

From 'Disordered' To 'Diverse': Defining Six Sociological Frameworks Employed in the Study of Dyslexia in the UK

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This article discusses six theoretical frameworks of disability which dominate studies of dyslexia: (1) the biomedical, (2) the biopsychosocial, (3) the social model, (4) the critical realist, (5) the post-structuralistic, and (6) the neurodivergent approach. The aim of this paper is to demonstrate how models of disability alter our understandings of dyslexia within research and practice. This paper suggests that the biomedical model has traditionally dominated debates regarding this condition. Yet there has been a recent shift to expand/reject this pathological approach, and to incorporate the social and psychological aspects of dyslexia. The author identifies two distinct ideological frameworks, referred to as the psycho-medical and socio-cultural perspectives, which dominate debates in the field. From a psycho-medical perspective, the biomedical and biopsychosocial models are defined and applied to dyslexia. These will be compared with a socio-cultural perspective by outlining: the social model; the social relational model; and the affirmation model. The article will conclude by referring to the recent theoretical occurrence of neuro-diversity. From this standpoint, the previous five models of disability are rejected due to their association with the concept of 'disability', which, from a neurodiversity perspective, constructs dyslexia from a 'deficit' approach. The author aims to clearly define the parameters of these theoretical frameworks to reveal the ideological assumptions that conceptualize dyslexia as a biological, psychological and social phenomenon.

Keywords: social theory of learning disabilities, medical models of dyslexia, social models of dyslexia, neurodiversity, disability studies

INTRODUCTION

Since the turn of the century, research in the field of dyslexia has begun to use a range of models to interpret the social experiences of people living with this condition. These models have developed from the discipline of Disability Studies, which defines a number of alternative definitions of 'disability' from the dominant medical classification. Debates have predominantly focused on two alternative sociological interpretations of dyslexia, referred to as either the social model or the biomedical model of disability. Depending on the model

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which is used, problems associated with dyslexia are either interpreted because of a physiological deficit, i.e. biomedical, or due to structural inequalities, i.e. social. Yet, these models were first defined within the 1960s and 1970s and were aimed at people with physical impairments, so over recent years these models have evolved into more complex versions of the original two definitions of disability. This article presents six theoretical frameworks which have emerged from Disability Studies and are now applied in the field of dyslexia. It will commence by defining dyslexia through a psycho-medical perspective, and within this perspective two distinct models will be identified: the biomedical model and the biopsychosocial model. Both of these models construct disability as a pathological functional limitation resulting from a person's impairment.

The article will then define the sociological alternatives from a socio-cultural perspective, and the author will outline the social model of disability, demonstrating how problems associated with dyslexia are explained due to structural discrimination. This paper will suggest that the social model of disability has, over recent years, become fragmented, and thus many authors in the field of dyslexia who claim to apply the social model are in actual fact applying either a social relational or an affirmation model perspective. The article will clearly define the three influential social models established in Disability Studies that are applied to conceptualize dyslexia in contemporary research and practice. However, this paper will additionally outline the recent development of neurodiversity, which offers a far more radical perspective than previous models of disability. Although this concept has been significantly influenced by the social model of disability, a neurodiversity approach develops radically different parameters than the previous sociological perspectives. From this perspective, the concept of 'disability' is rejected and replaced with the idea of 'difference'. The article concludes by discussing the importance of how understanding models of disability allows research and practice to offer alternative approaches to interpreting the experiences of people with dyslexia.

THE PSYCHO-MEDICAL PERSPECTIVES OF DYSLEXIA

In 2008 the New Labor government commissioned an independent review by Sir Jim Rose into educational provisions for students with dyslexia. The government was in part responding to claims within academia and in Parliament questioning the medical/educational validity of this condition (see Elliott & Gibbs, 2008; Hodgson, 2014). Supporting Sir Jim Rose was an expert advisory group predominantly derived from the psychological professions. The Rose Report (Rose, 2009) presented a number of recommendations to improve teaching practices, including a working definition of dyslexia. There was a rejection of criticisms that dyslexia is a fictional construct (Elliott & Place, 2004), and the report defined the condition as "a developmental difficulty of language

learning and cognition” (Rose, 2009, p.9). Hence, dyslexia was described as an impairment which affects “phonological awareness, verbal memory and verbal processing” skills. Due to the review, dyslexia has continued to be acknowledged as a disability within UK legislation. However, this report clearly illustrated, in the evidence it presented for its recommendations, that research in the field of dyslexia is dominated by the psychological and cognitive sciences (Hulme & Snowling, 2009; Miles, 1997; Muter & Snowling, 2009; Snowling & Maughan, 2006).

The report evidently illustrated that the core ideological perspectives in the field of dyslexia are dominated by a psycho-medical approach. Therefore, the construct of dyslexia is regulated by educational psychology, which is significantly influenced by research in disciplines of neuropsychology and neurobiology (Fawcett & Nicolson, 2008; Peterson & Pennington, 2012; Snowling, 2000; Willcutt, et al. 2010). These disciplines predominantly study how neurological and biological dysfunction affect children’s learning abilities, and this knowledge is used to respond to these difficulties experienced by children in an educational context by improving diagnosis and educational interventions. Scholars such as Macdonald (2009) and Campbell (2013) have criticized these psychological and cognitive perspectives, as they suggest they are derived from a biomedical approach which pathologizes the notion of disability. Yet if we use the Rose Report as an example, the majority of the bio-medical studies presented in this report acknowledge, not just the biological origins of dyslexia but also the impact that environmental factors have on this developmental condition (Snowling, Muter & Carroll, 2007).

Although the article asserts that the psychological and cognitive sciences that dominate the field of dyslexia can be defined from a psycho-medical perspective, the author suggests it is important to separate two variations of the medical model in order to prevent overgeneralization. The first of these variations is identified as the biomedical model, and is the traditional interpretation of dyslexia as a biological phenomenon (Critchley, 1970; Elliott & Grigorenko, 2014; Peterson & Pennington, 2012). The second is characterized as emerging from the biopsychosocial model, which conceptualizes dyslexia as resulting from the interplay between the biological, psychological and social (Bhattacharya, 2014; Snowling, 2000). Although the author demonstrates that these models emerge from a psycho-medical ideology, which dominates dyslexia research, both approaches are classified from a sociological perspective as medical models of disability (Barnes & Mercer, 2010).

The Biomedical Model of Disability and Dyslexia

As dyslexia is defined as a disability, it’s important to recognize that the term ‘disability’ has multiple meanings across academic disciplines (see Barnes, 2012). In the Rose Report, dyslexia is viewed as an impairment that primarily

affects accuracy in reading and spelling alongside secondary factors affecting language, coordination, mental calculation and organizational skills (Rose, 2009, p.9). In the UK's Equality Act (2010), disability is defined as 'a physical or mental impairment which has a substantial and long-term adverse effect on [a person's] ability to carry out normal day-to-day activities'. The Equality Act identifies dyslexia as a "mental impairment", classifying individuals with the condition as having a disability within an educational and employment context. Dyslexia is conceptualized as having a biological basis which affects an individual's functional ability (Peterson & Pennington, 2012) and disrupts social interaction, i.e. in education and employment.

It is this concept of a functional biological limitation that disables within a social context which defines the biomedical model. From a biomedical perspective, dyslexia is an impairment which results in disabling factors such as a person's inability to read or write (Vargo, 2015). From this perspective, illness, impairment and disability are interlinked and result in a functional deficit. This biological deficit affects people's life course, which in the case of dyslexia is permanent. An example of the biomedical definition of dyslexia is found in the World Federation of Neurology (1968) definition, as "A disorder manifested by difficulties in learning to read despite conventional instruction, adequate intelligence and social cultural opportunities. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin." (Critchley, 1970, p. 11)

From this perspective, dyslexia is entirely conceptualized in pathological terms as a 'disorder' which manifests from a legitimate cognitive impairment. Although the biomedical model of disability developed historically from a statistical classification of pathology (see Barnes & Mercer, 2010), it was outlined in the 1980s by the World Health Organization's 'International Classification of Disability'. Although this biomedical definition of disability and impairment has now been replaced by the International Classification of Functioning, Disability and Health (2001), this simplistic definition can still be found in a significant number of medical and educational textbooks (e.g. Oxford Handbook of Psychiatry). It is in this historical definition of disability where we can view the parameters of the biomedical model. Therefore, disability and impairment are defined as:

"Impairment: any loss or abnormality of psychological, physiological or anatomical structure or function."

- A deviation from a statistical 'norm' in an individual's biomedical status
- Includes loss/defect of tissue-mechanism-system-function
- Temporary or permanent

“Disability: any restriction or lack (resulting from impairment) of the ability to perform an activity in the manner or within the range considered normal for a human being.”

- Functional limitation expresses itself as a reality in everyday life
- Tasks, skills, and behavior
- Temporary or permanent

(Adapted from Semple, Smyth, Burns, Darjee & McIntosh, 2013, p. 90)

By applying this biomedical perspective to dyslexia there is a key focus on the effect that impairment has on a person's experience of this condition. Hence, from this perspective, an individual's pathology is defined through a normative measurement establishing an average baseline of physiological function. This model implies that humans have universal functions or abilities, for example the ability to cognitively learn to read, write, remember digit sequences, etc. If a person becomes impaired then their normative abilities are directly affected which restricts people's abilities to perform tasks, i.e. read and write. A biomedical model of dyslexia is defined as a deviation from this average measurement, resulting from a genetic and/or neurological defect. Therefore, dyslexia is conceptualized as permanent, resulting in disabling factors which impact on a person's ability to read and write as well as problems with short-term memory. These impairment effects disable the individual, both within education and later within adult life. From the biomedical perspective, disability is caused directly because of a person's impairment. Therefore, the inability to carry out tasks directly affects people's ability to interact within a social context.

From a biomedical perspective, to eradicate disability medicine must treat and cure the physiological aspects of impairment. Thus, from the above definition, this model conceptualizes disability entirely within pathological terms. Although the biomedical model's final goal is to cure dyslexia, this is not achievable at this moment in time, and arguably will never be possible or desirable; however, treatments are established within an educational context to reduce symptoms of the condition (Peterson & Pennington, 2012). Hence, from a biomedical model's perspective, dyslexia is a “Difficulty with reading, in most cases involving a deficit in phonological-processing skills. 4% of school-age children. Male predominance. There is often a family history of dyslexia. 20% have comorbid ADHD or CD. Management includes 1:1 remedial teaching, and parent involvement improves long-term outcome.” (Semple, et al., 2013, p. 90)

In the case of dyslexia, from a biomedical perspective the first stage is to understand the neurological deficits which affect decoding skills, working memory and motor function skills (Fawcett & Nicolson 2007; Miles, 1999; Nicolson & Fawcett, 2011). Once dyslexia is understood as a neurological impairment then interventions can be developed to alleviate certain symptoms of

the condition, i.e. developing an educational intervention which can be used to allow the child to cope within a society based on literacy (Fawcett & Nicolson, 2007). From this perspective, although the biomedical model is entrenched within medical discourse, its treatments now appear within an educational setting (Peterson & Pennington, 2012). The key criticism of the biomedical model is that if dyslexia is defined in medical terms, it views the problem in relation to a defective pathology (Peterson & Pennington, 2012; Vargo, 2015), therefore, it is the person who needs modifying rather than making changes to environmental factors which may exclude or discriminate (Barnes, 2012).

The Biopsychosocial Model of Illness, Impairment, Disability and Dyslexia

The biopsychosocial model is the dominant approach now used within healthcare to define disability. It is this approach which defines the World Health Organization's "International Classification of Functioning, Disability and Health", and there have been a number of scholars who have advocated this approach to conceptualize dyslexia in recent years (see Bhattacharya, 2015; Cooper, 2008; Riddick, 2010). Although the biopsychosocial model originated in psychiatry, it developed as a critique to the biomedical model (White, 2005). This approach was initially defined by George Engel (1977) as he reasoned that the biomedical model was too reductionist in nature to explain the complexities of illness within a biological and social context. From a biomedical perspective, impairment and disease were fundamentally pathological problems which advocated for biochemical responses, i.e. with medication or with surgical resolution. Applying the biomedical model indicates that diseases and impairments can be considered objective entities and have a comparable impact on the body (Engel, 1977). Therefore impairment is an objective measurable fact, which affects a person's pathology in a similar and measurable way. For Engel, this reductionist approach oversimplifies the causal factors and effects of health problems in people's lives. Engel (1977) states that illness, impairment and disability take place within a social context, which is completely disregarded by the biomedical model of disability.

Engel suggests that a person's lifestyle, socio-economic position and responses to stress levels are causally linked to the onset and escalation of impairment and disability. From this approach, social issues, resulting in psychological factors, can affect the healing process of illness or the capabilities of people with long term impairments (Steptoe, 2006). By applying the biopsychosocial model to reading difficulties, it could be suggested that the most common causes of reading difficulties are socio-economic and cultural factors. Therefore, to eliminate illiteracy, children from lower socio-economic backgrounds need to be targeted in mainstream education. However, this is not straightforward, as what are

the causes for illiteracy? Some are undoubtedly cultural, but up to 8%¹ of the population are affected by a neurological deficit, i.e. dyslexia. Furthermore, if a child struggles with reading then they are more likely to psychologically withdraw from this activity, thereby restricting their future cognitive development of this skill. Hence, the reasons why some adults are illiterate refer to biological, psychological and socio-cultural factors, which cannot be overcome in isolation.

When applying the biopsychosocial model to dyslexia, it should be noted that this does not entirely reject a biomedical interpretation of the condition. By applying this approach, dyslexia is seen as a neurological dysfunction resulting in a functional limitation (i.e. impairment) which causes disabling factors. However, the biopsychosocial model acknowledges the impact that the social and psychological have in affecting people's experiences of the condition. Therefore, this approach expands the biomedical interpretation by acknowledging how the biological reality of dyslexia is affected by an individual's cognitive development and their social environments (Snowling, 2000). For Engel (1977), the biopsychosocial model is a holistic approach which causally links the biological, psychological and social to offer a holistic comprehension of the onset and outcomes of illness and impairment. As White (2005, p. xiv) suggests, the biopsychosocial model includes "Thoughts, feelings, behavior, their social context, and their interaction with both physiology and pathophysiology ... Such an approach does not abandon the biomedical model, but extends it."

From this perspective, symptoms of dyslexia can be reduced or exaggerated by access to inclusive or exclusive educational environments. For children with access to inclusive educational environments, the impact that dyslexia will have on their reading and writing abilities, and their coordination and organizational skills, will be significantly reduced compared to children who are educated in an environment which is not adjusted for dyslexic learners. Therefore severity of the condition can be significantly affected by access to 'treatment' within an educational environment. This is directly linked to the psychological impact that dyslexia has on children and adults (Alexander-Passe, 2006, 2008). For children who have experienced an inclusive educational environment, dyslexia will have very little emotional impact. For children who have not experienced that inclusive environment, this can have a significant impact on their emotional well-being, resulting in problems with stress and anxiety in adulthood. From a biopsychosocial perspective, the biological impact of dyslexia is directly linked to a child's social environment and their psycho-emotional development. Although this model incorporates the social and the psychological, it is still conceptualized as a medical model as it individualizes disability, which is caused by a child or adult having an impairment. Therefore what makes this

1 4% to 8% is the estimated population reported in the Rose Report (2009, p. 11) to represent the extent dyslexia affects the general population.

a medical model is that the disability is caused by a physiological change to a person's body; however, it also acknowledges that these changes are affected by social factors, and that these factors have a psychological impact which affects a person's ability to carry out tasks.

THE SOCIO-CULTURAL PERSPECTIVES OF DYSLEXIA

Within studies of dyslexia scholars often apply the term the “social model” as shorthand when utilizing different theoretical ideas. Numerous studies into dyslexia claim to employ the social model of disability, but are essentially referring to either the social relational model or the affirmation model. The reason behind this is that the social model of disability was not used to conceptualize dyslexia until 2001, in a paper by Barbara Riddick. This is over twenty five years after the model was first defined by Vic Finkelstein and later Mike Oliver, which by 2001 was in common use in practices such as social work. In the 1990s, the social model had received a lot of criticism from academia and in practice, particularly concerning a lack of focus on the impact of impairment on social interaction. This led to the emergence of a number of variations of the model. It is during this period of time that scholars in the field of dyslexia started to apply the social model of disability to define this condition, and from this fragmentation three notable variations of the social model have emerged from a *Critical Realist, Post-structuralist and Neurodiversity perspective*.

The Social Model of Disability

In order to apply the social model of disability to studies of dyslexia it is important to define its historical roots. Unlike the medical models of disability, the social model was defined by grassroots politics of the 1970s rather than within professional practice. This model was first conceptualized by a group of radical disabled activists who formed the political group “the Union for Physically Impaired against Segregation” (UPIAS). The two key contributors and founders of UPIAS were Vic Finkelstein and Paul Hunt. Both men were wheelchair users and Paul Hunt lived in residential care. Finkelstein and Hunt were significantly critical of healthcare for disabled people, and rejected what they termed as the biomedical model of disability. It was Finkelstein and Hunt who first defined the concept of the social model of disability by suggesting that their problems as wheelchair users were not because they could not stand up, i.e. their functional limitations, but due to their environments which limited their social interactions. Both men suggested that it was environmental and attitudinal barriers which restricted their lives and prevented them from fully participating in social life. Finkelstein and Hunt illustrated how environmental factors such as building design, public spaces and social attitudes led to disabled people being systematically excluded from society.

Hunt and Finkelstein suggested that health and social services offered little support and no cure for their particular conditions. They suggested that their bodies had permanently changed, and health and social services offered them no interventions or solutions for their impairments. Hunt and Finkelstein established UPIAS with the aim of representing the voices of disabled people. It was this focus on environmental barriers which was central to UPIAS, and which led to the first definition of the social model of disability in a document entitled the “Fundamental Principles of Disability”. This definition stated “In our view, it is society which disables physically impaired people. Disability is something imposed on top of impairments by the way we are unnecessarily isolated and excluded from full participation in society.” (Oliver, 1997, p.33)

However, this radical concept of disability was not defined as a model of practice until the 1980s in the work of Mike Oliver. Oliver was also a member of UPIAS and a wheelchair user. It is in his work where we see the concept of disability being redefined through the notion of disabling barriers. From Oliver’s (1982) perspective, disability is created by disabling barriers due to social inequalities that structurally exclude disabled people from social participation. In his work he is highly critical of the biomedical approach, and suggests its definition of disability is over simplistic and constructs binary opposites of disabled and nondisabled people. Furthermore, Oliver implies that the biomedical model advocates the eradication of impairment through medical treatment, but in reality he suggests that very few impairments have been cured by medicine. From Oliver’s (1997) perspective, professional practice should move away from attempting to cure the body which is permanently changed, and towards a focus on removing disabling barriers in order to create an environment which is inclusive for all body types. From this perspective, the social model is defined as:

- Disability referring to how disabled people are excluded from contemporary society
- Impairment referring to a physiological or neurological variation resulting from birth or a life course transition

To demonstrate how the social model transforms the concept of disability, Oliver presents a critique of the biomedical model which was present in a questionnaire by the Office of Population Censuses Survey. For Oliver, each question is underpinned by a biomedical ideology which individualizes disability. As Oliver (1997) demonstrates:

- Medical model: Are your difficulties in understanding people mainly due to a hearing problem?
- Social model: Are your difficulties in understanding people mainly due to their inability to communicate with you?
- Medical model: Does your health problem/disability affect your work in any way at present?

- Social model: Do you have problems at work because of the physical environment or attitudes of others?

From this perspective, the social model interprets problems associated with disability not due to a dysfunctional pathology but because of universal structural barriers which affect social participation. Therefore, Oliver shifts the focus from impairment, i.e. dyslexia, to that of disabling barriers which restrict social interaction and participation. He suggests that professional practice is underpinned by a biomedical ideology which individualizes the experience of disability. By applying this approach to dyslexia, the problem is not because individuals have decoding and working memory problems, but that the education system is designed to include nondisabled bodies, and creates barriers which exclude people with dyslexia (Mortimore & Dupree, 2008). If we apply Oliver's approach to dyslexia, this would suggest:

- Medical model: does dyslexia affect your educational experience at present?
- Social model: do you have problems within education because of the physical environment, attitudes of teaching staff or their teaching abilities?

When applying the social model, the focus is on disability (i.e. disabling barriers), and the persons impairment type (i.e. dyslexia) is viewed as an unimportant factor. As explained by Oliver, people with the same impairment experience dissimilar disabling barriers, as they are affected by their own social circumstances. Therefore, impairment (i.e. the label of dyslexia) is irrelevant compared to disability (i.e. the effect of a disabling educational system), which is the key focus of the social model (Mortimore & Dupree, 2008).

From Oliver's perspective, people's experience of impairment is shaped by their social circumstances. Hypothetically, two people with profound developmental dyslexia will be disabled in different ways due to, for example, their socio-economic status. One individual may be from a higher socio-economic background and have been subjected to inclusive education aimed at dyslexia learning. In addition to this, they may have had access to private support outside of the education system. They may use assistive technologies and may be employed within an environment where disability legislation is enforced. Therefore, dyslexia may have a very limited impact on their overall lived experiences. The other person may come from a lower socio-economic background. This person may not have been identified at school and may not have had access to any form of inclusive education. They may be unaware of, or cannot afford, assistive technologies, and may work in an employment setting that is precarious, which does not noticeably enforce disability legislation. From the second person's perspective, dyslexia will have had a significant impact on their life-course, and they will have experienced far greater disabling barriers compared

with the person from a higher socio-economic background. From Oliver's perspective, the impairment's effect does not dictate the difficulties experienced by the person with dyslexia, but it is in fact their experience of disabling barriers that significantly impacts on their life-course. Therefore, from a social model perspective, professional practice must focus on removal of barriers that exclude people with dyslexia, rather than on impairment-related interventions. The social model is an approach grounded in social inclusion, rather than one based on cure, and can be used in contemporary practice to support people with dyslexia in a social context.

Critical Realism: The Social Relational Model of Disability

In 2001 Barbara Riddick wrote the first paper advocating the social model of disability to facilitate inclusive education for people with dyslexia. This paper led to a number of studies into dyslexia, applying this model to education and employment (see Campbell, 2013; Macdonald, 2009; Mortimore & Dupree, 2008; Pollak, 2009). However, during this time the social model was receiving increased criticism due to its lack of acknowledgement of the impact that impairment had on the lives of disabled people. The initial critique of the social model came from within disability studies, from Liz Crow. Crow illustrates how the social model had initially transformed her perception of disability, as she reframed her experiences from a deficit perspective to a structural interpretation of inequalities. The social model empowered her to challenge professionals and recognize discriminatory institutional practices. Although Crow (1994) reframed disability into a structural perspective, she also recognized that impairment still impacted on her day-to-day interactions, particularly because of physical pain. Crow suggested that to define disability one must incorporate how disabling barriers interact with impairment, and how this affects the quality of an individual's life course. As Crow (1994, p. 211) suggests "In fact, impairment, at its most basic level, is a purely objective concept which carries no intrinsic meaning. Impairment simply means that aspects of a person's body do not function or they function with difficulty. Frequently this has been taken a stage further to imply that a person's body, and ultimately the person, is inferior. However, the first is fact; the second is an interpretation."

Crow suggested that the social model must adapt and bring together the concepts of disability, i.e. structural disabling barriers, with impairment, i.e. functional difficulties, to truly represent the experience of disability. Parallel to Crow, Tom Shakespeare and Nick Watson (2001) applied a similar critique of the social model of disability based on its recognition of impairment. In their controversial paper entitled "The Social Model of Disability: An Outdated Ideology?" they suggest that to develop a holistic theory of disability we must include the impact of impairment. Shakespeare and Watson suggest that both the biomedical model and the social model are over-simplistic, with each focusing

entirely on either impairment (i.e. the biomedical model) or disability (i.e. the social model). Shakespeare (2013) advocates that disability is constructed exclusively within a social context, yet disabling factors cannot occur if a person does not have an impairment. They propose that to accurately represent disabled people's social experiences, both disabling barriers and impairment effects must be acknowledged. Shakespeare and Watson suggest "People are disabled both by social barriers and by their bodies. This is straightforward and uncontroversial. The British social model approach, because it 'over-eggs the pudding', risks discrediting the entire dish." (Shakespeare & Watson, 2001 p. 17)

From Shakespeare's (2013) perspective, the impact that impairment has within social interaction is comparable to structural influences such as stigmatization, education and employment inequalities, and environmental barriers. Shakespeare also illustrates the impact that impairment types have in relation to environmental barriers, and suggests that people with different impairment types experience different types of disabling barriers. An example of this is that someone with dyslexia will experience very different disabling barriers compared to someone with multiple sclerosis, ADHD, a visual impairment or bipolar disorder. Shakespeare and Watson's research is significantly influenced by a critical realist theoretical framework, which incorporates the epistemological, how realities are constructed within a social context, and the ontological, how reality occurs independently from human perceptions. From this perspective dyslexia is a neurological reality, i.e. the neurological variations which affect decoding skills, as well as being socially constructed by cultural factors, i.e. a literate society. As Beth Danermark (2001, p.58) states:

In order to be able to speak of dyslexia, we need to live in a society based on reading and writing. In this sense, Gutenberg can be said, not only to have invented the art of printing, but also conditions for dyslexia. However, this does not mean that dyslexia is merely a social construct. Both the brain [variations] and the characteristics of our society constituted necessary conditions for the phenomenon we call dyslexia.

From this critique there have been a number of attempts to incorporate impairment within a social model framework. Although Shakespeare does not directly refer to the formation of a new model of disability, a number of scholars who apply a critical realist framework have started to employ the social relational model of disability to their studies (see Macdonald and Deacon, 2015 and Reindal, 2008). Although the social relational model was originally developed by Carol Thomas (2007), it is this model that attempts to incorporate an interactionist approach which recognizes the impairment effect and its relationship to structural disabling barriers. This model also acknowledges the emotional impact that disability has on a person through disabling social factors. Although technically this approach incorporates the biological, psychological and social,

this perspective is fundamentally different from a biopsychosocial model. This is because the social relational model conceptualizes disability in the same way as the social model does. Hence, disability is a result of structural inequalities which are imposed on top of the person's impairment, rather than a functional limitation of the body. Therefore, the social relational model of disability refers to disabling barriers in the form of structural exclusion, psychological factors resulting from social oppression, and impairment related issues, which due to a biological/neurological variation, affect a person's life-course. As Macdonald and Deacon (2015, p. 85) state "The social relational model still allows a possible distinction between 'disability' as disabling structural barriers and 'impairment' as biological/neurological variations, but acknowledges that one cannot exist without the other."

Although this perspective is grounded in a social model ideology, through the concept of disabling barriers this model attempts to develop an interactionist perspective in order to conceptualize disability and impairment within a social context. Applying the social relational model to dyslexia advocates that dyslexia is a neurological reality, but the negative impact of the condition is due to structural inequalities within education and employment. Dyslexia is not seen as the problem, it is a disabling education system that does not prepare children for the complexities of adult life which is the problem for people with dyslexia. Thus, as education pathologizes dyslexia, and masks the experiences of social exclusion, there is a negative psychological impact on the child which lasts throughout adulthood. From a social relational model approach, although impairment is recognized, individuals are not problematized, but rather environmental factors that exclude are fundamentally used to explain the impact of negative factors on the experiences of people with dyslexia. However, this differs from the traditional social model of disability in the fact that it includes impairment types. From a social relational perspective, the label of dyslexia is seen as important because it directly relates to the micro experience of disabling barriers. Although a person with dyslexia will experience a multitude of disabling barriers depending on their social and cultural positioning, these barriers are not necessarily universal. Therefore, the dyslexic community will experience unique forms of disabling barriers compared to individuals with, for example, chronic fatigue syndrome, HIV or multiple sclerosis. Thus, this develops a more fluid and interactionist approach between disability and impairment types.

Post-structuralism: The Affirmation Model of Disability

During the 1990s a far more radical response, reacting to the critique of the social model, developed from a poststructuralist perspective. This response attempted to include impairment within a social context, but rather than viewing disability as a social construct and accepting impairment as a binary reality, these scholars conceptualized both disability and impairment as cultural phe-

nomena. Scholars such as Maria Corker (1999), Len Davis (2006) and Shelly Treman (2006) were significantly influenced by the philosophical writings of Michel Foucault. These theorists applied a linguistic perspective to conceptualize disability and impairment from a cultural perspective. One of the early writers applying this perspective to disability was Maria Corker, who recognized the need to bring back impairment, but her definition of impairment was radically different from the critical realists. Corker argued that not only is disability constructed within a social and cultural context, but so is the concept of impairment.

Disabled people often allude to a complex existence that occupies the space between health and illness, disability and 'normality', impairment and empowerment and nature and culture, to give a few examples. However, disability theory continues to dichotomize these things in a way that does not permit exploration of the space between. Theory recreates the divisions between impairments, and between impairment and other 'biological' foundations of human character. It preserves hierarchical social organization instead of challenging the assumptions that underlay it. (Corker, 1999, p.634)

Although the previous two social frameworks accept that disability is socially constructed, from a poststructuralist perspective so is the concept of impairment, through medical labelling. From this perspective, medicine does not exist outside the cultural formation of a society. Medical labels are constructed within a cultural setting and are attached to define bodies which are considered culturally outside society's notion of normality. Stiker (1997) suggests that 19th-century medicine defined the human body through medical discourses which were founded on the cultural concepts of normality and abnormality. The concept of disability is maintained by medicine with the construction of multiple impairment types. Medical science presents impairment labels as scientific and objective, measurable and outside of human perception, but Treman (2006) suggests that these labels are products of the socio-cultural and political landscape at a particular point in time. From this perspective, impairment and disability are linguistically constructed within a cultural context as a system of social regulation. As Campbell (2011, p. 450) suggests:

The diagnosis of 'Dyslexia' and the medical problematization of reading difficulties were almost unknown 100 years ago, yet today the British Dyslexia Association estimates that up to 10% of the UK population may have some form of dyslexia. ... The emergence of this sophisticated machinery of diagnosis in fact underlines the importance of describing and analyzing the socio-genesis of the diagnostic category. ... an increase in the estimated numbers of diagnosis, must therefore be related to the drive towards mass literacy across the twentieth century.

From this perspective, impairments types are conveyed into existence due to political, economic and cultural demands for the label. Drawing on a Foucauldian perspective, labels, i.e. impairment types, are constructed and ascribed to certain groups as a system of control. Therefore problematic groups are labelled as impaired, but these labels are politically influenced and used as a system of social organization for controlling undesirable populations. Medicine labels the impairment, i.e. through diagnosis, and this then dictates specific treatments, resulting in individuals being processed through a range of institutional regimes. This means that disability and impairment are permanently negatively constructed within western culture. What makes this approach radical is that, although it develops from the social model of disability, and critiques the biomedical model, it states that neither is entrenched in a reality as both are constructed by linguistic practices that operate to control and regulate disabled populations. Yet, as Beckett and Campbell (2015) illustrate, although the social model constructs specific linguistic practices, this does offer a more inclusive system for disabled people when compared with a biomedical deficit approach.

Applying this approach to dyslexia recognizes that the condition is constructed through normative literacy levels. Within an educational setting it is expected that children will engage in certain cultural performances at very specific times during their lives with reference to learning to read and write. If a child does not engage with these performances at the 'correct' stage, the child will be labelled and processed through specialized educational practices. This system not only labels and regulates the child's performances compared with other children, but it also creates a system of social control where other children observing this process regulate their own behavior so that they do not become labelled themselves. Therefore, children's reading and writing abilities become medicalized within an educational setting, and the child becomes the focus of intervention in order to normalize their abilities in accordance with non-dyslexic social norms.

This approach has been further developed by Colin Cameron who has expanded the social model to develop a cultural interpretation that redefines disability and impairment from a cultural perspective. This alternative approach has been referred to as the affirmation model of disability. The affirmation model was originally defined by Swan and French (2000), offering a more positive interpretation of disability and impairment. Therefore this model critically evaluates the concept of normality, as it states that to be normal requires a particular social performance. Hence the body is labelled in a particular way which significantly affects an individual's performance. These performances are interpreted within a cultural context, and are conceptualized as acceptable or unacceptable within particular social environments. For Cameron, disability and impairment are defined as:

Impairment: physical, sensory, emotional and cognitive difference, divergent from culturally valued norms of embodiment, to be expected and respected on its own terms in a diverse society. ...

Disability: a personal and social role which simultaneously invalidates the subject position of people with impairments and validates the subject position of those considered normal. (Cameron, 2013, p. 6)

From this perspective, disabled people are constructed through the notion of abnormality, which in turn validates the role of normality within a particular socio-cultural setting. These notions of normality are constructed in a particular, historically specific cultural setting, and if disability and impairment are culturally and historically constructed then these notions can be changed. Cameron suggests that from a biomedical perspective, disability and impairment are universally constructed in negative terms. If we accept that disability and impairment are culturally constructed through a negative deficit ideology, then we can amend this construct to a positive and empowering ideology. For Cameron, impairment should be conceptualized as difference rather than viewed as a tragedy, and if this transition can occur then the notion of dis/ability can be celebrated through the concept of human biological and neurological diversities. Although being labelled as dyslexic may be conceptualized as decisively negative, from an affirmation model approach performances can be changed and labels can be redefined from a more positive perspective. By changing the negative into a positive, this can transform stigmatizing assumptions about dyslexia and create a more inclusive environment, which includes all bodies rather than only those defined as nondisabled.

NEURODIVERSITY AND DYSLEXIA

A recent development in the field of dyslexia is the concept of neurodiversity. This approach emerged in the 1990s from the autism community in the United States. Although this originated from the field of autism, this concept has now been applied to a range of conditions including dyslexia, dyspraxia, dyscalculia, ADHD and Asperger's Syndrome (Armstrong, 2010). Armstrong (2010) suggests that the term was first used in an article by Harvey Blume (1998), suggesting that "neurodiversity may be every bit as crucial for the human race as biodiversity is for life". Within the UK, research that has conceptualized dyslexia through the notion of neurodiversity has been significantly influenced by social model theory (Pollak, 2009). Similar to the previous models, there is a rejection of the notion that problems associated with conditions like dyslexia are due to pathological defects. Again, similar to the social model, a neurodiversity framework explains problems associated with these conditions are due to structural barriers that exclude, discriminate and alienate people with dyslexia from social participation.

Unlike the social models, from a neurodiversity perspective there is an outright rejection of the concepts of ‘disability’ and ‘impairment’. This rejection suggests that the terms ‘disability’ and ‘impairment’ are medical constructs which situate dyslexia within a biomedical framework. By applying a neurodiversity approach, conditions like dyslexia are reframed as a neurological difference rather than a disability. It is suggested that disability is an inherently negative concept, which is defined by medical discourse (Barker, 2006). From the neurodiversity perspective, dyslexia is not an impairment, conceptualized as the medicalization of difference, but is in fact a learning variation. Therefore conditions like dyslexia need to be considered as a biological difference rather than a pathological dysfunction, making dyslexia comparable to other typologies of biological variation, such as sex or ethnicity. As Armstrong (2010, p. 2–3) suggests:

Instead of celebrating the natural diversity inherent in human brains, too often we medicalize and pathologize those differences by saying, “Johnny has autism. Suzie has [dyslexia]. Pete suffers from attention deficit hyperactivity disorder.” Imagine if we did this with cultural differences or racial differences. We’d be regarded as racists. Yet with respect to the human brain, this sort of thinking goes on all the time. . . . The lessons we have learned about biodiversity and cultural and racial diversity needs to be applied to the human brain.

From a neurodiversity framework, people with dyslexia are systematically excluded within education and employment in similar ways to people from a range of ethnic minority backgrounds. To understand the concept of dyslexia there is a rejection of the notions of ‘cure’ as well as the notion of ‘disabling barriers’ (Baker, 2006), both terms being considered to medicalize neurological difference. To comprehend how people with dyslexia experience difficulties, similarities are drawn between social exclusion and ethnic discrimination. Therefore, disabling barriers are replaced with sociocultural barriers which discriminate against people who are neurodiverse. People with dyslexia are considered as a minority group who are systematically excluded due to a biological difference which is an issue of diversity rather than a medical problem. This approach does not reject the fact that people with dyslexia may have difficulties in performing certain tasks such as reading and writing, but asserts that these problems are counterbalanced by unique talents associated with the condition compared to their neurotypical counterparts. A definition of neurodiversity is defined by Grant (2009, p. 35):

Neurodiversity is present when an exceptional degree of variation between neurocognitive processes result in noticeable and unexpected weaknesses in the performance of some everyday tasks when compared with much higher performances on a subset of measures of verbal and/or visual abilities for a given individual.

In most instances, neurocognitive variation is lifelong. Neurodiversity is a positive statement of differentiation, for while it explicitly refers to individuals whose everyday ways of thinking and behaving differ in certain key aspects from the majority of people, it rejects the assumption that these differences are dysfunctional and are to be 'cured'. Instead, is a societal obligation that others make suitable adjustments and accommodations to enable inherent potential to be realized.

Although difficulties in performing certain tasks are recognized by this definition, these are compensated for by enhanced abilities within other areas of learning. This is illustrated by Cooper (2006), who suggests that characteristics associated with dyslexia incorporate advanced creative and visual thinking as well as unconventional intellect when confronted with problems/situations, in order to effortlessly form new perspectives. Neurodiversity conceptualizes dyslexia as a cultural phenomenon where individuals have been negatively labelled and excluded based on their differences, and therefore dyslexia should be re-framed as a positive learning variation. The aim of this approach is to recognize the unique talents of people with dyslexia which offer new and diverse perspectives, both within education and employment. Accordingly there is a move away from discussing the negative aspects of what dyslexic children can and cannot do, and celebrating the successes and talents of this particular minority group. From this perspective, the rejection of disability is replaced by a celebration of difference.

CONCLUSION

The aim of this article is to conceptualize the key models of disability in operation in the field of dyslexia research. Debates concerning dyslexia definitions are typically situated around basic concepts of either the biomedical model or social model, which characterize research and practice. Yet these definitions are usually applied in a very broad sense, and studies often apply variations of either model. From a sociological perspective, studies from within psychiatry, neurology and neuropsychology are frequently criticized as constructing a deficit ideology situated within a biomedical model approach. Yet this definition can be somewhat misleading, as a significant number of these psycho-medical studies employ a biopsychosocial perspective. Research by scholars such as Maggie Snowling and Angela Fawcett, although define the pathology of dyslexia from a deficit perspective, also focuses on environmental factors which affect the progression of the condition. Although these studies draw on a more progressive biopsychosocial approach, they still denote dyslexia as a neurological dysfunction that disrupts the functional ability of an individual, resulting in disabling factors. Therefore, although the biopsychosocial approach recognizes the psychological and sociological aspects of dyslexia, this model still individualizes disability due to biological factors.

Alternatively, scholars in sociology and social psychology often present their work from a social model perspective, but again, similar to biomedical practitioners, many of these articles are underpinned by a variation of the social model. Although research by Riddick (2001) and Macdonald (2009) makes reference to the social model of disability, both illustrate the importance of understanding how specific aspects of dyslexia interact with disabling barriers, thus applying a social relational model of disability. Similarly authors such as Campbell (2013) refer to the social model but construct dyslexia from a cultural perspective. Therefore this article suggests that: the social model focuses on universal barriers that affect all disabled people; the social relational model is an interactionist approach which examines the relationship between impairment (dyslexia) and disability (specific disabling barriers); and the affirmation model constructs dyslexia in linguistic terms that culturally exclude people labelled with the condition.

The final theoretical development discussed in the article is the concept of neurodiversity. Interestingly, from a neurodiverse perspective, the concept of disability is completely rejected and replaced with the notion of diversity grounded in learning variations. This constructs dyslexia entirely within the arena of 'difference' rather than 'deficit', and rejects any medical connotations relating to the condition (Pollak, 2009). Although this approach seems the most progressive framework referred to in this article, there should be a note of warning; i.e. adopting a neurodiversity perspective could potentially break ties with and stigmatize other disability groups. It should be noted that the social model aimed to unite impairment groups under the banner of 'disability' in order to confront structural inequalities and force political change. If we apply a neurodiversity perspective to dyslexia, then this logically separates the condition from other impairment categories. Finally, although the notion of 'difference' is attractive to people diagnosed with the condition, if dyslexia is not conceptualized as a disability then this might allow future governments to exclude the condition from disability legislation and policies.

To conclude, the author aims to define the dominant psycho-medical and socio-cultural frameworks in this paper for researchers and practitioners to apply and unite different perspectives within the inter-disciplinary field of dyslexia. Therefore, this article has presented a range of sociological frameworks to define the parameters of different theoretical frameworks to guide future research in the field.

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