Academic confidence and dyslexia at university

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This thesis is an account of the study, research processes, data analysis and discussion of an attempt to understand more about how the academic confidence of university students with dyslexia in the UK is affected by the identification of their dyslexia.

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# Abstract

## Re-drafted April 2020

This study explored how university students' academic confidence may be affected by them being identified as dyslexic. Contemporary views of dyslexia range from considering it primarily as a literacy-based, specific learning difficulty (BDA, 2017), to a multi-factorial information processing difference (Tamboer et.al., 2016). Currently, and by defining dyslexia as a disability, dyslexia-identified students at university in the UK are entitled to receive academic support to enable equitable engagement with their studies.

Confidence is a robust dimensional characteristic of individual differences (Stankov, 2012) and academic confidence has been defined as the level of strong belief, firm trust, or sure expectation of responses to the demands of studying at university (Sander & Sanders, 2006a). Academic confidence has been linked to academic capability and ultimately, to academic achievement (de la Fuente et.al., 2013). In this study, academic confidence was gauged using the Academic Behavioural Confidence (ABC) Scale, a metric designed to explore and explain differences in the study behaviours and learning strategies of students at university (Sander and Sanders, 2003, 2006a, 2009). The ABC Scale draws from the Social Cognitive Theory (SCT) of Bandura, and particularly the application of SCT to learning through the concept of self-efficacy (Bandura, 1997), considered as the parent construct of academic confidence (op cit, 2006a).

Data was collected by self-report questionnaire from a sample of n=166 university students, who had declared either a dyslexic learning difference or not. By comparing differences in ABC between students with dyslexia and those with no identified dyslexia, evidence emerged that the non-dyslexic students showed significantly higher levels of academic confidence than their dyslexia-identified peers, principally indicated by a large effect size (***g***=1.04). From the non-dyslexic group, a sub-group of quasi-dyslexic students was identified, being those who presented attributes and characteristics that were similar to those in the dyslexic group. To achieve this, a fresh metric was developed, the Dyslexia Index (Dx) Profiler, which framed dyslexia through the lens of study skills and learning behaviours at university. Existing dyslexia screeners were considered to be ethically inappropriate for this study. The academic confidence of students in the quasi-dyslexic group was compared to those in the dyslexic group, and the remainder of the non-dyslexic group. The quasi-dyslexic students also had significantly higher levels of academic confidence in comparison to their dyslexia-identified peers, indicated by a moderate effect size (***g***= 0.48). For students in the dyslexic group, significant differences in ABC were also revealed as a function of how these students were told of their dyslexia, with those whose dyslexia had been diagnosed as a disability showing the lowest levels of ABC. To further explore more nuanced differences between the groups, both principal component analysis and a tentative regression analysis were used.

The main conclusion drawn from attempts to explain the analysis outcomes was to suggest that identifying dyslexia in university students may be counter-productive, because this might negatively impact on academic confidence, and possibly on academic achievement.

[484 words]

# List of Abbreviations

|  |  |
| --- | --- |
| Abbreviation | Explanation |
| ABC | Academic Behavioural Confidence |
| ACS | Academic Confidence Scale |
| ADD | Attention Deficit Disorder |
| ADHD | Attention Deficit Hyperactive Disorder |
| ADSHE | Association of Dyslexia Specialists in Higher Education |
| BDA | British Dyslexia Association |
| BRAIN.HE | Best Resources for Achievement and Intervention re Neurodiversity in Higher Education |
| CDT | Cerebellar Deficit Theory |
| DAST | Dyslexia Adult Screening Test |
| DSA | Disabled Students' Allowance |
| Dx | Dyslexia Index |
| HE | Higher Education |
| HESA | Higher Education Statistics Agency |
| IPA | Interpretative Phenomenological Analysis |
| LADS | Lucid Adult Dyslexia Screener |
| MSc | Master of Science |
| MIS | Meares-Irlen Syndrome |
| PCA | Principal Component Analysis |
| QAA | Quality Assurance Agency for Higher Education |
| QRI | Questionnaire Response Identifier |
| RG:DI | Research Group DI - students with identified dyslexia |
| RG:DNI | Research Group DNI - students with quasi-dyslexia |
| RG:ND | Research Group ND - students with no identified dyslexia |
| SATA | Scholastic Abilities Test for Adults |
| SCT | Social Cognitive Theory |
| SLE | Smart Learning Environment |
| STM | Short Term Memory |
| SSD | Speech Sound Disorder |
| TEF | Teaching Excellence Framework |
| UDL | Universal Design for Learning |
| ViS | Visual Stress |
| VLE | Virtual Learning Environment |
| WFN | World Federation of Neurology |
| YAA-R | York Adult Assessment - Revised |

# 1 Study Overview

## re-drafted April 2020

### 1.1 Academic confidence and dyslexia at university

This study explored how the academic confidence of students at university may be affected by dyslexia-ness, the term used throughout this thesis to describe an individual’s intensity of dyslexic characteristics or dimensions.

The research was about gauging how the dyslexia-ness of students with identified dyslexia, or with previously unidentified dyslexia-like profiles (termed *quasi*-dyslexia), may impact on their study strategies and processes in relation to their sense of academic purpose. This was achieved by exploring the confidence they express in meeting the academic challenges of university. Thus, the objective was to determine whether an association exists between levels of dyslexia-ness and levels of academic confidence. The academic confidence of students with few or no indications of dyslexia will be used for comparison.

### I Dyslexia

In the context of this project, dyslexia at university is viewed as a learning difference rather than a disability. It is acknowledged however, that at its core, a legacy of literacy challenges in earlier schooling may place additional study demands on some university students with dyslexia in comparison with their non-dyslexic peers, which may place them at a learning disadvantage and which might be viewed as disabling. However, defining dyslexia remains contentious (e.g.: Tunmer & Greaney, 2010; Elliott & Grigorenko, 2014; Nicholson & Fawcett, 2017) especially in adults. This is perhaps unsurprising given the predominance of literature in the field has been interested in the syndrome in children, with a shift in focus to dyslexia in adults being relatively recent. This in part acknowledges that dyslexia persists into adulthood (Undheim, 2009; Carawan et.al., 2016), but also that as many higher intellectual functioning dyslexic adults are now attending university (Tops, et.al., 2012; Pino & Mortari, 2014), the arguably disparate nature of dyslexia has become more evidenced, not least by exploring levels of support for students with dyslexia and its effectiveness (Dobson, 2019).

The most wide-ranging and locally (i.e. UK) pertinent statement to describe dyslexia is demonstrated by the set of characteristics offered by the British Dyslexia Association (BDA, 2018). These suggest that: dyslexia is a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling, and occurs across the range of intellectual abilities; that characteristic features are difficulties in phonological awareness, verbal memory, verbal processing speeds, and that co-occurring challenges may be apparent in aspects of language, motor co-ordination, mental calculation, concentration and personal organization. Notably, the BDA indicates that dyslexia can be best considered as a continuum (Jamieson & Morgan, 2008; Reid, 2016; Edwards et.al., 2019) with no clear boundaries rather than a distinct category, not least due to the diverse range of characteristics that may be present or not in dyslexic individuals.

This current study acknowledges the breadth of this 'definition' of dyslexia and contends that it can be seen to be aligned with the more recent approaches towards understanding dyslexia as a multifactorial condition (Tamboer et al, 2014; Tamboer et al., 2017), which is arguably more relatable to the specific subset of adults with dyslexia who attend higher education. This is the contemporary view that the syndrome impacts on a range of literacy, cognitive and organizational competencies which, through variances of both degree and co-morbidity, can render the dyslexic individual at a disadvantage in conventionally delivered, literacy-based learning environments. The dyslexia debate is discussed more comprehensively in Section 2.1, where a selection of literature pertaining to the nature and aetiology of dyslexia is discussed, and where the stance of this current study on dyslexia is elaborated.

However, by taking the multifactorial approach to dyslexia, and so that the study could draw on a research pool of students across the complete university community, it was necessary to develop an innovative profiler to gauge dyslexia-ness. This was one which did not focus on deficit-discrepancy models or on disability, and which avoided ethical issues of disclosure that would have arisen had an existing dyslexia screener been used with non-, and especially with quasi-dyslexic students. This profiler was built from dimensions of dyslexia that have been shown to be typical amongst university students with dyslexia, but which could also be relatable study behaviours of non-dyslexic students. The development of this profiler is discussed in Section 3.3(IV).

### II Academic Confidence

Academic confidence is set as the dependent variable in this study. The position will be adopted that academic confidence is a sub-construct of academic self-efficacy (Sander & Sanders, 2003), and is concerned with a student's belief about their capability to perform a task at a particular level to attain a specific goal. Along with self-esteem, self-confidence, and notably, self-efficacy, these beliefs and attitudes form the core of our self-concept (Pajares & Schunk, 2005), and at university, act to guide students through the academic challenges that university study presents (Sander & Sanders, 2006a).

Academic confidence is grounded in the self-efficacy component of Social Cognitive Theory (SCT) (Bandura, e.g.: 1977, 1986, 1997a), itself concerned with how human actions and behaviours are self-regulated. Increasingly, components of the self, and more particularly, self-beliefs, are being cited as key indicators of students' motivation in learning environments (Zimmerman, 2000; Pajares & Schunk, 2002; McGeown, et. al., 2014). Academic confidence is likely to emerge primarily as a result of mastery experiences (Skaalvik & Skaalvik, 2002, Usher & Pajares, 2006), this being one of the four components of SCT, and is about achievements built on positive prior experiences in related, relevant contexts. The others are vicarious experiences - formed largely through gaining a sense of capability in comparison with others engaged in the same undertaking; verbal persuasion, notably through encouragement by people significant to the individual; and physiological and affective states, that is, how we *feel* when we are engaged in an activity or endeavour. These components of SCT are elaborated in Section 2.2(II), later.

Academic self-efficacy focuses on the features of self-efficacy which are presented in learning contexts. The research contributions of Zimmerman, Schunk and Pajares have been selected to demonstrate how SCT can be applied in educational settings, not least due to their relevance to university contexts. In particular, Zimmerman placed academic self-efficacy as a central component of the learning process through learners' beliefs in their capabilities to self-regulate their learning and master academic challenges, acquire new ideas and communicate their knowledge. Zimmerman (1990) evidenced that students who are competent self-regulators achieve stronger academic outcomes than their otherwise comparable peers who are poor self-regulators. All of these concepts and constructs are discussed in Section 2.2(III).

### III Academic Behavioural Confidence

Academic behavioural confidence is used to operationalize academic confidence through use of the Academic Behavioural Confidence (ABC) Scale, following precedents set in other studies (e.g.: Putwain et al., 2013; Nicholson, et.al., 2013). ABC emerged from earlier attempts to explain differences in the reasons provided by university students from two different cohorts to defend their preferences for particular pedagogical processes, namely learning through role-play or through peer-group presentations. At that time, academic confidence was proposed as “a mediating variable between the individual's inherent abilities, their learning styles and the opportunities afforded by the academic environment of higher education” (Sander & Sanders, 2003, p4). It was first operationalized as the Academic Confidence Scale which was later revised into the Academic Behavioural Confidence Scale because it was better seen to be gauging confidence in behaviours, actions and plans related to academic study (Sander & Sanders, 2006a). The ABC Scale is designed to be a general measure of students' confidence about their academic work at university.

### IV Location and stance of the study: Impact Statement

This study provides evidence to suggest that students who know about their dyslexia present lower levels of academic confidence in comparison with their non-dyslexic peers. The study also shows that the terminology used to tell newly-assessed students of their dyslexia may also have a significant effect on their academic confidence. This adds to the limited range of research relating to the academic confidence of university students from minority groups, especially those deemed to have learning disabilities however these might be defined. The conclusions of the study support a contemporary view favouring a shift in the delivery of university learning towards increased inclusivity and accessibility. The impact of this would be that be accommodating greater learner adaptability and learning flexibility, learners with dyslexia, however this is also defined, might feel more included and less 'different' (e.g.: Dykes, 2008; Thompson et al., 2015).

This might be achieved by adopting the principles of Universal Design for Learning (UDL; Rose et al., 1999; Rose & Meyer, 2002), an original approach to redesigning classrooms and curriculum delivery to extend the rights of students with disabilities for better access to the general education curriculum. Encouraging the design and development of more accessible curricula is argued to be preferable to retrofitting the curriculum to the learner (Lancaster, 2008) by way of 'reasonable adjustments' (discussed in sub-section 2.1(I)). UDL provides a blueprint for institutions to become accessible and inclusive without the need for differentiation of learning spaces or curriculum delivery, previously thought as the most appropriate way to accommodate the atypical learning needs of disabled students. In UDL environments the principles of inclusivity are embraced, thus ameliorating an emerging disconnect between the 'one-size-fits-all' curriculum and increasingly more diverse communities of learners (Edyburn, 2010).

Thus, it is reasonable to suppose that the positive strengths and qualities that form part of a spectrum of apparent learning differences could be integrated into the development of the learner in ways that would encourage a greater sense of academic agency to emerge through stronger academic confidence. Hence, this may contribute positively towards better and more successful academic outcomes at university (Nicholson et al., 2013).  Zimmerman spoke of academic confidence in the context of academic agency (discussed in Section 2.2(III)), which he described as “a sense of [academic] purpose, this being a product of self-efficacy and academic confidence that is then the major influence on academic accomplishment” (1995, p202). It is through the lens of academic confidence, as a sub-construct of academic self-efficacy (Sander & Sanders, 2006a), that this research project has been tackled.

Hence, the stance of the research particularly supports those aspects of the inclusion agenda in education contexts which advocate rethinking the design and delivery of learning curricula, not least to reduce the persistent reliance on literacy-based formats, claiming that this is inherently unjust. This is to argue for the re-framing of learning and teaching environments at university to accommodate learning diversity more equitably, which may then consign into redundancy the need for special conditions and reasonable adjustments for many students with unseen differences or disabilities.

## 1.2 Research Design and methodological overview

### I Background - the preceding small-scale enquiry

The legacy of outcomes from the researcher's preceding Masters' dissertation (Dykes, 2008) has had a significant impact on the development of this current project. This was a small-scale enquiry conducted within the dyslexic student community at a UK university. The aim was to try to understand why some students with dyslexia strongly advocated the learning support value of a dedicated learning technology suite staffed by dyslexia and disability specialists; whilst others with apparently similar dyslexic profiles appeared ambivalent towards these services. This was evidenced through the former making frequent use of the suite and services whereas the others were only infrequent visitors despite initially registering for access. It was hypothesized that this disparity might, in part at least, be due to differences in the attitudes and feelings of students with dyslexia to their own dyslexia, but particularly to their perceptions about how it impacted on their access to, and their engagement with their learning at university. The analysis outcomes were mixed, making it difficult to establish clear conclusions and revealing that the issue was far from straightforward; but also could have been attributable to the small sample sizes of the research groups and to a research design which, with hindsight, could have been better developed. However, three influential aspects emerged from this study: firstly, lessons were learned about constructing online survey questionnaires and in particular how to design and incorporate Likert-style scale items into questionnaire design; secondly, considerable value was ascribed to the development of profiling charts to visualize quite complex interrelationships between variables (see Section 3.3/III(2)). An important aspect of these were the opportunities they afforded to spot patterns, similarities and contrasts, not so much between the profiles of individual respondents, but how respondents could be grouped into subsets. Thirdly, it became clear that the opportunity provided in the questionnaire for students to reflect and report on how they felt their dyslexia impacted on their studies, and how the university responded to their learning needs, was widely welcomed. This qualitative data was optionally provided, although a significant majority of participants contributed to this section of the questionnaire.

### II structure and process

##### Epistemological position

This was a primary research project grounded in a methodologically pluralistic approach (Johnson & Onwuegbuzie, 2004; Johnson, et.al., 2007). Thus, a blend of both quantitative and qualitative methods and analysis was used, an approach widely practised across domains of educational research (Seigel, 2006). The epistemological position draws from four components of sources of knowledge: intuitive: concerning belief, faith, feelings; authoritarian: from taught, defined or existing facts; logical: as deduced from reasoning; and empirical: being demonstrated from experimentally derived evidence. However, a greater reliance is placed on the logical and objective interpretation of facts established from observed data. Hence this is to adopt a Deweyist, pragmatic philosophical position grounded in pluralistic empricism in relation to the design and action of the research process and for understanding the outcomes (e.g.: Shook, 2002). Espousing the positivist paradigm generally attributed to Comte (Acton, 1951; Cohen, et.al., 2007), the purpose of the research was to accept or reject hypotheses through due scientific process. In this way, statistical analysis of data leading to generalizable findings based on comparisons between a control and an experimental (or test) group were the basis.

##### Process

This study has been underpinned firstly by a review of a range of literature (in Section 2.1) on the nature, aetiology, identification and assessment of dyslexia, with dyslexia amongst university students framing the selection strategy. This informed the establishment of a fresh descriptor, dyslexia-ness, as one element of the research design. This is a measure of the intensity that the attributes and characteristics of dyslexia have on study behaviours at university. Dyslexia-ness has been operationalized through the development of a profiler and a new metric, Dyslexia Index (Dx), (discussed in Section 3), which aimed to be valid across the wider student community rather than be focused specifically at students with identified dyslexia. This served as an essential component to the study, enabling a test sub-group of quasi-dyslexic students to be established in a way that was ethically non-controversial. These were students who appeared to be presenting many characteristics and attributes typically associated with dyslexia but who were not identified as dyslexic. Thus, comparisons could be made with both a control subgroup of students with a formal identification of dyslexia, and a base subgroup of non-dyslexic students, as determined by their low levels of dyslexia-ness in the profiler.

Secondly, a comprehensive review of the theory and previous research relating to academic confidence, principally operationalized through academic *behavioural* confidence, has been presented (in Section 2.2). Academic confidence is located within the framework of the parent construct of academic self-efficacy, itself identified as an element of Social Cognitive Theory (SCT) in extensive earlier research by Bandura (e.g.: 1997b, 2000, 2001). SCT about explaining human behaviour in the context of systems of self-regulation, and Bandura's thesis is that these systems are the principal activators of all individuals' actions and behaviours. The theory is outlined and selectively reviewed, particularly in relation to education and learning in Section 2. Hence, the use of academic confidence as a construct is discussed from the theoretical perspective, with data collected using the existing, Academic Behavioural Confidence (ABC) Scale, which sets out to gauge students’ actions and behaviours in academic study (Sander & Sanders, 2006a).

Data collected from a sample of university students through an online, self-report questionnaire was largely quantitative, although additional qualitative responses were invited. Statistical analysis set out to explore research questions about the extent to which dyslexia-ness impacted on academic confidence (see 1.4, below). Null hypotheses are stated, and evidence to address these was based on effect size differences between research group and subgroup sample means, supported by conventional independent sample means’ *p*-value outcomes. Although the analysis was able to respond adequately to the research hypotheses, it was considered that exploring dimension reduction techniques using principal component analysis might add depth to the results. The outcomes were mixed, perhaps indicating that this approach may need a larger and/or more diverse sample for more convincing outputs to be generated. A regression analysis was also tentatively explored to determine whether the output might add substance to the analysis outcomes (see Section 4). These additional analyses are reported and discussed, although the results are used mainly to suggest possible directions for future research (see Section 6).

Qualitative data was also collected, although providing it was optional, with none being received from students in the non-dyslexic group. Hence, although conducting an Interpretative Phenomenological Analysis may have been a possible approach for analysing these data for the dyslexic group alone, as no comparison was available with other participants, it was considered more appropriate to use these data to contextualize some of the statistical conclusions in the discussion element of the thesis instead, and where apposite (see Section 5). However, these data have been reserved for a focused analysis later which may be included in a subsequent study.

### II Register

The majority of this thesis is written objectively and in the third-person. However, some sections relate more of the personal and reflective elements of the learning journey of the researcher, and hence are narrated in the first person. This also serves to distinguish between the reporting of the evidence-based outcomes of the project and my stance as a practitioner-researcher in the field of education and learning development at university. Where direct quotations have been taken from other literature, these are shown in double quotation marks; single inverted commas are used as marks of emphasis (e.g.: ‘reasonable adjustments’); direct quotations from participants in this, and other studies are italicized when presented in the narrative, or shown in a reduced font-size when part of a bulleted list.

## 1.3 Research Importance

No peer-reviewed studies were found that specifically explore how the academic confidence of dyslexic students at university may be affected by their dyslexia when compared to their *quasi*-dyslexic and non-dyslexic peers. Searching across journals databases revealed only an unpublished dissertation (Asquith, 2008) which explored how dyslexia was related to academic confidence and to self-esteem. This study hypothesized that dyslexic students who were receiving support would present higher levels of each of these constructs in comparison to dyslexic students who were not. A significant feature of the study was an assumption that a proportion of the apparently non-dyslexic students recruited into the study may present characteristics of dyslexia, as determined by use of the Vinegrad Adult Dyslexia Checklist (Vinegrad, 1994). Hence, three research subgroups were established: dyslexic students, non-dyslexic students and quasi-dyslexic students although this term was not used. Although not considered as a precedent, similarities between that study and this current research were apparent. Discussed more fully later (Section 2.2), briefly, Asquith identified significant differences in mean values of academic confidence, (evaluated using the ABC Scale), between dyslexic and non-dyslexic students. Investigating differences between dyslexic and quasi-dyslexic, or non-dyslexic versus quasi-dyslexic students did not appear to have been attempted. Nothing was said about how ethical tensions were resolved in relation to apparently identifying dyslexic students previously considered to be non-dyslexic, and how this may have been disclosed and followed up. However, although limited in its scope, research design, and verifiable outcomes, Asquith’s study has been a useful example of one of the earliest uses of the ABC Scale, notably with dyslexic students. This current study takes a more robust approach to developing clearly focused research questions (see 1.4, below), addressed by a research design (Section 3) grounded in an extensive review of the pertinent literature (Section 2), together with a more elaborate analysis of data collected (Section 4). Hence this study fills a gap in the existing research.

## 1.4 Research questions and hypotheses

Research questions were formulated thus:

Firstly, do students who know about their dyslexia present different levels of academic confidence to that of their non-dyslexic peers? If so, can factors in their dyslexia be identified as those most likely to account for these differences, and are these factors absent or less-significantly impacting in non-dyslexic students?

Secondly, do students with no formally identified dyslexia, but who show evidence of a dyslexia-like learning and study profile, that is, present quasi-dyslexia, present different levels of academic confidence to that of their dyslexia-identified peers? If so, are the outcomes sufficient to suggest that identifying dyslexia in student learners is detrimental to their academic confidence?

Hence these research questions enabled two, corresponding hypotheses to be formulated:

* Ho(1) = There is no difference between dyslexic and non-dyslexic students' levels of academic confidence;
* AH(1) = Non-dyslexic students present a higher level of academic confidence than their dyslexic peers.
* Ho(2) = There is no difference between dyslexic and quasi-dyslexic students' levels of academic confidence;
* AH(2) = quasi-dyslexic students present a higher level of academic confidence than their dyslexic peers.

Furthermore, amongst students with identified dyslexia, does the manner in which these students have learned of their dyslexia impact on their levels of academic confidence? Is there evidence more specifically, that students whose dyslexia has been *diagnosed* to them as a *disability* present lower levels of academic confidence than those whose dyslexia has been reported to them in other ways, for example, *identified* as a *difference.* If so, this may imply that insufficient merit is accorded to the importance of not presenting dyslexia in clinical terminology, arguably a legacy of the out-dated, medical model of disability.

Hence these subsidiary questions prompted a further hypothesis:

* Ho(3) = Amongst students with dyslexia, there is no difference in academic confidence between students whose dyslexia was formally diagnosed to them as a disability, and those who formally learned of their dyslexia in other ways;
* AH(3) = Students who were formally diagnosed with dyslexia as a disability present lower levels of academic confidence than their dyslexic peers who formally learned of their dyslexia in other ways.

[3625 words