not only is an African American student with LD a racial minority, but they are also an ability minority within their own racial group. CLD students with disabilities struggle more in reading than their White peers with disabilities (e.g., 14% of White students with disabilities were at or above proficiency in reading, 2% of Black students, and 5% of Hispanic students; Irwin et al., 2021). Furthermore, only 1% of MLs with a disability scored at or above proficient in 12th grade (Irwin et al., 2021).

Long-standing inequities within our education systems have contributed to these enduring achievement gaps in reading comprehension (Noltemeyer et al., 2012). Reading comprehension is deeply embedded within cultural practices (e.g., one's interests, interpretation of language, prior knowledge, values; Galda & Beach, 2001) and the corpus of reading comprehension research reflects the dominant (i.e., White) culture of public schools, restricting access to culturally relevant texts and culturally responsive teaching strategies (Ladson-Billings, 2003). Thus, access to the capital garnered by skilled reading comprehension has been historically constrained for many CLD students, especially those with disabilities.

Defining CLD

The term CLD is common in LD literature; however, the *cultural* modifier of CLD often goes unmentioned and unexamined (Lindo, 2006; Moore & Klingner, 2014; Reed et al., 2012). Analyses of linguistic diversity are far more normative, but rarely grant attention to dialect variation, a cultural variable which can play a role in academic outcomes (Brown et al., 2015; Dexter et al., 2018). Possible explanations for the oversight of the "C" in CLD is the messiness of defining culture and the

lack of an adequate heuristic to measure one's culture. In order to discuss CLD students, however, we must develop a working definition of culture to make clear our population of interest.

We define culture as "a historically unique configuration of the residue of the collective problem-solving activities of a social group in its efforts to survive and prosper within its environment" (Gallego & Cole., 2001, p. 12 as cited in Artiles et al., 2010). All individuals have a culture that results from an evolving amalgamation of unique identity and personal experiences (Trainor & Robertson, 2022). Culture is ubiquitous, multifaceted, and responsive to individual lived experiences, rendering it difficult to operationalize. Within societal systems, demographic identity markers can serve as proxies for culture. Race and socio-economic status (SES), for example, have historically served as proxies of culture, allowing for the analysis of culture on education outcomes (Artiles, 2003, 2019; Trainor & Robertson, 2022).

For example, Garth-McCullough (2008) investigated the influence of culturally bound prior knowledge on African American students' reading comprehension across culturally similar and dissimilar texts. The findings suggest that culturally bound prior knowledge significantly supports African American students' comprehension, particularly students in medium- and low-skill reading groups. Similarly, Kelley et al. (2015) found higher comprehension scores for culturally familiar texts among a Latinx population, also noting improvement in students' self-efficacy. These findings align with a broader understanding regarding the role of background knowledge in improving reading comprehension. Although imperfect, viewing culture from the lens of demographic identity markers offers a way to critically analyze educational practices and identify differential effects among varied cultural groups (Artiles, 2019).

Theoretical Framework

Reading comprehension refers to the process by which a reader extracts meaning from a given text (Snow, 2002). Sociocultural interactions resulting from a triad of reader, text, and activity characteristics influence this process (Snow, 2002). The physical places in which these interactions occur (e.g., schools) are activity systems (Cultural Historical Activity Theory; Roth & Lee, 2007). Activity systems are cultural phenomena that are "...an evolving, complex structure of mediated and collective human agency...with objects/motives that contribute to maintaining human societies, and therefore, for maintaining individuals." (Roth & Lee, 2007, pp. 198). One principle of activity systems is knowledge construction. Within a school activity system, texts represent cultural artifacts that drive interactions between individuals in knowledge formation.

Reading, particularly narrative reading, is a cultural act (Tsai, 2007). When engaged in the reading of stories, students are thrust into a cultural world similar to or different from their own (Galda & Beach, 2001). The degree of congruence between the cultural world of the text and the cultural funds of knowledge brought to the text by the reader exerts an effect on reading comprehension outcomes (Garth-McCullough, 2008; Kelley et al., 2015). As a result, a student with greater cultural knowledge of the text is likely to comprehend the textual material to a better degree, suggesting culture as a variable that influences reading comprehension (Snow,

2018). Teachers serve as mediators between these two cultural worlds and bear the responsibility of bridging gaps between the cultural world of the text and the cultural world of their students (Gay, 2018). Culturally responsive practices aim to support teachers in this mediator role.

Culturally Responsive Pedagogy and Students with Disabilities

There has been an increasing call for teachers to implement culturally responsive pedagogy (CRP) to better meet the needs of CLD students (Aronson & Laughter, 2016). CRP is both a teaching philosophy and instructional practice that strives for social justice (Gay, 2018; Ladson-Billings, 2014). To enact CRP, teachers must continually reflect on their own implicit biases and adopt a critical lens in order to build and maintain a basic level of cultural competence. In addition to instructional practices such as connecting and building students' background knowledge, culturally responsive educators select culturally relevant literature. Teachers that implement CRP in their classrooms validate the lived experiences of CLD student groups while simultaneously exposing students to different perspectives (Ladson-Billings, 2014).

CRP is critical for students with disabilities because the number of CLD students with disabilities is outpacing the growth of diversity within the general student population (U.S. Department of Education, 2020). CLD students continue to be overrepresented in special education, particularly Black, Hispanic, and indigenous students in the category of LD. Thus, CLD students with LD require not only special education services to meet their educational goals, but also *culturally responsive* special education to ensure maximum educational benefit from the interventions received.

Though much is known about evidence-based practices to promote the reading achievement of students with LD, less is known about how researchers are infusing CRP into their interventions to go beyond "just good teaching," making a concerted effort to engage CLD students in authentic, culturally relevant, student-centered learning. Aceves and Orosco (2014) reviewed research investigating CRP practices for students with LD and determined four emerging practices with evidence of effectiveness for students with LD from CLD backgrounds: (a) collaborative teaching, (b) feedback, (c) modeling, and (d) instructional scaffolding. Table 1 provides *general* examples of these four practices as well as *culturally responsive* examples.

Aceves and Orosco (2014) offer a roadmap to CRP built upon existing evidence-based practices; however, what makes a practice *culturally responsive* can be vague and often overlaps with general practices also considered to be evidence-based (e.g., explicit instruction; Archer & Hughes, 2010). Without direct reference to how culture is considered in the development and implementation of intervention research, the effects of evidence-based interventions using CRP are more difficult to establish and replicate.

Table 1. *General and Culturally Responsive Components of Effective Instruction*

Instructional Component	General Examples	Culturally Responsive Examples
Collaborative Teaching	Cooperative learning, differentiated instruction, peer teaching, reciprocal teaching	Joint intellectual effort between students and teachers, reinforcement of background knowledge, sharing perspective and lived experiences
Feedback	Explicit, immediate, and ongoing, affirms a correct response, corrects an incorrect response	Incorporate cultural preferences into feedback, provide follow-up inquiry, classmates demonstrate cognitive processes leading to the correct response
Modeling	Explicit demonstrations of a strategy or concept, think-alouds, accompanied by guided practice	Examples based on students' linguistic, cultural, or lived experiences, validates the importance of cultural background knowledge
Instructional Scaffolding	Activating background knowledge, guided practice, matching skill to task, controlling for task difficulty, providing clear directions	Acknowledging and extending students' responses through follow-up questions, structured turn-taking, effective wait time, primary language explanations, supportive instructional materials

*Note: adapted from Aceves & Orosco (2014)

Culturally Relevant Intervention Research

Research suggests that interventions specifically and deliberately designed to support CLD students contribute to positive student outcomes (Aronson & Laughter, 2016). However, one barrier to examining the impact culture has on student learning and the potential benefit of CRP is a lack of explicit centering of culture in intervention research (Lindo, 2006; Moore & Klingner, 2014; Reed et al., 2012). It is challenging to determine the effectiveness of interventions for CLD students with LD due to the lack of information provided by researchers regarding cultural factors (e.g., race, ethnicity, gender, disability, dialect) and their effects on academic outcomes.

For example, Lindo (2006) examined reading intervention studies published in prominent education research journals between 1994 and 2004. Among 79 studies, no articles disaggregated results by race. Consistent with Lindo's findings, Reed et al. (2012) investigated demographic and contextual data in reading interventions for students with LD published between 1991 and 2010. They found that researchers did not report participants' race or ethnicity in almost one-third of the 26 studies, and

only three studies included MLs. While 15 studies reported the SES of participants, data were not disaggregated to analyze effectiveness among any of these subgroups. Similarly, Moore and Klingner (2014) examined the population validity of reading intervention studies, particularly for MLs, published between 2001 and 2010. They found that 35 out of 67 studies failed to provide demographic information about race, ethnicity, or ML status, thus precluding the generalizability of results for CLD participants.

Considering the impact research has on practice and policy (e.g., IDEA, RTI), it is important that the field understands how CLD students with LD are currently represented and positioned within published reading intervention research (Artiles et al., 2010). Due to the interconnectedness between reading comprehension and culture, reading comprehension interventions are particularly suited for this inquiry. In doing so, we can better understand the unique ways in which culture may impact intervention outcomes and craft our interventions to deliberately meet the needs of students with LD from diverse *cultural* as well as linguistic backgrounds (Trainor & Robertson, 2022).

The purpose of this study is to examine how culture is represented in reading comprehension intervention research for students with LD. We framed this review on the following research question: To what extent is culture considered within reading comprehension interventions for students with LD? Specifically, we examined articles for: a) cultural identity markers (e.g., race, language background, SES); b) explicit descriptions of CRP; and c) discussion of culture within the manuscript (i.e., introduction, methods, results, discussion).

METHOD

Search Procedures

In order to respond to calls for research investigating underserved CLD students in special education (Artiles et al., 2010; NJCLD, 2016; Trainor & Robertson, 2022) we chose to examine the last decade of reading comprehension research for students with LD (2010-2019). Prior reviews by Moore & Klingner (2014) and Reed et al. (2012) reviewed reading intervention articles up to 2010. We identified articles for review in two phases. In the first phase, we searched for reading comprehension studies included in the following five journals: *Journal of Learning Disabilities (JLD), Learning Disabilities: A Contemporary Journal (LDCJ), Learning Disabilities: A Multidisciplinary Journal (LDMJ), Learning Disability Quarterly (LDQ), and Learning Disabilities Research & Practice (LDRP).* Next, we searched the reference sections of each article to find additional relevant studies in the identified LD journals. Studies from these high impact journals are frequently cited in research focused on students with LD. Although the population of relevant studies was not located for this review, articles published within these five journals should serve as a good indicator of the larger literature base. As such, this is considered a sampling study of the published literature.

In the second phase, we screened the identified reading comprehension studies by applying inclusion criteria. Studies were included if they (a) were published between 2010-2020, (b) were available in English, (c) included students with LD

or at-risk for LD, (d) included students in K-12th grade, (e) included quantitative outcome data for reading comprehension, (f) were conducted in the US, and (g) represented a quantitative research design.

We included students identified in studies as "at-risk" for LD because such students are often included in LD studies. Researchers often identify at-risk students as those with difficulties in decoding and/or linguistic comprehension (Hoover & Gough, 1990; Gough & Tunmer, 1986). Including studies of at-risk students is also important to encompass students who may not yet be identified with LD or are misidentified as LD. The latter population is of particular relevance to the present study as the mis- and under identification of LD in populations of CLD students is evidenced by disproportionality in LD on a national level (Fish, 2019).

Coding Procedures

Studies were coded for research characteristics (e.g., publication year, study design), participant demographics (e.g., race, gender), and intervention information (e.g., text type, teacher demographics). Participant demographics were coded using the minimum standards for participants in LD research recommended by Rosenberg et al. (1994), including: (a) number of participants (total and by gender); (b) age; (c) race/ethnicity; (d) SES; (e) grade level; (f) intelligence; and (g) overall and/or specific academic achievement. We also coded for the percentage of students receiving English as a Second Language (ESL) services.

Within each intervention, we coded for text type (i.e., narrative or expository). Some research suggests narrative texts may be more influenced by cultural knowledge than expository texts (Dray, 2018). Though expository texts might be influenced by knowledge of the material being presented, comprehension of narrative texts may be partly dependent on the reader's understanding of the social conventions surrounding the characters in the text (e.g., common social experiences, motivations, and shared knowledge; Dray, 2018).

To examine how culture was addressed within the described interventions, we coded the four culturally responsive practices identified by Aceves and Orosco (2014): (a) collaborative teaching, (b) feedback, (c) modeling, and (d) instructional scaffolding. Within each practice, we coded for evidence of general and culturally responsive examples (see Table 1). Finally, we coded for cultural components of each manuscript, including whether or not (a) the article was focused on CLD students; (b) researchers incorporated culture into their literature review and theoretical framework; (c) the sample was described using cultural factors, including race; (d) the intervention was modified based on participant culture; (e) culture was accounted for in the analysis; and (f) culture was integrated into the results/discussion.

Inter-rater Reliability

During the screening process, two researchers searched each journal for articles meeting inclusion criteria. Disagreements were resolved by the research team prior to coding. We coded articles in three phases. In the first phase, we piloted the coding manual to determine if the codes provided relevant data. We then refined the coding manual and began the second phase of coding. We double-coded 32% ($n = 13$) of the articles for study information, demographics, and intervention information.

Inter-rater reliability was determined using the following formula: number of agreed variables/numbers of total variables * 100. The inter-rater reliability was 94%.

During the coding process, the research team acknowledged the overlap in definitions of CRP components as well as nuances between general and culturally responsive examples (see Table 1). Given the subjectivity of these variables, the team double-coded 100% of the articles on the CRP and manuscript variables and obtained an inter-rater reliability of 86.5%. The team met to resolve all differences among double-coded articles.

Results

A total of 993 articles were identified through a search of the aforementioned LD journals. Following screening, 66 articles remained for full-text coding. During coding, an additional 25 articles were excluded, resulting in a total of 41 articles coded and synthesized.

Study Information

A total of 5,551 students were represented across the 41 studies, ranging from 2-1,629 participants. More than half of the studies employed a randomized control trial design ($n = 25$), with six quasi-experimental and eight single-case designs. The location of studies was only specified in half of the articles; urban settings were most often represented ($n = 11$). Most articles either did not report the region of the US or indicated a mixed region ($n = 15$); however, 18 studies were conducted in the south, southeast, or southwest region of the US.

Demographic Information

Elementary students were represented in half of the studies ($n = 23$), with middle ($n = 8$) and high school students ($n = 10$) distributed among the remaining studies. Demographic information was recorded for each article's total sample, or as reported at the school level. The mean percentage of students reported to have low SES (i.e., free-and-reduced lunch) was 60%. Boys made up 56% of the participants, on average, and students identifying as non-binary were not reported in any articles. Students receiving ESL services comprised an average of 32% of the participants across 23 studies, and children with LD represented, on average, 55% of the samples across 18 studies. Students receiving services in other categories of special education (e.g., speech or language impairment) represented 17% of the participants across 23 studies.

Racial demographics were reported in 35 of the articles. On average, Hispanic students comprised 43% of the study samples, White students 36%, Black students 25%, Asian/Pacific Islander 2%, and students of mixed or other races 7%. Articles were also coded for teacher demographics (i.e., gender and race). Most articles did not report either the gender or race of intervention teachers ($n = 29$; 71%); however, both race and gender were mentioned in four articles (10%) and teacher gender was reported in eight articles (19.5%).

General Instructional Practices

Fourteen studies focused on expository texts (34%) while 10 studies focused on narrative (24%). Nine studies included both text types (22%) and seven studies did not report text type (17%). Articles were coded for general examples of the practices recommended by Aceves and Orosco (2014; see Table 1). Overall, the majority of studies included at least one general example of the four recommended practices, with general collaborative teaching in 28 studies (68%), feedback in 30 (73%), modeling in 35 (85%), and instructional scaffolding in 33 (80%).

Culturally Responsive Instructional Practices

To answer our research question regarding explicit descriptions of *culturally responsive* instructional practices, we coded for examples that included features of CRP (see Table 1). Examples of *culturally responsive* collaborative teaching were explicitly described in 10 articles (24%), feedback in seven (17%), modeling in six (15%), and instructional scaffolding in eight articles (20%). The total number of articles that contained at least one CRP practice was 27 (68%). These articles and the types of culturally responsive approaches that were included are summarized in greater detail in the following paragraphs. Study information on the 27 articles including at least one CRP practice can be visually examined in Table 2.

Culturally Responsive Collaborative Teaching

Among the articles describing culturally responsive collaborative teaching, some researchers described an approach to *reinforce* students' background knowledge, rather than simply activate it, by explicitly prompting students to make connections between the reading content and their personal lived experiences (Catts et al., 2016; Vaughn et al., 2019a). Joint intellectual effort between students and teachers included group tasks requiring students to develop their own definitions, form new ideas, and develop supporting questions for group discussions (Bulgren et al., 2013), as well as opportunities for groups of students to take the role of the teacher (Ciullo et al., 2015; Hock et al., 2017).

Culturally Responsive Feedback

Culturally responsive feedback is student-centered and focuses on guiding students to efficient and relevant use of strategies and skills (Aceves & Orosco, 2014). For example, Hock et al. (2017) tasked pairs of students with evaluating each other on the strategy being taught. Burns et al. (2017) asked students to conduct self-evaluations of strategy use, compare their evaluations with those of the interventionists, and develop ideas about more effective strategy use. Vaughn et al. (2019a) asked teams of students to prepare and present responses and justifications to the class, then used student responses to construct a class summary linked to the overarching skill. Ciullo et al. (2015) guided the use of a graphic organizer, conducted follow-up inquiry with students, then tasked students with teaching the class the strategies. Reed and Lynn (2016) used continuous formative feedback, so students understood when they were making valid inferences.

Table 2. Articles Including Culturally Responsive Instructional and/or Research Components

Author, Year	N	Grade	%WHT	%BLK	%API	%OTH	%HSP	%FRL	%ESL	%LD	Inst Dem	Txt Type	Collab	Feedback	Modeling	Inst Scaff	CLD Focus	Comp Cond	Lit Review	Theo Focus	Sample	Int Mod	Analysis	Discussion
						Study Information								CR Instructional Components				CR Research Components							
Apel & Diehm, 2014	151	Elem	16	75	1	5	3	74	-	-	-	-	-	Y	-	Y	Y	-	Y	-	Y	-	-	Y
Baker et al., 2016	78	Elem	-	-	-	-	100	45	100	-	-	N/E	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y
Barber et al., 2018	3	Elem	-	100	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bemboom & McMaster, 2013	57	High	97	-	2	-	2	34	-	-	-	N	-	-	-	-	-	-	-	-	Y	Y	-	-
Berkeley & Riccomini, 2013	319	Mid	92	3	-	1	3	51	48	8	G	E	-	-	Y	Y	-	-	-	-	Y	-	-	-
Bulgren et al., 2013	134	High	81	1	2	13	2	23	-	10	G/R	N	Y	-	-	-	-	-	-	-	Y	-	-	-
Burns et al., 2017	4	Mid	-	75	-	-	25	89	-	50	-	-	-	Y	Y	-	-	-	-	-	Y	-	-	-
Catts et al., 2016[a]	263	Elem	63	11	6	7	6	35	-	-	-	N	Y	-	Y	-	-	-	-	-	-	-	-	Y
Cirino et al., 2017	75	Elem	-	40	-	5	55	-	-	-	-	-	Y	-	Y	-	-	Y	-	-	Y	-	Y	Y
Ciullo et al., 2015	7	Elem	14	14	-	-	71	29	-	100	-	E	Y	Y	-	Y	-	-	-	-	Y	-	Y	-
Denton et al., 2017	48	High	8	29	-	-	63	75	-	-	-	N	-	-	-	-	-	-	-	-	Y	-	Y	Y
Faggella-Luby & Wardwell, 2011	81	Mid	23	6	-	1	69	78	26	-	G	N	-	Y	-	-	-	-	-	-	-	-	-	-
Fuchs et al., 2018	116	Elem	29	39	-	8	24	92	-	-	G/R	E	-	-	-	-	-	-	-	-	Y	Y	-	-
Helman et al., 2015	3	High	-	-	-	-	100	100	100	100	-	E	-	-	-	-	Y	-	Y	-	Y	-	Y	-
Hock et al., 2017	40	Mid	65	-	-	45	-	55	-	86	-	N/E	Y	Y	Y	Y	-	-	-	-	Y	-	Y	Y
Hudson et al., 2011	56	Elem	25	46	14	2	16	-	14	19	-	-	Y	-	-	-	-	-	-	-	Y	-	-	-

Table 2. Articles Including Culturally Responsive Instructional and/or Research Components (continued)

Author, Year	N	Grade	%WHT	%BLK	%API	%OTH	%HSP	%FRL	%ESL	%LD	Inst Dem	Txt Type	Collab	Feedback	Modeling	Inst Scaff	CLD Focus	Comp Cond	Lit Review	Theo Focus	Sample	Int Mod	Analysis	Discussion
Miciak et al., 2018.	484	Elem	8	23	-	1	68	82	50	-	G	E	-	-	-	-	-	-	-	-	Y	-	Y	-
O'Connor et al., 2017a	34	Mid	-	-	-	-	94	-	76	32	-	E	-	-	-	-	Y	-	-	-	Y	-	Y	Y
O'Connor et al., 2017b	73	Mid	-	16	-	-	65	-	45	77	G	E	-	-	-	-	-	-	-	-	Y	-	-	Y
Reed & Lynn, 2016	24	High	71	29	-	-	-	46	-	-	-	N/E	Y	Y	Y	Y	-	-	-	-	-	-	-	-
Rouse et al., 2014	2	Elem	-	50	-	-	50	-	-	100	-	E	-	Y	Y	Y	-	-	Y	-	Y	-	-	Y
Toste et al., 2019	109	Elem	4	6	-	3	85	90	27	-	G	-	Y	-	Y	-	Y	-	-	-	Y	-	Y	Y
Vaughn et al., 2012	41	Mid	6	46	-	-	49	92	32	22	G	N/E	-	-	-	Y	-	-	-	-	Y	-	-	-
Vaughn et al., 2015	375	High	18	33	5	-	44	43	19	-	-	N/E	-	-	-	-	-	-	-	-	Y	-	-	Y
Vaughn et al., 2019a	1,629	Mid	40	9	1	9	40	58	27	-	G/R	E	Y	Y	-	-	Y	-	Y	Y	Y	Y	-	Y
Vaughn et al., 2019b	278	Elem	49	42	3	5	-	75	21	NR	-	N/E	-	-	-	-	-	-	Y	-	Y	-	-	-
Wanzek & Roberts, 2012	87	Elem	10	3	-	-	86	91	54	7	-	E	-	-	-	-	Y	-	Y	-	Y	-	Y	Y

Note. Due to variations in reporting or overlap in race and ethnicity, racial demographics may not add to 100%; "-" = zero or not reported; Y = present; CR = Culturally Responsive; WHT = White; BLK = Black/African American; API = Asian/Pacific Islander; OTH = Other Race; FRL = Free and Reduced Lunch; ESL = English as a Second Language; LD = Learning Disability; Inst Dem = Instructor Demographics; Txt Type = Narrative/ Expository; Collab = Collaborative Teaching; Inst Scaff = Instructional Scaffolding; Comp Cond = Comparison Condition; Int Mod = Intervention Modification

[a] Race and SES demographics provided only at the district level

Culturally Responsive Modeling

Culturally responsive modeling considers differences in students' linguistic backgrounds and lived experiences (Aceves & Orosco, 2014). Several researchers explicitly described the modeling of relevant vocabulary prior to reading (Berkeley & Riccomini, 2013; Catts et al., 2016). Baker et al. (2016) included pictures in vocabulary instruction, providing students from various linguistic backgrounds with a universal depiction of a target word. Toste et al. (2019) taught students to identify negative thoughts that a struggling reader may have, then encouraged them to consider their own lived experiences with negative thoughts about reading. Tutors then modeled self-motivating statements during reading.

Culturally Responsive Instructional Scaffolding

Instructional scaffolding encompasses and overlaps with the aforementioned practices of collaborative learning, modeling, and feedback. Teachers providing general instructional scaffolding incorporate activation of background knowledge and guided practice while also controlling task difficulty and matching skill to tasks. Culturally responsive instructional scaffolding is more nuanced and may be difficult to identify if not explicitly described. Examples of culturally responsive scaffolding included specific attention to the selection of instructional materials of interest to students and the use of student-centered discussion as a form of scaffolding (Berkeley & Riccomini, 2013; Bulgren et al., 2013; Ciullo et al., 2015). Hock et al. (2017) explicitly referenced student interest *and* reading level when choosing books for students' independent reading, displaying how general scaffolding procedures can become culturally responsive. Matching interest and reading level may result in increased background knowledge for the reader, strengthening the outcomes of the intervention and eliminating a potential confounding variable. Baker et al. (2016) used students' native language (i.e., Spanish) to scaffold instruction and make explicit connections between letter sounds in English and Spanish as well as transferable and nontransferable features of the two languages.

Cultural Components of Research Articles

Of the 41 included articles, only eight (20%) were specifically focused on CLD students, often representing MLs and/or students with low SES. Eight articles incorporated culture in the literature review and only three incorporated culture in the theoretical framework. Samples were described using the cultural factor of race in 33 (80%) of the studies. Five studies modified the intervention based on participant culture, and two studies reported CRP practices in the comparison condition. Though 13 articles mentioned culture in the results/discussion, only eight considered culture within the analyses. Two manuscripts, Baker et al. (2016) and Vaughn et al. (2019a), incorporated discussions of culture throughout the manuscripts. Several other articles were represented across at least three dimensions of cultural components of research. Results within and across these articles can be observed in Table 2, and patterns in the findings will be explored in the discussion.

DISCUSSION

The purpose of this systematic review was to examine how culture is

represented in reading comprehension intervention research for students with LD. We sought to understand how cultural identity markers (e.g., race, language, SES) were reported, how instructional components of CRP were explicitly described, and how cultural representation shaped intervention development, implementation, analysis, and reporting of results.

Culturally Responsive Intervention Practices

Despite relatively diverse samples in terms of race, SES, and language, the vast majority of studies did not include explicit descriptions of culture beyond reporting of these proxies, nor did most authors explicitly describe elements of CRP within the interventions. Although it is encouraging that studies are increasingly providing proxy measures of culture to describe participants, the field needs to establish alternative methods of describing participants' cultural backgrounds. This will help practitioners identify practices likely to be successful for their specific students.

The majority of studies described evidence-based, effective, instructional practices, which demonstrates a commitment by researchers to align interventions with effective instruction; however, only one-quarter of the included studies explicitly described CRP practices (see Table 2). Explicit descriptions of CRP were difficult to find, though culturally responsive instruction was often implied or nuanced in the manuscript's descriptions of instruction. The identification of articles containing elements of CRP is likely the result of what researchers chose to report about intervention procedures. Perhaps some of the interventions in our pool did indeed include CRP. For instance, one component of culturally responsive instructional scaffolding includes acknowledging student responses with follow-up questions. It is likely that interventionists did ask follow-up questions during their instruction, yet the lack of reporting in the intervention procedures precludes their identification.

Only five articles reported intervention modifications based on cultural factors (see Table 2). Researchers incorporated feedback respective of participants' background knowledge (Fuchs et al. 2018; Vaughn, 2019a), chose culturally relevant texts (Barber et al., 2018), included text written by a local author (Bemboom & McMaster, 2013), and emphasized vocabulary and academic language for specific populations (Baker et al., 2016). The practice of incorporating the knowledge students bring to any intervention is an integral component of CRP (Gay, 2018; Ladson-Billings, 2014). Explicit descriptions of effective culturally responsive intervention procedures can serve as a positive step forward in addressing the needs of students with LD from CLD backgrounds.

Implications for Research and Practice

The implications of our findings expose gaps in understanding the effects of reading comprehension interventions across varied cultural groups. The lack of disaggregated analyses and explicit connections between culture and chosen or modified intervention practices further complicates replication and generalizability of study findings. Researchers explicitly reporting cultural variables would help the field understand the ecological validity of reading comprehension research and the extent to which effective intervention practices generalize across cultural groups; a validity greatly needed in the face of increasing diversity in US public schools

(Reed et al., 2012). As it stands, the extent to which student culture influences intervention outcomes is unknown. We acknowledge this will require the field to continue to reckon with what culture means in the context of reading comprehension interventions. Defining culture is a messy and dynamic process and may resist the strict operationalization necessary for statistical measurement. Still, if we are ever to address the varied cultural needs demanded in education broadly, and special education specifically, the field must pivot to embracing this challenge. We next describe the ways in which future research can begin to address and incorporate culture.

First, future research should seek to recruit participants from varied cultural backgrounds to ensure an adequate sample size for data analysis and disaggregation. One important research question stemming from this review is whether or not identity markers can continue to serve as adequate proxies for investigating the impact of culture on educational outcomes. Second, future research should explicitly describe the texts used in reading comprehension interventions, and how such texts were chosen based on the participants' characteristics. When reporting research results, authors should detail how students' background knowledge was built to examine the role of knowledge in comprehension outcomes. Finally, researchers should explicitly report how they embedded culturally relevant examples that reflect students' backgrounds and lived experiences.

Fortunately, outside the field of special education, CRP practices are more prominent. One example for educators to draw from is cultural modeling (Lee, 1993, 1995, 2001). Cultural modeling connects a student's prior knowledge and experiences with academic content demands. It requires intentionally considering students' cultural prior knowledge to develop an understanding of the content being taught. As a framework for guiding literacy instruction, the cultural modeling framework incorporates explicit strategies such as modeling, scaffolded instruction in knowledge representation, and metacognitive strategies to explicitly develop and connect personal/cultural background knowledge to the academic content. This model gently guides students to connect their implicit reasoning strategies with explicit instructional strategies they have learned through intervention (Risko & Walker-Dahlouse, 2007).

Limitations and Future Directions

In an effort to focus our research on students with LD, we confined the pool of potential studies to LD journals. Though we consider these articles representative of the larger research base, other journals may have published reading comprehension studies including students with LD, thus representing a limitation of our review. Another limitation is the messiness of conceptualizing and operationalizing culture. We acknowledge that culture is ever evolving and consider the exercise of conceptualizing culture an iterative process of professional and personal development.

The majority of students represented in this review would be considered *diverse* by most standards (e.g., non-White, lower SES), yet, similar to Lindo's (2006) review, such cultural differences were scantly described outside of the required sample reporting, and the analyses were rarely, if ever, disaggregated by cultural groups. We acknowledge that small sample sizes may compromise power and analyses related

to disaggregating data but encourage authors to note this in their manuscripts and make data available to other researchers for future, more robust analyses across varied demographic groups.

The good news is that the majority of studies did use evidence-based teaching practices and *may* have used culturally responsive practices. Still, culture was not routinely situated in analyses nor were potential cultural differences made explicit. In fact, the vast majority of studies did not modify the intervention based on culture or failed to describe such modifications in the published article. Future research should consider culture at the outset of the intervention and describe culturally responsive adjustments made throughout implementation.

CONCLUSION

Through this systematic sampling review, we sought to identify the role of culture in reading comprehension intervention research for students with learning disabilities. The influence of culture in our research and teaching will never cease. In fact, as educational institutions become more diverse, cultural differences must be embraced, celebrated, and purposefully incorporated into our intervention practices. As always, we must evolve and adapt our research in response to the needs we see. From the founding of special education, students outside the privileged positions of society have been marginalized, and the intersectionality of cultural differences, learning disability, and linguistic differences complicates and restricts student access to effective instruction. The time has come to appreciate that cultural differences do matter, and that such differences deserve the same scrutiny of inquiry as other differences explored in our research.

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