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Learning Disability Identification Criteria and Reporting in Empirical Research: A Review of 2001–2013

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This review documents the learning disabilities (LD) identification criteria and procedures utilized in empirical research including students with LD published from 2001 to 2013 in three journals dedicated to the study of LD. Results reveal several troublesome findings related to transparency in reporting and the coherence of the LD construct. Nearly one-third of all empirical studies investigating LD did not describe who identified the participants as having LD or how they were identified. Information on the specific area of LD was similarly lacking. Across studies, identification criteria varied widely. Moving forward, we contend that greater transparency and consistency with regard to the definition and operationalization of the construct of LD in empirical research is necessary if solidification of the scientific construct of LD is to be achieved.

In 1975, the U.S. Congress passed the Education for All Handicapped Children Act. The law codified specific learning disabilities (SLD)[1] as a disability category eligible for special education services. However, the law did not define SLD or establish procedures for SLD identification. In 1977, the United States Office of Education (USOE) addressed this gap, providing both a formal and operational definition of SLD. The operational definition, which explicitly mandated the use of an ability-achievement discrepancy, was intended to be used by states for the purpose of identifying students with SLD (USOE, 1977).

The USOE's requirement that SLD identification be contingent on a measured ability-achievement discrepancy was based on a precarious research base and brought about an immediate and enduring controversy within the field of learning disabilities (LD; Francis et al., 2005; Hallahan & Mercer, 2002). Critics argued that the use of an ability-achievement discrepancy for SLD identification was flawed methodologically, because it: (1) represented a wait-to-fail approach (Lyon, 1996; Vaughn & Fuchs, 2003), (2) relied upon flawed psychometric procedures and assumptions (Francis et al., 2005; Siegel, 1992), and (3) utilized faulty formulas for the calculation of discrepancies between ability and achievement (Berk, 1982; Reynolds, 1985). Critics further argued that the ability-achievement discrepancy method lacked validity, because: (1) low-achieving students with and without an ability-achievement discrepancy do not demonstrate qualitative differences on external behavioral and academic measures (Hoskyn & Swanson, 2000; Stuebing et al., 2002) and (2) IQ is only minimally related to intervention response (Stuebing, Barth, Molfese, Weiss, & Fletcher, 2009). Contention over the ability-achievement discrepancy reached a tipping point in 2001 at the LD Summit, organized by the Office of Special Education Programs, where participants reached consensus that an ability-achievement discrepancy is neither necessary nor sufficient to identify SLD (Bradley, Danielson, & Hallahan & Mercer, 2002).

In 2004, the U.S. Congress accepted the LD summit recommendations during the reauthorization of the Individuals with Disabilities Education Act (IDEA; United States Department of Education, 2004). The law contained the first significant change to SLD identification procedures since 1977. IDEA 2004 included new language no longer mandating that the identification of SLD be contingent on the existence of an IQ-achievement discrepancy. Students could now be identified with SLD, in part, based upon inadequate response to research-based interventions or other alternative research-based procedures (i.e., RTI).

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LEARNING DISABILITIES
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LD in Research

The stability in federal law of both the definition and identification procedures for SLD belies significant disagreements in the scientific community surrounding the essential characteristics of LD and the validity and reliability of different methods for the identification of LD. These disagreements result in variability in the criteria used to identify individuals with LD in empirical research, and trigger fears that LD represents a "generic term" (Kavale & Nye, 1981, p. 387). Such differences in the LD identification criteria utilized in empirical research raise concerns about the generalizability and replicability of research on individuals with LD (Rosenberg et al., 1994). A lack of clear descriptions of populations identified as LD also complicates the identification of populations for research synthesis and meta-analysis, important scientific activities that can assist in consolidating knowledge across studies focused on LD.

This study reviews empirical research conducted with individuals identified as LD published between 2001 and 2013 to document the specific LD identification procedures utilized in studies that investigated the characteristics or treatment of LD.

Previous Reviews of LD in Research

The conceptual frame for this review most closely reflects the work of Kavale and Nye (1981), who surveyed research on LD to document the identification criteria utilized. A survey of 307 research articles published between 1968 and 1980 revealed significant variability in the LD identification criteria used in sampling and the quality of reporting to describe the LD sample. Indeed,

> Results of the survey showed one half of the subjects were selected on the basis of previous classification or diagnosis. Presumably, the classifications were based upon established criteria; however, the investigator chose to report neither those criteria nor the extent to which the chosen subject met established criteria. (Kavale & Nye, 1981, p. 384).

Another 20 percent of the articles selected participants with LD on the basis of previous classification only, but provided a description of the criteria utilized. The authors concluded that the lack of transparency and documented variability of LD identification criteria utilized in empirical research resulted in heterogeneous samples and raised significant questions about the generalizability and replicability of research with individuals with LD.

Preceding the work of Kavale and Nye (1981) were two influential papers (Keogh, Major, Reid, Gándara, & Omori, 1978; Torgeson & Dice, 1980) that, although broader in scope, arrived at similar conclusions and recommendations. Keogh et al. (1978) sought to define a set of marker variables for LD, or "core variables which are collected in common by those conducting research within a given field" (p. 6). As part of the larger marker variable project, Keogh and colleagues conducted an extensive computer search of cross-disciplinary databases, identifying 1,385 articles concerned with LD or a close synonym. Within this sample, broad differences in selection characteristics of subjects and authors' methods of subject identification were identified (Keogh, 1982).

Torgesen and Dice (1980) reviewed research conducted by psychologists and educators in eight major journals between 1976 and 1978. From this review the authors concluded that the generalizability of research on LD was limited because of a lack of precision in describing important descriptive variables, including the operational definitions of LD. Sixty-four percent of the articles identified children as LD based on a discrepancy between expected achievement (variably defined) and actual achievement. However, in light of the variability in reporting quality and procedures, Torgesen and Dice concluded that "more effort needs to be expended in examining the construct validity of the testing procedures and experimental paradigms which are used" (p. 5).

Recognizing the existence of limited and vague descriptions of participants identified as LD in research as a hindrance upon the evaluation and generalization of scientific research, the Council for Learning Disabilities (CLD) research committee in 1984 recommended specific guidelines for participant descriptions (Rosenberg et al., 1994). Hammill, Bryant, Brown, Dunn, and Marten (1989) evaluated adherence to these guidelines in a review of 277 articles that included participants evaluated as having LD and that were published between 1984 and 1987 across 10 journals. The authors concluded that only 4 of the 277 reviewed articles included descriptions meeting CLD reporting guidelines.

Durrant (1994) replicated the work of Torgesen and Dice (1980) by reviewing research from the same eight journals between the years 1988 and 1990. Results indicated that 96.1 percent of the articles reviewed reported some type of definition of LD. Durrant divided those definitions into three basic criteria: (1) prior identification, (2) research criteria, or (3) multiple criteria. Durrant found that a large majority of studies (70 percent) depended upon prior identification criteria. Furthermore, fully 33 percent of those cases were not specified, making precise replication impossible. Only 10 percent of the reviewed studies utilized research criteria, in which the researcher administered a set of assessments and defined LD groups based on a priori criteria. Twenty percent of the studies utilized multiple criteria, the vast majority of which required that the student meet state or federal definitions, as well as specific research criteria. Summarizing the review, Durrant concluded that the quality of reporting on LD research was inadequate to permit replication.

Purpose

In the years following Durrant's (1994) review, scrutiny surrounding LD identification increased, culminating with the LD Summit in 2001 and the inclusion of new options for LD identification in IDEA 2004. A recent review of literature from 2001 to 2013 indicated that despite, or perhaps as a result of, the availability of new identification options the inclusion of participants explicitly described as having an LD declined over time (McFarland, Williams, & Miciak, 2013). Therefore, to gain insight specific to how researchers are identifying participants as LD this review documents the LD identification criteria and procedures utilized in research

including students identified as LD published from 2001 to 2013, the period following the initiation of a great shift in the field away from a singular focus on IQ-achievement discrepancy as the framework for LD identification. We contend that such a review: (1) provides an accurate and valuable snapshot of the construct of LD as operationalized in research; (2) documents the quality and consistency of reporting in LD research, an important self-policing activity in all sciences; and (3) suggests emergent trends that may inform predictions regarding the future of the LD construct. Two research questions guided the review:

1. What LD identification criteria and procedures were used by authors to identify participants with LD in three prominent LD journals between 2001 and 2013?
2. Have the prevalence of the most common LD identification criteria (IQ-achievement discrepancy and low achievement) changed between 2001 and 2013?

METHODS

This review is an extension of a previous paper documenting the foci and characteristics of research published from 2001 to 2010 in three journals focused on LD (McFarland et al., 2013). In this study, we extended the search to further investigate those studies including participants explicitly identified as LD. We sought to review the LD identification criteria and procedures utilized in empirical research in those journals through 2013 to better understand the quality of reporting in research about LD and the nature of the LD construct in current research practice.

Literature Selection

Journal Selection

This review summarizes research focused on the identification, description, and treatment of LD published in refereed journals from 2001 to 2013. As in any review of this nature, the selection of inclusion and exclusion criteria is an inherently arbitrary task, in which the researcher must weigh tradeoffs associated with more versus less restrictive inclusion criteria. The literature search was guided by two competing needs: (1) the need to include enough literature to permit confidence in the representativeness of the sample and (2) the need to derive a final sample that was logistically feasible to code and analyze. We made an a priori decision to review a subset of journals with an explicit focus dedicated to the population with LD. Three journals were identified for review: *Journal of Learning Disabilities*, *Learning Disability Quarterly (LDQ)*, and *Learning Disabilities Research & Practice (LDR&P)*. Two of these journals, LDQ and LDR&P, are associated with international professional organizations whose explicit focus is to enhance the education of students with LD through the dissemination of LD-centric research. The third, while not associated with a specific professional organization, is the nominally affiliated LD journal with the highest impact factor. The selected journals each: (1) have an expressed mission to focus on a population with LD and (2) as a result of the explicit representation of LD in the journal title are strongly positioned to serve as primary sources for persons in the field seeking information related to this population.

Inclusion Criteria

This review includes all articles from the chosen journals published between 2001 and 2013 that met three inclusion criteria:

1. The article had to report novel results from an empirical study. Literature reviews and meta-analyses were excluded.
2. The study had to include participants with LD, based upon the authors' description. Studies including participants described in commonly understood disability language, such as participants with dyslexia, dysgraphia, dyscalculia, and reading/writing/math disabilities, were included. However, studies including participants described in more general terms, such as learning difficulties or poor readers, were excluded. While such studies undoubtedly investigate a similar population, this review concerns the scientific construct of LD as represented in research. We therefore limited inclusion to studies that evoked the LD construct to describe participants.
3. The article had to disaggregate results for participants with LD. Studies that disaggregate results for an LD group make an implicit claim of generalizability to other students with the same classification, and this review provides objective data to evaluate the external validity of such claims. Therefore, studies that included participants with LD but did not report separate results for students with LD were excluded.

Systematic Screening

In the systematic screening phase, we accessed all articles published between 2001 and 2013 ($N = 1{,}149$) to capture basic information, including: (1) author and year, (2) topic of interest, (3) population of interest, (4) whether novel data were collected, (5) whether an intervention was studied, (6) whether participants with LD were included, and (7) whether data for an LD group were disaggregated. Throughout this phase, we employed a combination of closed coding choices with explicit decision rules and open coding, in which the coder attempted to capture the information from the article as completely as possible. All coding decision rules were documented in a coding rules sheet attached to an electronic coding document. This allowed for easy, real-time access to rules during group and individual coding. The corresponding rules sheet also enabled individual coders to address ambiguities in coding rules by creating and documenting a new,

clear decision rule to be followed in all subsequent systematic screening.

One hundred sixty-eight (15 percent) of a total of 1,149 articles were screened simultaneously by at least two members of the research team. This permitted discussion and helped us create consistent screening rules. In addition to collaborative screening, we independently double-screened 301 (31 percent) of the 979 articles that had been individually screened to assess reliability. Reliability was high across raters and categories. Kappa (K) by coding category ranged from .929 to .987.

Coding

After systematic screening, we conducted a more detailed coding of articles that met inclusion criteria ($N = 284$). We documented: (1) the person or agency responsible for diagnosing LD, (2) the criteria used to identify LD, (3) the type of LD (i.e., the specific academic area), and (4) the measure or measures used in the LD identification process.

During this second phase of coding, we initially utilized closed coding processes in all categories. During reliability checks, however, we discovered some variability across raters in the categories capturing LD identification criteria, type of LD, and specific measures utilized for LD identification. To address this, we created open coding cells in those categories to allow the individual coder to copy and paste the participant description, identification criteria, and measures utilized directly from the study. Following the open coding decisions, each article was double-coded by the authors. Any identified disagreements were discussed and a consensus was reached between the two coders.

RESULTS

A total of 284 articles qualified for inclusion. This number represents slightly less than one-quarter (24.7 percent) of all articles published in the selected journals during the reviewed timeframe ($N = 1{,}149$).

Among the 284 qualifying articles, 41.5 percent of total participants were at the elementary level (grades k–5), 26 percent were in secondary grades (grades 6–12), and 28.5 percent of articles included a sample of students from both the elementary and secondary levels. Interventions, or the manipulation of an independent variable, were enacted in 30 percent ($n = 84$) and 57 percent ($n = 162$) included a minimum of one dependent variable in an academic area (e.g., reading, math). A plurality of studies investigated the nonacademic characteristics of students with LD ($n = 99$; 35 percent), followed by studies investigating literacy ($n = 85$; 30 percent), math ($n = 45$; 16 percent), and identification processes ($n = 16$; 5.6 percent). To investigate differences between research conducted in the United States and elsewhere, we categorized studies as being of "U.S." or "international" origin and disaggregated results accordingly. Overall, 173 (61 percent) of the articles included a U.S.-based population.

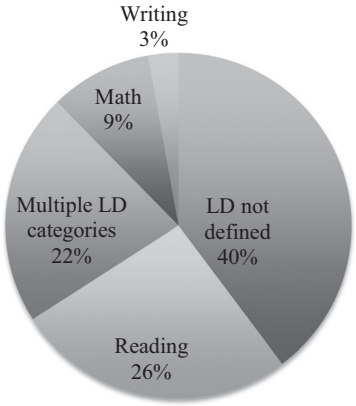

FIGURE 1 Area of LD for participants as specified by authors.

Area of LD for Participants in Empirical Research

Across proposed definitions and identification criteria, LD is marked by low achievement (LA) in a specific academic area. We therefore documented the stated deficit area corresponding to participants' LD diagnosis. Reading represented the most commonly reported specific area of LD ($n = 74$; 26 percent). However, the largest portion of studies ($n = 113$; 40 percent) included participants described as LD, with no explicit reference to the area of deficit. An additional 62 (22 percent) articles included participants described as LD with associated academic deficits in more than one academic area (Figure 1).

Compared with studies conducted in the United States, a relatively smaller number ($n = 36$; 32.7 percent) of international studies included participants described as LD without citing a specific area of academic deficit. In contrast, 76 (44 percent) of U.S. studies described participants with LD without explicitly stating the area of academic deficit. International studies were thus more likely to state participants' specific area of identified LD.

Specific to participants included in intervention research only, authors defined the specific area of LD in 52.4 percent of the identified studies ($n = 40$). When defined, students with an identified LD in reading were the most common participants in intervention research ($n = 22$; 26 percent).

LD Identification Criteria

We documented the LD identification criteria through which participants were diagnosed with LD in all qualifying studies ($n = 284$; Table 1). To identify participants having an LD, authors most frequently reported the use of a discrepancy criterion, in which academic achievement fell below intellectual ability by a specified amount ($n = 83$; 29.2 percent). The second largest percentage of studies did not report the identification method utilized to diagnose participants with an LD, or stated that participants were identified using district or state guidelines, with no additional explanation of the specifics of those guidelines ($n = 62$; 22 percent). Twenty-nine percent ($n = 81$) included participants with LD identified utilizing

TABLE 1
Criteria for LD Identification

Identification Criteria	*Percent of Total (N = 284)*
Discrepancy	29.2
LA	28.5
Criteria not stated	21.8
Other	7.9
District or state guidelines not specified	7.7
LA and/or discrepancy	4.9

Note. Discrepancy criteria required a discrepancy between a cognitive measure and an achievement measure. LA criteria required measured achievement in an academic area below a set cut point. "Criteria not stated" indicates author(s) provided no information regarding methods utilized to identify the included population as LD. "District or state guidelines not specified" indicates author(s) stated participants were identified as LD according to the district or state guidelines, but a description of said guidelines was not provided. "Other" included methods outside of the five closed coding categories. "LA and/or discrepancy" indicates author(s) included participants who demonstrated low academic achievement and/or a cognitive/achievement discrepancy.

TABLE 2
Parties Responsible for LD Identification

Responsible Parties	*Percent of Total (N = 215)*
School	43.0
Author(s)	27.2
Not stated	21.8
Other	8.1

Note. "School" indicates personnel from the local education agency were responsible for determining participant LD identification prior to inclusion in article population. "Author(s)" indicates article author(s), prior to inclusion in article population, made LD identification. "Not stated" indicates author(s) made no statement regarding the parties who identified included population as LD. "Other" indicates parties other than school personnel or article author(s) were responsible for identification of population as LD.

an LA criterion in which academic achievement fell below a specified level (often in combination with other exclusionary clauses).

International authors were more likely than U.S. authors to provide a description of the identification criteria utilized (international: $n = 96$ [87.3 percent]; US: $n = 126$ [78 percent]); and within studies providing descriptions, those conducted outside the United States were more likely to utilize an LA criterion ($n = 50$; 45.5 percent). Thirty-three percent of intervention studies ($n = 28$) reported that participants were identified as LD using a discrepancy criterion. However, 45 percent ($n = 38$) of the 84 studies implementing interventions either did not state the identification method or described the use of a nonspecified district or state guideline.

Parties Responsible for LD Identification

Persons or entities responsible for making the LD identification were also documented (Table 2). Overall, school personnel were cited as the identifying agent in 43 percent ($n = 122$) of the articles. Twenty-seven percent of articles identified the author(s) as making the LD identification, and 22 percent ($n = 62$) did not state who was responsible for the identification of participants as LD. Across the reviewed period of time, school personnel were consistently the most frequently reported identifying party. An anomaly occurred in 2008 when the number of studies reporting LD identification by authors spiked (Figure 2).

For studies based in the United States, authors relied heavily upon school personnel to identify article participants as LD ($n = 85$; 49 percent). Additionally, similar to the data associated with identification criteria, U.S. studies were more likely to exclude documentation of the LD identifying party. Studies implementing interventions relied on previous identifications of LD by school personnel in 54 percent ($n = 45$) of the studies.

Measures Utilized in the LD Identification Process

For each of the articles, we documented the reported measures used for LD identification. The majority of articles identifying participants as LD based on an ability-achievement discrepancy did not identify the specific cognitive measure ($n = 46$; 55 percent) or the specific achievement measure ($n = 55$; 66 percent) utilized for identification. When identifying a student as LD using LA as the singular marker, only an achievement measure is required. Within the 81 studies that reported LA for identification, 79 percent ($n = 63$) specifically identified the utilized achievement measure. Fifty-eight of the 81 studies utilized standardized achievement measures, and five used a measure developed by the author(s). The majority of studies utilizing an LA criterion were conducted internationally ($n = 50$). Within these studies, authors ($n = 16$; 32 percent of international) were less likely to report the achievement measure used in identification than were their U.S. counterparts ($n = 2$; 6.5 percent). Intervention studies that relied on a discrepancy criterion ($n = 28$) overwhelmingly did not report the cognitive ($n = 21$; 75 percent) or achievement measure(s) ($n = 23$; 82 percent) used for student identification.

IQ-Achievement Discrepancy and LA over Time

Data on the percentage of studies utilizing the IQ-achievement discrepancy and LA criteria disaggregated by year reveal considerable variability across time, with few discernible patterns (Figure 3). From 2001 to 2010, the IQ-achievement discrepancy and LA criteria alternate in terms of which criterion is utilized in a plurality of studies. However, beginning in 2010, a decrease in the proportion of studies utilizing the IQ-achievement discrepancy begins. In contrast, the percentage of studies utilizing an LA criterion remains relatively flat before increasing in 2012 and 2013.

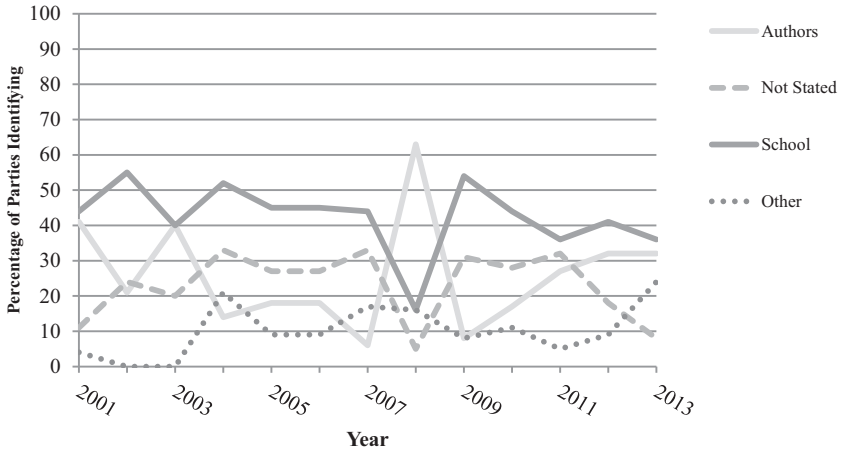

FIGURE 2 Parties responsible for LD identification over time.

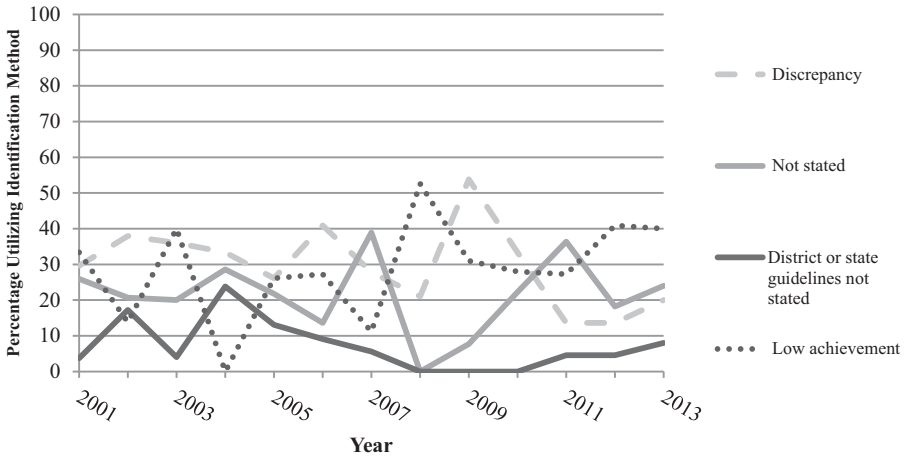

FIGURE 3 Identification methods over time.

DISCUSSION

The heterogeneity of samples of children identified as LD in research is a long-standing concern for the field (Durrant, 1994; Hammill et al., 1989; Kavale & Nye, 1981; Rosenberg et al., 1994). In this review, we examined reported methods of LD identification in educational research during the recent eventful epoch for special education and LD research. We sought to shed light on whether or not the historical lack of consensus regarding the definition and identification of LD had moved toward resolution.

Transparency in Reporting

Cumulatively, previous reviews raise disquieting questions about the quality of reporting in studies investigating LD and the generalizability of findings therein. The results of this review align with previous findings, by again identifying troublesome findings with regard to transparency in reporting and the coherence of the LD construct. First, nearly one-quarter of all identified studies investigating LD did not describe who identified the participants as having LD or how they were identified. Information on the specific area of LD was similarly lacking. Notably, the proportion of studies that relied upon prior identification without specifying the procedures or criteria utilized is roughly the same as that found by Durrant (1994), the most recent study to review LD identification methods in research. Durrant argued that such opacity in participant descriptions was troubling because of variability in the application of identification criteria across different states, districts, and schools (MacMillan & Siperstein, 2002), as well as the heterogeneous manifestation of LD. Hammill et al. (1989) and Rosenberg et al. (1994) state that such vague descriptions of samples (e.g., school-identified, state guidelines) render study results "worthless" (p. 178) and "meaningless" (p. 56).

The finding of vague descriptions of students with LD within the subset of articles reporting the implementation of an intervention is particularly troubling because intervention studies make claims of generalizability for specific populations. If the population cannot be clearly defined, external

validity is in question and replication is hindered. As stated 25 years ago by Hammill et al. (1989), insufficient description of sample characteristics "contributes very little to our understanding about the nature of LD or the kinds of LD students for whom an intervention program might be appropriate" (p. 178). These issues are particularly problematic considering the time frame reviewed in this study, because it spans a significant upheaval in the federal regulatory framework for the identification of SLD. For the first time since original codification of SLD in federal law, states were allowed the option to use criteria other than an ability-achievement discrepancy to identify students with SLD. The review also spans the years leading to a significant shift away from ability-achievement discrepancy criteria within the updated Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013). The introduction of additional, competing frameworks for the definition and identification of LD necessitates an increased emphasis on clarity in reporting.

Lack of Control over Identification Procedures

A unique contribution of this article is collected data on the party responsible for LD identification for article samples. The overwhelming majority of participants were initially identified as LD by school personnel. This aligns with the finding that the majority of articles included did not state how students were identified as LD, or stated that identification was made following district or state guidelines, without further specification. This finding is troubling because it introduces a significant source of variability in the LD identification process. There are no uniform guidelines for LD identification across or even within states. Many states allow for multiple identification procedures and even permit conceptually different definitional frameworks (Maki, Floyd, & Roberson, 2015). Furthermore, considerable variability in test interpretation by school personnel is well documented (Ross, 1990). As a result, research designs that rely on LD identification by outside parties introduce another significant threat to the external validity of their study.

The Persistence of IQ-Achievement Discrepancies

Among those studies that did report the specific criteria by which participants with LD were identified, there was considerable variability. The IQ-achievement discrepancy criterion was most commonly used, followed by LA criteria. Notably, we did not identify any study that explicitly stated the use of an RTI framework to identify LD. This is not to suggest that no studies in the past decade investigated interventions for, or the characteristics of, students who demonstrate inadequate response to intervention. However, no study stated that the researchers or the school utilized an RTI framework to identify a generalizable sample of students with LD. This finding likely reflects: (1) previously identified trends in terminology (McFarland et al., 2013), which may avoid terms such as "LD" and "dyslexia" because of ongoing controversies, in favor of instructional terms such as "at-risk" or "struggling" learners; and (2) the requirements of time and resources necessary to utilize an RTI framework to identify students as LD prior to conducting an empirical investigation.

It is notable that the largest percentage of studies identified participants through a discrepancy framework (in isolation, or in combination with LA criteria). However, beginning in 2010, the proportion of studies utilizing IQ-achievement discrepancy criteria drops precipitously. At the same time, the percentage of studies utilizing LA criteria increases. This trend could be anticipated given the lag between researchers publishing research and the codifying of RTI in IDEA 2004. Such data are preliminary, and should be interpreted with caution. However, a continuation of these trends could signal an important shift in the research community away from the IQ-achievement discrepancy criteria in research and toward an alignment of scientific knowledge and practice.

Limitations

We deliberately targeted three prominent journals with a dedicated focus on LD for inclusion in this review. We chose this limited scope because of our interest in capturing an accurate and valuable snapshot of the construct of LD as operationalized in research. We felt that limiting selection to LD-specific journals was theoretically defensible and logistically feasible, but still provided sufficient data for analysis. However, as a result of this limited scope, we cannot account for research specifically related to LD published in other journals. The inclusion of prominent international journals like the *British Journal of Learning Disabilities* and the *International Journal for Research in Learning Disabilities* – or of journals that publish articles including participants identified as LD (e.g., *Exceptional Children* and *Journal of Special Education),* but whose scopes and missions include all populations in special education – may have changed our findings. However, the triangulation of our findings with the findings of previous reviews would signify that this limitation is minimal (Durrant, 1994; Hammill et al., 1989; Kavale & Nye, 1981).

Additionally, it should be noted that the time frame studied is short and observed trends should be interpreted with caution. Although the impetus for this review was found in significant changes in federal law around LD identification, these changes should not be interpreted as having an immediate impact, as they would in an interrupted time series, for example. Publication lag and the lag in funding mechanisms make such inferences difficult. Instead, the trends should be interpreted broadly, across the full span of the review (and future reviews investigating similar issues).

Summary and Implications

A total of 1,149 articles published across 13 years in three prominent LD journals were reviewed in an effort to gain a snapshot of how the construct of LD is operationalized

in research. One-quarter of the total corpus met criteria for inclusion. Results of the review were consistent with previous historical reviews, identifying a lack of transparency and consistency regarding the identification of LD in empirical research. This is an unproductive and persistent trend, and confirmation that this trend, first identified almost 40 years earlier, continues to exist is an area of concern for the LD field. One explicit concern is that the legal benefits of SLD will be undermined if the scientific understanding underlying the disorder is invalid or misapplied. For much of its history in federal law, SLD was operationally defined via the largely discredited ability-achievement discrepancy. At present, we are aware of few in the LD research community who would advocate a return to identification methods based on a discrepancy between IQ and achievement (Bradley et al., 2002). And yet, as we review the identification criteria utilized in the past decade, the largest percentage of studies included students identified through a discrepancy framework. This disconnect between the field's best understanding of the construct and how it is operationalized in empirical research is of concern, because of the influential role of the research community in shaping understanding of the construct in law and practice. Indeed, would a conscientious consumer fully understand the disfavor with which the ability-achievement discrepancy is viewed if she is most likely to find participant samples with LD identified through this very same discrepancy? Furthermore, this review identified a number of studies that did not include information defining how the participants with LD were identified as such. Can a consumer generalize the research to their population with LD if no description of how research participants were identified is provided? It may be asked why editors and editorial boards continue to publish articles containing samples labeled as LD that are poorly defined and may be inappropriately identified.

Variability in how the phenomena of LD are defined and identified in empirical research has existed since LD entered into the public lexicon. It may be unrealistic to expect consensus on the defining features of LD to emerge in the immediate future. However, the fundamental task of every scientific discipline is to create a defensible construct. A defensible scientific construct depends upon clear descriptions of persons, settings, treatments, and outcomes, so that consumers can clearly understand the empirical and theoretical grounding of the construct of interest (Shadish, Cook, & Campbell, 2001). A defensible construct allows experimental results to be scrutinized, supported, and applied. Consequently, we contend that it is essential that the LD research community move toward more complete descriptions of participants with LD, including information about the criteria with which they were identified and the persons by whom they were identified.

NOTE

1. In this article, we draw a distinction between specific SLD, which we define as a legal designation for the provision of special education services, and LD, which we treat as the scientific construct of LD.

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