Dyslexia: a categorical falsehood without validity or utility

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Abstract

Children’s failure to develop proficiency in reading and writing continues to challenge educationalists, parents and carers. In this chapter we argue that the concept of dyslexia as an explanation for failure or as a starting point for intervention is fatally flawed. Our argument is that the concept is a socially constructed category with no scientific basis. Hence quasi-medical differential diagnosis is invalid and educationally divisive. We question this phenomenon, that persists despite the protestations of Stanovich (1994, 2005) and others, through a brief survey of work in the fields of social categorisation, cognitive psychology and neuroscience. In summary our view is that whilst there are some ‘natural’ tendencies to categorise, with regard to literacy there is no identified objectively defined and unambiguous discontinuity between skilled and unskilled reader. There is, therefore, no support for the persistence of a distinctive category of dyslexia. Further, the notion of ‘dyslexia’ in itself does not support appropriate intervention.

Introduction

Despite the ubiquitous nature of the concept of dyslexia, typically used to describe a failure to acquire sound decoding skills, fierce argument continues to rage in many countries around the world as to the scientific and clinical validity of this construct. At its simplest level, debate has centred upon whether dyslexia 'exists', or is, alternatively, a conceptual artefact that serves to exculpate those who fail to provide an appropriate educational experience. Others have argued that such a debate is meaningless (Elliott & Gibbs, 2009), for while there are clearly many children who encounter significantly difficulty in acquiring literacy, independent of the tuition they receive, subdividing this population into dyslexics and non-dyslexics is inappropriate, invalid and potentially discriminatory.
In this chapter we do not intend to underplay the experience and consequences of difficulty in acquiring fluent literacy. We fully appreciate that children and adults may be significantly distressed by failure in literacy (either or both spelling and reading). Such problems entail serious challenges for those who have responsibility for the education and emotional well-being of children and young people. For us, problems arise from two sources. One relates to fundamental problems with definition; the other is about the practicalities of providing support to those who are struggling to acquire proficiency in literacy.

As we will argue later in the chapter, there is a lack of any scientifically objective line of demarcation to determine in a consistent and rigorous fashion who will benefit from different and more specialised treatment by virtue of being ‘dyslexic’. Not only is there no clear line of demarcation, the notion or label of ‘dyslexia’ does not in itself indicate any specific form of treatment. As a result, educational administrators are forced to use arbitrary, ad hoc, definitions of dyslexia (such as the widely discredited IQ-Reading level discrepancy measure) to allocate resources and, in so doing, not only differentiate between children arbitrarily but also allocate specialised treatment and resources in an unfair and discriminatory fashion.

We do, however, recognise the considerable advances in understanding gained from research into factors associated with the development of reading development (see for instance Snowling & Hulme, 2005) and work that has shown the efficacy of appropriate forms of intervention (eg Hatcher. While these advances are reassuring for parents, educators and children, a consequence of this is the widespread belief that a diagnosis of dyslexia will be key to ensuring that appropriate educational steps are taken. Drawing upon the medical model: diagnosis is the key to determining treatment, and a diagnosis of dyslexia points to appropriate means of remediation. One of our aims in this chapter is to challenge the hegemony of quasi-medical categorisation – or diagnosis - of children exhibiting difficulties with literacy. We wish to emphasise that, in our view, the categorisation of some children as ‘having’ dyslexia, whilst others are alternatively conceived as
"garden-variety" poor readers (cf. Stanovich, 1988), is scientifically and socially problematic. Our purpose here is quite clear: to highlight evidence that illustrates the conceptual flaws in the conception of dyslexia as a distinct, differentially diagnosable condition, and to demonstrate how, perversely, this leads to damaging educational consequences for many.

Thus, our contention is that dyslexia is not a distinct and distinguishable category of impairment. We suggest that dyslexia is falsely reified, and is indistinguishable from the generality of reading difficulties. (This is, however, not a new assertion. Stanovich (1994) demonstrated very clearly that there is no valid means to dissociate dyslexia from other forms of reading retardation.) In order to support greater educational and social inclusion, as well as ensuring greater equality of opportunity, we will, therefore, argue that the maintenance of dyslexia as a differentially diagnosed condition is divisive and unfair. In short we will argue that dyslexia - as a differential term - is a social construct with arbitrary definition.

**Initial Confusion**

Let us start by noting that, despite Stanovich’s (1994) paper and his demonstration that a discrepancy definition of dyslexia has no basis in science,, a range of arbitrary definitions of dyslexia persist. Thus, for example, The American Psychiatric Association’s diagnostic manual (DSMIV, American Psychiatric Association, 1994) provides the following criteria for the diagnosis of dyslexia:

- Reading achievement substantially below that expected for the person’s age, measured intelligence and age-appropriate education.
- The disturbance in reading ability interferes with academic achievement or activities of daily living that require reading skills.
- If a sensory deficit is present, the reading difficulties are in excess of those usually associated with the specific sensory deficit.
Co-morbid ‘symptoms’ of dyslexia are often considered to include difficulties with: speech and language, short-term memory, ordering and sequencing, clumsiness, a sense of rhythm, rapid information processing, concentration, inconsistent hand preference, verbal fluency, phonic skills, frequent letter reversals (d for b, for example), mental calculations, self-image, and anxiety when being asked to read aloud. However, as Rice and Brooks (2004, p11) noted:

"There is no consensus …as to whether dyslexia can be distinguished in practice from other possible causes of …literacy difficulties. Many ‘signs of dyslexia’ are no less characteristic of non-dyslexic people with reading skills deficits. In our present state of knowledge, it does not seem helpful for teachers to think of some literacy learners as ‘dyslexics’ and others as ‘ordinary poor readers.’”

Rice & Brooks (p.11) also noted that at the broader theoretical level, similar ambivalence prevails:

“There are many definitions of dyslexia but no consensus. Some definitions are purely descriptive while others embody causal theories. It appears that ‘dyslexia’ is not one thing but many, in so far as it serves a conceptual clearing house for a number of reading skills deficits and difficulties, with a number of causes”.

In light of the above, important questions to be asked, therefore, are: ‘what creates or perpetuates the notion of dyslexia as a distinct entity?’, ‘what purpose might it serve?’, but most importantly, ‘is the notion at all helpful?’

We will approach the questions in stages; firstly, by considering the social construction and categorisation of children as ‘dyslexic’; secondly, by considering literature that deals with putative diagnoses of dyslexia and the scientific ideas and methods associated with such discriminations; finally, by addressing the utility of the concept.
**Socially constructed categorisation**

In general terms, it is apparent that psychological development depends on the uniquely individual interaction between brain and environment or, as Ferrari (2002) noted, development (normal and abnormal) depends on the socio-cultural context. More pertinent to our argument is the view of Pennington and Olson (2005, p 453) that ‘Dyslexia is an interesting example of the intersection between an evolved behaviour (language) and a cultural invention (literacy)’.

As we will detail later there seems to be no naturally evolved human cognitive mechanism to deal specifically with the codes of written language (see Wolf, 2008). Byrne (2005) described the complexity of the tasks involved in acquiring literacy. The enormity of the task is particularly evident for those seeking to acquire literacy in a language such as English where the relationship between phonological representation and orthography is anything but straightforward [and further complicated over time by the vagaries of writers and printers – see Crystal (2004)].

Thus, as the characteristics of the dominant oral language, the phonological structures within the language, and the relationships these have with their orthographic (written) representations vary from culture to culture (Caravolas, 2005; Seymour, 2005), incidence rates for supposed dyslexia also vary considerably. It is important to note that there is, therefore, no consistency in the definition or incidence of dyslexia across cultures.

Given the complexity of the task, it might be regarded as somewhat miraculous that literacy is acquired at all. But, once acquired, literacy is self-evidently a powerful social tool. It enables communication over distance and time. In comparison to the timescale of human evolution, however, the emergence of literacy as a communicational tool is very recent (Wolf, 2008). In evolutionary terms, literacy (in Western society at least) was, in the earliest stages, only available to a powerful elite, and was used as a means to both acquire and to maintain religious, social, cultural and political power. The ensuing aspiration and requirement that all should become literate
emerged more recently. Cook-Gumpertz (2006) has suggested that the transition from a societal position in which unauthorised attempts to acquire literacy were viewed as dangerously radical to the converse in which illiteracy was seen as the social and political danger, did not take place until the late 19th century. Once universal literacy is posited as an important social and educational aim, as Goody and Watt (1968) suggested, it follows that shades or gradations of literacy and illiteracy (almost inevitably requiring some form of label) may follow. Goody and Watt also highlighted the ensuing serious implications for schools – as ‘key institutions of society’ - if they are deemed to be unsuccessful in inculcating successful literacy. (In the UK, for instance, schools are currently rated and compared on a range of indicators that include measures of children’s literacy.) In such circumstances, it seems likely that schools would come to regard themselves as insufficiently knowledgeable, skilful or resourced and either attribute failure to innate characteristics of children (as being, for instance, ‘dyslexic’) or for other reasons, discriminate between such children and other, more able readers [for a discussion of issues related to teachers’ attitudes regarding their motivation to include see also: Ferri and Connor (2005) and Gibbs (2007)]. The alternative rationale, outlined above, located in relation to the idea that ‘literacy’ is an artefact of the interaction between human linguistic capabilities and random social constructs, is rarely invoked. Thus, in ways that are analogous to the phenomenon of ‘categorical perception’ (Harnad, 1987), children are placed in socially constructed categories, in this case, as being literate or not. Within the latter category there has been a further unjustifiable categorisation, as Stanovich (1994, 2005) and others have persistently argued, in which some children are seen as ‘dyslexic’ and others are perceived merely as poor readers.

In all of our social interactions, how we deal with people depends on how we perceive them - as well as how they are in themselves (Eiser & Stroebe, 1972). For reasons set out above, the issue of how we perceive and deal with people becomes particularly focussed and sharply dichotomised in the field of literacy. We will now discuss particular aspects of these social processes, specifically the
social construction of categories, and in particular how this relates to the phenomenon that has been labelled as dyslexia.

The social purpose of classification or category creation

In general, knowledge development is a social activity (Berger and Luckmann, 2002) with social purposes. Classification or categorisation is, certainly in western scientific orthodoxy, central to the development of knowledge (Estes, 1994; Jenkins, 2000). Within this paradigm, in order to be able to classify or categorise elements of a group, it is first necessary to be able to specify differences and similarities between members and non-members. Whilst for the purposes of scientific research it may be helpful and legitimate to partition groups using researcher-defined criteria (e.g. a Reading age two years below chronological age), such arbitrary distinctions are highly questionable in relation to the allocation of educational provision. As we will seek to demonstrate, in the case of reading difficulty there is no clearly delineated dividing line between what is and is not, dyslexia.

The act of social category creation

There is now a substantial literature in the fields of sociology and psychology that addresses theories and features of social categories. Social categories are defined or created by others (Jenkins, 2000). Harnad (1987) noted that categorisation requires the reliable detection of features that distinguish members of a category from ‘confusable nonmembers’. However, Rothbart and Taylor (1992), for instance, argued persuasively that many social categories are treated by laypeople as if they are natural categories with clearly identified biological underpinnings, as well as being historically and culturally invariant (see also Medin and Ortony, 1989). This ‘essentialist’ view has been challenged by Haslam, Rothschild and Ernst (2000) who reported finding a two factor structure to social categories. One factor corresponding to the concept of natural kinds as delineated by Kripke (1980) and Quine (1977) is characterised by specific and necessary properties of immutability, discreteness and historical stability. The other, corresponding to the concept of reification, is suggestive of
‘entitity’ (Campbell, 1958) in seeming to have homogeneity and coherence as a meaningful entity that is itself informative, uniform and exclusive. Haslam et al suggested that although ‘social categories, like artefacts, reflect historically situated human desires, needs and conventions’, they come to be treated as though they have an underlying essence.

We suggest that this is the situation with regard to ‘dyslexia’ since, as we have argued above, dyslexia lacks historical and cultural consistency.

It would, however, not be logical to simply propose that the converse was necessarily valid and that something treated as a category with a natural ‘essence’ but evidently lacking discreteness, immutability, homogeneity and coherence, was merely a social category. It is also necessary to indicate that the category has no clearly defined biological underpinning discriminants.

In order to examine possible biological accounts for dyslexia we therefore now turn to experimental and scientific investigations.

The scientific and diagnostic treatment of the phenomenon

As already noted, psychological and experimental studies have revealed much of value in understanding the course of development or the failure to acquire skills in literacy (see Snowling and Hulme, 2005). However, the study of biological factors (see Fischer, Bernstein and Immordino-Yang, 2007) whilst providing many related insights, do not yet provide any evidence of substantive organic or biological entities underpinning literacy per se. Further, and more crucially, it is less clear whether these findings are of use in determining whether or not someone may be categorised as dyslexic, and if so, what the practical consequences of such a description might be. Whilst, as we have already implied the distinguishing characteristics (the phenotype) of dyslexia may seem obvious, it is almost certain that we should regard reading generally (and those features that may lead to a diagnosis of
dyslexia in particular) as having significant phenotypic plasticity – for the psycho-linguistic reasons adduced above.

We first review evidence from biological, brain-based and cognitive studies before returning to the persistent issue of the use of IQ/Ability tests in the assessment of dyslexia.

**Biological and Genetic factors**

Given the quasi medical status that dyslexia appears to have, it is, perhaps, understandable why considerable resources have been devoted to discovering the underlying biological essence of this condition (see for example Fischer, Bernstein and Immordino-Yang, 2007; Mody and Silliman, 2008).

Functional magnetic resonance imaging (fMRI) studies show great promise and have, to date, yielded interesting findings that have helped improve current models and theories (see, for instance Richards et al, 2005; Shaywitz and Shaywitz, 2005; Temple et al, 2003). However, it needs to be noted that, in essence, current findings can, only be regarded as correlational and not indicative of causal relationships (see Paré-Blagoev, 2007; Schulte-Körne et al., 2007).

At the yet more fundamental level of genetics, whilst it seems there may be some evidence of heritability (Grigorenko, 2001), it is most likely this relates to underlying language development (see also Bishop and Snowling, 2004; Duff et al, 2008). However, even if the genotype could be detected (and that seems highly problematic; see, Grigorenko and Naples, in press; Thomas and Karmiloff-Smith, 2002), as we have already shown, environmental factors (for instance host language and culture) would seem to be obvious compounding influences. Critically, as Grigorenko and Naples (in press) and Wolf (2008) indicated it is highly unlikely that hypothesised mechanisms would be related solely to the development of reading. This is hardly surprising given the relatively (in terms of human evolution) very recent emergence of writing and reading as communicational tools (Wolf, 2008).
At the level of neurological and anatomical brain structures, therefore, it seems quite improbable that structures or mechanisms directly and uniquely implicated in reading could be found. We can, therefore, dismiss claims for immutable biological underpinnings.

**Cognitive Factors**

Although a number of competing theories about the cognitive processes underlying literacy have been proposed, the dominant account now supports the role of phonology. This perspective recognises that while language and speech are natural human abilities, reading and writing are parasitic on language and have to be taught (Mattingly, 1972; Shaywitz and Shaywitz, 2005). Thus, in order to acquire proficiency in literacy, one needs to be able to recognise different sounds in spoken language and relate this to the orthographic symbols that represent the language in writing. Whilst this appears to be the most complete and coherent available theory at present (Torgesen, 2007), it is acknowledged that it does not provide a full account (Snowling, 2008; Torgesen, 2007) and there is still debate about whether phonological awareness is the key determinant of success or failure in literacy (Vellutino et al., 2004).

Cognitive accounts demonstrate how the task of becoming literate (Byrne, 2005) is complex, irregular and dependent on other linguistic and cognitive abilities. What these accounts do not show, however, is any clear evidence of a distinctive discontinuity in the dimensionality of reading and associated cognitive abilities. To reiterate, measures of word literacy and underlying skills lie on a continuum (Shaywitz and Shaywitz, 2005). On this basis we can, therefore, dispense with the concept of dyslexia as a distinct entity with clearly defined boundaries. With reference to the literature on categorisation, dyslexia does not satisfy the criteria of essentialism in that it does possess clearly defined ‘biological underpinnings... [and is not] historically invariant and culturally universal... [with sharp] boundaries ... not susceptible to sociocultural shaping’ (Haslam, Rothschild and Ernst, 2000, p114).
The use of IQ in the identification of dyslexia

‘Developmental dyslexia is defined as unexpected difficulties in learning to read in children of average or above average intelligence.’ (Nicholson & Fawcett, 2007, p135; see also the DSMIV criteria cited above.)

This type of definition has for too long been dominant and widespread (McNab, 1994; Presland, 1991). Despite the case against its use, and the real-world implications for those who struggle to acquire literacy, it is puzzlingly persistent. For advocates of inclusive education, the issue is particularly critical since the use of the IQ-discrepancy model can serve to exclude children from specialised intervention (Catts, Hogan and Fey, 2003; Francis et al, 2005; Stanovich, 2005).

Stanovich (1994, 2005), Coltheart and Jackson (1998), Vellutino et al (2000), Vellutino et al (2004), and others, have long argued against the continued use of IQ-discrepancy definitions of learning difficulties, specifically dyslexia. As Stanovich (1994) contended, dyslexia has so many empirically unverified connotations and assumptions, the term should be abandoned. This argument is supported by empirical studies. Thus, Stanovich and Siegel (1994) were unable to find significant differences between ‘dyslexic’ (defined as having significant IQ-Reading discrepancies) and other poor readers on a range of tests of phonology and non-word reading. Similarly, Hatcher and Hulme (1999), in a longitudinal study of predictors of response to intervention found no effects on word reading accuracy of IQ, although, perhaps unsurprisingly, there was evidence of a relationship between aspects of verbal IQ and reading comprehension. Stuebing et al (2002) conducted a meta-analysis and found substantial evidence of overlap in the functioning of ‘IQ-discrepant’ and ‘IQ-consistent’ readers. More recently, Francis et al (2005) have shown how the practice of imposing an arbitrary cut-off on the distribution of scores (which is embodied by the IQ-discrepancy approach) leads to instability in groups and invalid decisions for individual children.
In simple terms, therefore, no absolute categorical boundary can be legitimately set on the basis of IQ-Achievement discrepancies, or on any other basis, between those who can and those who cannot (whether or not such individuals are labelled as dyslexic). Measures of word reading/spelling and underlying and requisite skills lie on a continuum (Shaywitz and Shaywitz, 2005). Academic researchers may still allocate children to ‘normal’ and ‘non-normal’ groups on the basis of arbitrary researcher-defined criteria in order to test for patterns of functioning that discriminate between groups, post hoc. For academic psychologists, distinguishing between groups of readers/non-readers on the basis of intelligence may shed light on underlying cognitive mechanisms (for example, Snowling, 2008). However, the situation for educationalists and administrators is rather different and, as indicated above, there is no theoretical or ethical reason for making use of a discrepancy definition of non-readers as do, for example, Nicholson and Fawcett (2007).

Setting all the above critiques to one side (momentarily) could ‘dyslexia’ have educational utility?

One may ask whether, if it were possible to identify clearly, reliably, validly a child with dyslexia, to differentially diagnose dyslexia from other forms of reading failure, would that in itself be helpful?

We suggest that if the label has any utility it should differentially indicate what treatment or resources should result. As Stanovich (2005, p104) wrote:

‘...the summary model of difficulties in reading that is generally accepted [due to difficulties with phonology]... provides no support for differentiating poor readers on the basis of IQ.

‘Consider that:

1. The primary subcomponent of reading that is problematic for children with severe reading problems is word recognition.
2. The primary psychological process underlying the word-recognition difficulties of reading disabled individuals is a problem in phonological coding due to weak segmental language skills.

3. Both the distal processing problem in the phonological domain and the proximal word-recognition problem can in part be remediated with intensive intervention.

‘The problem for the discrepancy assumption that is so foundational... is: none of these facts correlate at all with IQ!’ (Emphasis in the original.)

Likewise, Vellutino et al (2004, p 31) urged that practitioners should relinquish assessment that attempted to provide categorical labels ‘in favour of assessment that would eventuate in educational and remedial activities tailored to the child’s individual needs.’

With regards to work in the field of neuroscience, whilst this may have illuminated some of the underlying processes implicated in reading, the techniques are neither theoretically or practically capable of providing a differential decision (Schulte-Körne et al., 2007).

More generally, there continues to be no clear evidence that there is a particular form of intervention that is more suitable for some poor readers than others (Stanovich, 1991; Vellutino et al, 2000). Rather, it seems that the approach advocated for dyslexics (consisting of highly structured work to develop phonological awareness linked to successful practice with reading) is equally appropriate for other poor readers (Hatcher and Hulme, 1999; Rice and Brooks, 2004; Shaywitz et al, 1996), although there is some evidence that an intervention that is successful for most may not necessarily be successful for all (Hatcher et al 2006). It also seems that whether classified as dyslexic or poor reader, children responses to intervention are indistinguishable (Brooks et al, 2007).

**Summary and Conclusion**

We have argued that although there is a natural social inclination to locate people in categories this does not necessarily validate the category as having innate distinctiveness. In the case of children
with developmental reading difficulties that are typically linked to underlying difficulty with the phonological and orthographic representations of the oral language, there is no identified natural and unambiguous discontinuity between skilled and unskilled reader – or on any dimension of the underlying cognitive associates. Equally, there is no clear cut evidence to support differential assessments on the basis of scientific findings. There is, therefore, no support for the maintenance of a distinctive category of ‘dyslexia’. Furthermore, the notion of ‘dyslexia’ in itself does not support differential intervention.

However, the notion of ‘dyslexia’ persists. As stated at the start of the chapter, it is clear that too many children (and adults) struggle with, and are distressed by, problems with literacy. This is a puzzling phenomenon that continues to thwart many endeavours to enable children to engage successfully with education. Interestingly, a recent UK Government Report, Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties (DCSF, 2009) attests to the value of the dyslexia construct, yet notes that difficulties lie on a continuum, with no clear cut boundaries. One is left to ponder whether this key qualification too will find its way into the public vernacular and be reflected in everyday understandings and practice? Unless such recognition can be achieved, it is likely that many poor readers who lack the ability to obtain the cherished dyslexic label will continue to be vilified as lazy, ignorant or unintelligent and, concomitantly, be perceived as less needy of specialised reading intervention.

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