Revisiting Discrepancy Theory in Learning Disabilities: What Went Wrong and Why We Should Go Back

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The rise in popularity of Response to Intervention (RTI) as a method of identifying Learning Disabilities (LD) is partially due to the psychometric and theoretical issues inherent to the use of IQ tests in the once popular discrepancy method of identification. However, both RTI and discrepancy theories have their shortcomings, and criticisms directed at either method are usually applicable to both. This conceptual article puts forward a justification for using tests of the cognitive processes that are implicated in LD as a better method of LD identification. Although the unsuitability of the discrepancy method to accurately identify LD students is well established, it does represent the construct of LD well. Therefore, the discrepancy method can be used as an effective baseline measure against which improved identification procedures based on cognitive processes can be measured. Once these cognitive processes are more clearly defined, tests of these processes offer promise for LD identification.

■ **Keywords:** learning disabilities, discrepancy, response to intervention, cognitive deficits

The idea that Learning Disabilities (LD) such as dyslexia do not exist, at least in a form that could be usefully differentiated from any other academic difficulty (Elliott & Gibbs, 2008), persists even in recent times. This is despite a great deal of neurological, experimental and genetic evidence to the contrary (e.g., Grigorenko, 2001; Zeffiro & Eden, 2000). This continuing doubt stems from the insufficient operationalisation of LD (Speece, 2008). Existing methods of identification such as Response to Intervention (RTI), discrepancy and low achievement have theoretical flaws that result in inaccuracy (Francis et al., 2005; Reynolds & Shaywitz, 2009). Identifying LD on the basis of cognitive processes can overcome many of these problems. However, any new operationalisation will need to be compared to an existing operationalisation of LD in order to establish concurrent validity.

Although LD is widely accepted as a permanent processing disorder (Shaywitz & Shaywitz, 2004), a range of definitions for the disorder is available. In 2004, the

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Individuals with Disabilities Education Act (IDEA) in the United States defined learning disabilities as 'a disorder in one or more of the basic psychological processes involved in understanding or using language that may manifest itself in an imperfect ability to: listen, think, speak, read, write, spell, or do math' (34 C.F.R. §300.7[c][10]i). These difficulties could not be the result of other disabilities, nor could they be due to environmental, cultural or economic disadvantage.

Unfortunately, definitions ultimately have little bearing on how learning disabilities are identified or operationalised. For instance, while lifetime prevalence of the disorder in United States has been cited to be as high as 9.7% (Altarac & Saroha, 2007), others have found a prevalence rate of 4 to 5% (McNamara & Willoughby, 2010). Prevalence estimates are continually under debate and vary considerably mainly due to differences in identification.

The debate on the best operationalisation of Learning Disabilities (LD) has lately been reduced to a two-sided argument with Response to Intervention (RTI) on one side and the discrepancy method on the other. The discrepancy method of identification relies on a discrepancy between aptitude and achievement in order to identify students with LD, while RTI identifies those students that do not adequately respond to intervention. Both methods have detractors and, as will be discussed in this article, the detractors on both sides of this argument have valid points. What is widely accepted is that identifying students with LD as early as possible in order to facilitate appropriate remediation is important. This is because students with LD are more likely than their non-LD peers to leave school early (Marder & D'Amico, 1992), receive welfare due to unemployment (Taylor & Barusch, 2004) and become incarcerated (Zabel & Nigro, 1999).

This article will examine the issues with the two most popular methods of LD identification, namely discrepancy and RTI, and discuss the shared criticisms of both methods. A case for utilising what is now known about the etiology of LD to formulate a method of identification based on cognitive processing deficits will then be presented. Finally the case for using the discrepancy method as the basis of concurrent validity for this new model will be proposed.

Discrepancy

The discrepancy method has been used widely for identification of LD (Reschly & Hosp, 2004) and is based on the idea that a significant difference between a student's aptitude and their achievement would be due to a disorder that prevented them from fulfilling their potential (Rutter & Yule, 1975). Over time, as this method of identification gained popularity, LD became synonymous with the idea of unexpected underachievement. Although the discrepancy approach was commonly utilised, especially during the 1990s, this method was criticised on both psychometric and theoretical grounds. The main criticisms included the psychometric problems with difference scores, over-identification of high-IQ students, and the inability of the regression-adjusted discrepancy method to sufficiently account for either of these issues (Cahan, Fono, & Nirel, 2012; Cotton, Crewther, & Crewther, 2005; Stuebing et al., 2002).

Some of the statistical issues with the use of discrepancy scores in LD diagnosis were also highlighted more than a quarter of a century ago (Reynolds, 1984). One of

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the main criticisms was that prevalence rates of LD are dictated by the criterion for identifying a significant difference rather than the actual prevalence of a disorder. Furthermore, the probability of being diagnosed with LD is altered if different tests with different standard deviations and correlations are used, regardless of the test designer's intent (Reynolds, 1984). Consequently, the probability of being identified as having LD is shaped by too many factors outside of the existence of LD.

Another issue with the discrepancy method is the over-identification of students with high IQ and under-identification of those with low IQ, a statistical issue caused by regression to the mean (Cone & Wilson, 1981). As a result, formulas were adjusted to take this regression to the mean into account (e.g., McLeod, 1979). Although this adjusted regression method was touted as a solution to some of the psychometric problems that the discrepancy method faced (Willson & Reynolds, 2002), it was also dismissed because it defeated the very purpose of a discrepancy in the first place as this statistical artifact should be naturally expected (Van den Broeck, 2002). Furthermore, the regression-adjusted discrepancy was described as conceptually flawed, with the claim that if IQ is not responsible for say, reading ability, then no amount of adjustment will make it so (Cahan et al., 2012). Other psychometric issues inherent to regression-adjusted discrepancy, for instance, that the two tests used are rarely co-normed (Mather & Schrank, 2001), were also put forward. Despite all these criticisms, some studies still utilise the discrepancy method or a variation of it for the identification of LD (e.g., Stoodley, Ray, Jack, & Stein, 2008; Wong & Ho, 2010), and it is popular with school psychologists (Machek & Nelson, 2007).

RTI

Much more popular of late is the use of RTI in LD identification (O'Donnell & Miller, 2011). RTI is a system of multiple waves of intervention provided to those students who have not responded to their learning environment to date (D. Fuchs & L. Fuchs, 2006). RTI is often implemented in tiers, where a student who does not respond to intervention at the first tier will go on to the second, and failure to respond to the second tier will lead to a referral for comprehensive testing. The theory behind this system as an identification tool is that repeated and increasingly individualised intervention will differentiate between those who are, for instance, not reading because of environmental issues and those who are not reading because of a disability (L. Fuchs, D. Fuchs, & Hollenbeck, 2007).

Despite the popularity of RTI, the assumptions inherent in it present a number of theoretical issues. For instance, contradicting the idea that students with LD cannot respond to treatment is the finding that dyslexic students who had abnormal brain patterns pre-intervention showed similar brain activation to controls after intervention (Richards & Berninger, 2008). Furthermore, the existence of a wide range of reasons aside from LD that would prevent a student from responding to intervention increases the Type II error of this method (Reynolds & Shaywitz, 2009). Finally, there does not seem to be solid ground for the assumption that all the interventions that are delivered to students will be of a consistently high standard. As noted by Berninger and Holdnack (2008): 'failure to respond to instruction simply signals that another approach to instruction should be brainstormed,

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implemented, evaluated, and if necessary, revised' (p. 76). These criticisms have not, however, stopped the declaration of RTI as the method of identifying LD with the best evidence base (Fletcher & Vaughn, 2009).

Although some researchers argued that the success of RTI has all but replaced the need of neuropsychological testing (Hiscock & Kindsbourne, 2008), others have suggested that RTI be used in conjunction with other forms of assessment. These complementary assessments include cognitive processing testing (Anastasiou & Polychronopoulou, 2009; Holdnack & Weiss, 2006), dynamic assessment (D. Fuchs et al., 2007; Grigorenko, 2009), or psycho-educational assessment (Riccio, 2008). However, this perceived need for additional assessment is the crux of the problem with RTI. While RTI may be effective as a method of allocating resources in a classroom, the very existence of a debate surrounding the form of assessment that should accompany RTI speaks volumes about its effectiveness as an identification tool in and of itself.

Shared Problems

One of the most striking aspects within the literature surrounding the RTI-discrepancy debate is that many criticisms levelled at either method of identification are actually relevant to both. For instance, one review of the implementation of RTI in the United States found that most states implemented the three tier model in vastly different ways, and that the states have not necessarily enforced the research-based practices aspects so vital to RTI (Berkeley, Bender, Peaster, & Saunders, 2009). This, of course, is similar to the criticism levelled at the discrepancy method of identification, namely that the varying methods of determining the significance of an aptitude achievement discrepancy reduced the method's reliability (Sternberg & Grigorenko, 2002).

Another example of shared criticism of RTI and discrepancy is how little either method informs remediation. For instance, while aptitude and achievement measures alone cannot provide enough information to facilitate remediation (Silver et al., 2008; Willis & Dumont, 2006), the same criticism applies to RTI in so much as a failure to respond to intervention gives no clues as to why that failure occurred (Reynolds & Shaywitz, 2009). It has also been argued that the discrepancy method misses out on those who compensated for their shortcomings (e.g., phonological decoding) to date and therefore does not show a sizeable discrepancy (Gustafson & Samuelsson, 1999). However, the same could be said for those who are compensating well enough in an RTI environment to avoid Tier 1 selection for remediation. In fact, a common criticism of RTI is that gifted LD students are overlooked (Volker, Lopata, & Cook-Cottone, 2006).

Despite early screening and identification being described as a cornerstone to LD prevention (Barnes & Wade-Woolley, 2007), this is an area that is problematic in both the RTI and discrepancy methods of identification. Although proponents of RTI accused the discrepancy method of a 'wait to fail' mentality (D. Fuchs & L. Fuchs, 2006, p. 96), proponents of the discrepancy method accused RTI of a 'watch them fail' mentality (Reynolds, 2008, p. 20). Essentially, both sides of this argument are right. For instance, when the discrepancy method of LD identification is implemented, a student will often have to 'wait' for their difficulties with reading

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to become severe enough to result in a significant discrepancy with aptitude before being identified. Meanwhile, a student in an RTI paradigm will not even qualify for the first tier of intervention until they fall into the low achievement range. In both cases this is worrying because students who have the ability to memorise the small number of words that they are introduced to in the early years of education may not have their problems recognised until 3 or 4 years into their formalised education when the number of words they are expected to read rises exponentially (Woolley, 2007). This of course can lead to students being too far behind to catch up once their problems are recognised.

Cognitive Deficits

One of the best ways to avoid some of the issues inherent in LD identification using the RTI or discrepancy approaches is by testing for the cognitive deficits that are thought to underlie LD. A call for screening on the basis of positive indicators of LD (including phonological processing and naming speed) was made by Nicolson in 1996. Although imaging techniques as diagnostic tools are not yet feasible, they may be in the future (Hudson, High, & Otaiba, 2007). In the meantime, the best method of identifying LD students is to assess them for the cognitive processing deficits that have led to their achievement difficulties in the first place.

Neurological studies have demonstrated qualitative differences in processing between LD students and their peers (Ingvar et al., 2002), and some theories have been based on utilising these differences as markers of LD. One example is Stanovich and Siegel's (1994) phonological core variable deficits model, which is supported by consistent findings of phonological deficits in students with LD (e.g., Caylak, 2010; Chung & Ho, 2010; van der Lely & Marshall, 2010). Although support has been found for the efficacy of phonological methods in detecting LD (Bekebrede, van der Leij, & Share, 2009), other processing deficits such as Rapid Automatic Naming (RAN) have been put forward in the double deficit hypothesis (Wolf & Bowers, 1999). Moreover, recent studies found further deficits that may need to be taken into account, including genetic evidence for the role of working memory (Berninger, Raskind, Richards, Abbott, & Stock, 2008) and short term memory (Laasonen, Oinonen, Sandbacka, Salakari, & Service, 2012) in dyslexia. These three deficits, namely phonological processing, RAN and working memory, are among a range of deficits that could be highlighted as marker variables for LD diagnosis.

The link between the ability to phonologically decode novel words and LD has been established for decades. In 1980, Snowling demonstrated that dyslexic children had significantly more difficulty matching nonword stimuli than reading matched controls. Studies like this were important because they demonstrated that the difference between LD readers and normal readers was specific to certain processes. More recent studies found that a phoneme segmentation task at kindergarten predicted later reading ability (Linklater, O'Connor, & Palardy, 2009) and that 9-year-old Finnish students with a reading disability were significantly poorer at recognising differences in phoneme discrimination than their non-reading disabled counterparts (Hamalainen et al., 2009). In another longitudinal study, phonological processing, morphological processing and RAN were all found to be significant predictors of

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reading ability (Torppa, Lyytinen, Erskine, Eklund, & Lyytinen, 2010). Importantly, a recent study found that phonological deficits occur independently of IQ (Tanaka et al., 2011).

In a review of the literature on naming speed and reading, Kirby, Georgiou, Martinussen, and Parrila, (2010) concluded that naming speed was responsible for unique variance in reading prediction, albeit stronger at a low level of reading than at higher proficiency levels. This correlation between RAN and reading stayed constant across English-, Chinese- and Greek-speaking students (Georgiou, Parrila, & Liao, 2008) and has also been found in Estonian students (Lukanenok, 2011). Further support for naming speed deficits in LD can be found in Savage and Frederickson's (2006) study. They reported that below average readers and spellers performed poorly on a rapid digit naming task as well as a phonological awareness task. This RAN deficit is not exclusive to LD students with reading difficulties as these deficits have been found in dyscalculic students (Willburger, Fussenegger, Moll, Wood, & Landerl, 2008).

While the importance of RAN and phonological processing in LD is well accepted, memory deficits have also received attention of late. Swanson, Zheng, and Jeerman (2009) found that both short-term and working memory deficits play a role in reading disorders. A meta-analysis that examined whether or not working memory and short-term memory problems represented a lag or deficit, found support for the deficit model (O'Shaughnessy & Swanson, 1998) and Baddeley's (1986) phonological loop. Other researchers have found evidence of a working memory deficit (Siegel & Ryan, 1989) or deficits in tasks that measure short term or verbal memory such as digit span (Jeffries & Everatt, 2004).

The processing deficits outlined so far are by no means a definitive list, as other processing deficits such as morphological processing or orthographic processing could also contribute to LD (Schiff & Raveh, 2006). For example, a Chinese study found that in dyslexics who deal with a non-alphabetic script, processing speed and orthographic processing were the two most distinct deficiencies in a dyslexic population (Ho, Chan, Lee, Tsang, & Luan, 2004). The integration of orthographic and phonological processing is also vital for reading and lacking in LD readers (Cao, Bitan, & Booth, 2008; Desroches et al., 2010). However, it is important that any test of orthographic processing should not also be testing exposure to print. This is because any test that is also assessing exposure to print will be not only be a measure of a cognitive process but also many of the external factors that affect how much exposure any given student has had to print. This will then lead to many of the problems surrounding the confusion between LD and environmental considerations in both discrepancy and RTI being present in a multiple deficits model as well.

Concurrent Validity

The ultimate success or failure of using cognitive processes as markers of LD can only be ascertained if comparisons can be made to a predetermined benchmark. This brings us to the issue of concurrent validity in LD research. One of the primary issues in establishing criterion based validity is that you need a 'well defined and demonstrably valid criterion measure' to which you can compare your current

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measure (Kane, 2001, p. 320). However there is currently no 'true positive' or 'gold standard' of LD to which diagnostic methods can be compared (Dombrowski, Kamphaus, & Reynolds, 2004; Van Der Heyden, 2011), and validation is difficult if not impossible without a well-defined yard stick for comparison. For example, if a researcher wished to put together a predictive screening tool of say heart attacks, they could utilise cross-sectional studies to develop a set of predictor variables and then validate the developed framework within a longitudinal study. In the study, people would be considered accurately identified if they were predicted to have problems and then went on to have a heart attack. In the case of LD identification, however, we are not just looking for those students who, for instance, cannot read. Rather, we are trying to identify those students who cannot read for a given set of reasons that have not yet been well defined or at least agreed upon.

To come back to the heart health analogy, researchers may wish to use an obesity measure to see if it is an appropriate predictor of occurrence of a heart attack. However, just as learning disabilities are not the only reason for reading problems, obesity is not the only risk factor involved in heart health; genetics, lifestyle, smoking and a range of other factors may play a part. As such, one cannot measure the predictive validity of a heart health measure by how well it predicts obesity.

The same logic applies to learning disabilities and reading — learning disabilities are only one reason why a student may not be able to read or achieve as they should academically. There is a wide range of other reasons for low achievement, including preschool experiences (Roberts et al., 1989), parents' education and income (Davis-Kean, 2005), parental involvement (Fan & Chen, 2001), motivation (Metsala, Sweet, & Guthrie, 1996) and behavioural issues (Hirvonen, Georgiou, Lerkkanen, Aunola, & Nurmi, 2010). As such, it is insufficient for a LD screening tool to be able to predict future poor readers. Instead, there is a need to identify those individuals whose future reading difficulties are caused by deficits in one or more cognitive processing abilities. This is why there has been such a focus on separating LD readers from those who have poor reading achievement without a neurological disorder, with the latter group often referred to as a Low Achievement (LA) cohort.

The primary advantage of separating LD and LA students is that remediation and accommodations can be appropriately designed with the etiology of the reading difficulties, be it LD or something else, taken into account. The advantages of individualised treatment compared to blanket treatment have been demonstrated in successful programs in the past (e.g., Andreassen, Knivsberg, & Niemi, 2006; Gathercole, Briscoe, Thorn, Tiffany, & Team; 2008). It does make sense that a student struggling with reading due to a phonological deficit would benefit more from a phonologically based program than a student struggling to read due to a poor home environment or behavioural issues in the classroom.

If we accept that it is important to differentiate LD students from LA students using a cognitive deficits approach, the question then arises as to how success in doing so is measured. If it comes down to a choice between the two most popular forms of LD identification, namely RTI or the discrepancy approach, then the reasons for choosing discrepancy are clear. First and foremost, RTI does not differentiate between LD and LA students, but rather differentiates between students who do or do not respond to intervention. Without evidence that the cause of the

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reading problem dictates the intervention's failure, there is little to be gained from using RTI as a base. In contrast, the discrepancy method of identification represents the 'classic' LD student quite well by using the idea of unexpected underachievement. In a review of identification and definition problems in LD, Scruggs and Mastropieri (2002) concluded that 'discrepancy is the most objective indicator of learning disabilities' (p. 164).

Nevertheless, there are obvious issues with using the discrepancy approach as the yardstick for validating a cognitive deficits model for LD identification. Given the previously mentioned issues with this method, some may be wary of a cognitive deficits method of identification that is guided by the presence of said deficits in discrepancy defined people with LD. However, countless studies have already been using this approach, but with a different aim in mind. Instead of trying to ascertain the cognitive deficits that should be used for identification, they are instead finding out about the cognitive profiles of those who have been identified as LD through other methods. The knowledge we already have about the cognitive deficits inherent to LD are more often than not drawn from research using the discrepancy method as a baseline comparison (e.g., Frijters et al., 2011; Katzir, Kim, Wolf, Morris, & Lovett, 2008; Schuchardt, Maehler, & Hasselhorn, 2008). What is suggested here is that the next step needs to be taken in which frameworks for identifying LD on the basis of these cognitive deficits are developed. High IQ readers may be a good initial group from which to base these frameworks. Despite the fact that high IQ and low IQ poor readers have no qualitative differences in their phonological processing deficits (Tanaka et al., 2011), high IQ poor readers are often found to have more trouble with phonological processing than low IQ poor readers (Johnston & Morrison, 2007). This may be because those students who have high IQs are less likely to be struggling for other reasons, a confound due to the positive correlation between reading achievement and aptitude, socio-economic status and motivation (Coutinho, Oswald, & Best, 2002; Davis-Kean, 2005; Metsala et al., 1996).

By selecting the discrepancy model of identification as the baseline, the cognitive profiles of LD students can be studied to ascertain which deficits should then be then used as positive predictors of LD. One important consideration will be which of the multitude of methods of identifying a significant discrepancy will be used. While this debate is not in the scope of the current article, it is an important issue and due consideration will need to be given to the debate on methods of assessing discrepancy, even if the aim of doing so has changed.

Although there are aspects of the discrepancy method, such as exclusionary criterion, that make it flawed, it is not so flawed that information cannot be taken from it that will enable a more accurate method of identification to be developed. One of the biggest advantages of this new model will be the removal of exclusionary criteria from the method of identification.

Removing IQ and Cultural Disadvantage From LD Operationalisation

Many of the problems with the RTI and discrepancy methods of LD identification noted in the literature were linked to exclusionary criteria. These problems could

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be avoided using a cognitive deficits framework. Exclusionary criteria are currently in place because issues such as low aptitude and cultural disadvantage could be alternative explanations for either a significant discrepancy between aptitude and achievement or a failure to respond to intervention. However, neither of these states are mutually exclusive to the presence of LD.

There are serious conceptual issues involved in excluding those students with low intelligence from a LD diagnosis. The students in question here are not those with mental retardation (MR), but rather those with an IQ of say 70–85 who are often excluded from both LD or MR diagnoses and designated with a LA label. However, there has never been any suggestion that the existence of phonological decoding deficits or any other processing difficulties and low intelligence are mutually exclusive, nor has it been demonstrated that those with low intelligence would not benefit from LD-based intervention.

It is important to acknowledge that the distinction between LA and LD students was originally made within a discrepancy paradigm. The subsequent discovery that LA and LD students had similar phonological deficits was then put forward as evidence that there may not be any point in differentiating between the two groups and was in theory damaging to the very idea of dyslexia or LD itself (Nicolson, 1996). However, another explanation of this finding is tenable. The similarity in phonological processing deficits could be explained by both the LA and LD groups containing true LD students as well as those who do not have LD, resulting in a reduced difference between the two groups in most tests, aside from IQ. In any study, when group membership is defined by the discrepancy method, each group will contain both LA and LD students, thus increasing intra-group differences and decreasing between-group differences. This is not to say that this differentiation was not once useful — much of what we know about the deficits inherent to LD come from studies using the discrepancy approach. Instead, it is put forward that these groups provide an estimation of the make-up of the groups and that similarities between the two groups may be a reflection of inaccurate methods of group allocation, rather than a sign that the differentiation is not required.

In this article, we argue that it is still important to differentiate between LD and LA students because such a differentiation may result in more appropriately targeted interventions. However, LA students should not be defined as those who have low IQ commensurate with their poor reading achievement. Instead, LA students should be defined as those students whose poor reading achievement cannot be explained by cognitive deficits. In fact, if the presence of LD is independent of intelligence, then low achievement cannot logically serve as an exclusionary criterion. While the existence of other disorders, such as mental retardation, might still be an exclusion criterion, LD students with subcritically low IQs can currently fall through a sizeable 10–20 point IQ gap where neither mental retardation nor LD diagnoses are available to them.

The same argument we have proposed for the exclusion of IQ in the determination of LD could easily be applied to the exclusionary criterion of 'cultural disadvantage' or socioeconomic status (SES). Aside from the negative effect low SES has on IQ (Linver, Brooks-Gunn, & Kohen, 2002), the exclusionary criterion of cultural disadvantage is certainly not based on a buffer that somehow protects a culturally disadvantaged student from, for example, phonological deficits. If LD

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is a disorder caused by cognitive processing deficits then lack of exposure to appropriate learning and LD are not mutually exclusive. There is no reason why a student who has not had an appropriate learning environment could not also have these deficits and therefore this exclusionary criterion is flawed.

It should be noted that the exclusionary criteria of low IQ and cultural disadvantage were essential to both discrepancy and RTI frameworks to avoid inflated Type I errors. This is because the students identified by these methods could have their identification alternatively explained by one of these exclusionary criteria. What is required instead is the ability to differentiate between, for example, low SES poor readers with LD and those whose poor reading achievement is actually due to their environment. By testing for the existence of cognitive processing deficits, this should be possible. If a low SES student has low reading achievement, yet does not seem to have any cognitive processing deficits, then it reasonable to work on the assumption that the student's reading difficulties are a result of their environment and not a neurological disorder. However, without testing such factors first, it is unfair to the student to assume that cultural disadvantage is the cause of low achievement from the outset.

The arguments proposed here, especially those that seek the removal of IQ tests in the determination of LD, may seem at odds with our proposal of using the discrepancy method as a baseline for comparison of an identification system grounded in cognitive processing deficits. While the discrepancy approach reduces the likelihood of LD identification for low IQ students, it is important to note that we are suggesting that this approach will only be used to identify the cognitive processing deficits of those students who exhibit low reading achievement but do not have the confounding factor of low IQ. Once these deficits have become established markers of LD, some LA students who would not meet the discrepancy criterion will meet the new guidelines. By using the very method that discriminates against low IQ students, we may be able to demonstrate that some of the current exclusionary criteria that have formed the basis for LD identification have been unwarranted.

Implications for Practice

One of the most important aspects of a multiple deficits model for those who are identifying LD in schools will be the reduction in time that is required for testing. Without the need for IQ tests, as would be required for discrepancy, or for long-term intervention programs before identification, as would be required for RTI, diagnosis of LD can be more time- and cost-effective using a multiple deficits model of identification. Furthermore, this information can be made available to the most critical person in the child's learning journey, namely the classroom teacher. Of course, much of this debate is somewhat hypothetical in an Australian context as LD is not currently recognised as a category for funding and therefore much of the focus on identification that would be found in other countries is not as relevant. However, it is possible that more concrete methods of identifying LD could bolster the argument for recognition of the phenomenon of LD.

The removal of the IQ test from LD diagnosis will not impact on the ability of the test of identification to inform remediation (e.g., Fletcher, Coulter, Reschly, &

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Vaughn, 2004; Willis & Dumont, 2006). Current remediation development is confounded by the diverse group of students who teachers are hoping to accommodate. By diagnosing on the basis of cognitive processes it should be possible to group students by their processing deficits, resulting in relatively homogeneous groups under the heterogeneous LD umbrella. This can then lead to tailored remediation or accommodations that are appropriate for the cognitive deficits identified in individual LD students. This is not to say that there are not many benefits to administering IQ tests in an educational psychology setting, merely that they will not be a requirement for diagnosis of LD, which may be important where administration of an IQ test may not be logistically or financially feasible.

One of the most challenging aspects of the multiple deficits model will be the change in the cohort of students identified. Not only will some students who would have otherwise slipped under the radar be identified, but some students who will have been identified in the past will now need to have their difficulties addressed in a different way. That there are poor readers who do not have LD is widely accepted in theory, but is possibly more difficult to accept in practice. A diagnosis of LD provides a label that potentially explains why a child might be struggling to achieve at the same level as his or her peers. However, there are some students who will not achieve the reading proficiency levels expected for their age or grade level for a multitude of other reasons. These children are no less deserving of assistance or remediation, but instead require something other than a diagnosis of a learning disability so that the causes of their problems with reading can better inform support and remediation. By acknowledging this fact and formulating remediation for these students that is targeted to their needs, just as would be done for LD students, different types of literacy difficulties can be more adequately addressed.

Conclusion

Many of the arguments against either RTI or discrepancy methods as a means of LD identification are actually relevant to both approaches because both are measuring possible secondary symptoms of LD. By directly measuring the cognitive processing deficits thought to underlie LD, it should be possible to bypass many of the problems inherent to RTI and discrepancy approaches in LD identification. However, in order to adopt a cognitive deficits framework, either RTI or the discrepancy method of identification needs to be utilised as a basis for convergent validity. Given that the discrepancy method is thought to better represent the essence of LD, despite many psychometric flaws, it is recommended that this method should be used as the yardstick by which success of a cognitive deficits approach is measured. The idea of utilising positive cognitive indicators as a method of LD identification is not new (e.g., Nicolson, 1996; Spagna, 1998). However, what is urgently needed now is a framework detailing the deficits that accurately predict LD. The use of these cognitive indicators will reduce the effect of confounding variables, such as intelligence and exposure to quality literacy teaching, which are integral to current approaches to LD identification. Adopting a cognitive deficits paradigm would benefit students and, importantly, help to legitimise the difficulties LD students face daily.

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