Self-Efficacy in Undergraduate Students with Dyslexia: A Mixed Methods Investigation

*Abstract*

It may be thought that gaining a place at university confers self-belief in students with dyslexia; after all they have succeeded in their academic studies. Our research explored self-efficacy beliefs in university students with and without dyslexia. An Academic Self-Efficacy scale and Sources of Academic Self-Efficacy scale were completed by 44 university students. These scores were compared between dyslexic and non-dyslexic students. Interviews were conducted with eight participants to gain a fuller understanding of how their self-efficacy beliefs develop. Undergraduate students with dyslexia scored lower than students without dyslexia on four out of the five measures of academic self-efficacy. The dyslexic students reported role models, teachers and school performance as factors influencing their motivation toward academic work. The research suggests that university students with dyslexia still need interventions to help boost their self-efficacy profiles despite the level of success they have achieved in gaining a place at university.

Keywords: Self-efficacy, Bandura, dyslexia, mixed methods, higher education

Dyslexia is a specific learning difficulty which primarily affects the skills involved in reading and spelling. Dyslexic students form the largest single group of disabled students in higher education (Weedon & Riddell, 2005). The DSM-5 (APA, 2013) categorises dyslexia as a specific learning disorder. The specifier dyslexia is characterised by difficulties with phonological processing, rapid naming, working memory and processing speed. Throughout early education, these struggles can lead to frustration and low self-esteem in children (Singer, 2008). Students may also feel inferior compared to similar aged peers who are learning to read at a quicker pace (Riddick, Sterling, Farmer & Morgan, 1999). These difficulties persist into higher education where students with dyslexia face a set of broad challenges to their learning and self-perception (MacCullagh, Bosanquet, & Badcock, 2017) and often receive lower pass rates for degrees (Richardson, 2010). For some time, educators have acknowledged that students’ beliefs about their academic capabilities play an essential role in their motivation to achieve (Zimmerman, 2000), which (amongst other motivational factors) makes self-efficacy an important topic to investigate. Self-efficacy is defined as a person’s belief in their capability to perform a specific task (Bandura, 1977). It might be expected that students with dyslexia who achieve a university place may have similar levels of self-efficacy to their typically developing peers; however, self- efficacy beliefs in dyslexic undergraduate students remains an understudied area.

Self-efficacy can determine how much effort people invest in tasks and how long they will persist in the face of obstacles, and low-self efficacy can lead to self-doubt and avoidance of circumstances where the individual thinks they will fail (Bandura, 1977). Bandura hypothesised four primary sources that influence the development of self-efficacy: past achievements (or mastery experience), vicarious experiences, social persuasion and psychological state. In an academic context, past achievements refer to the interpretation and evaluation students make after they have obtained an academic result. If they believe they have been successful, their confidence to accomplish similar tasks is raised, if they believe they have failed, confidence is diminished (Usher & Pajares, 2008). Past achievement is the most influential source for the development of academic self-efficacy beliefs (Bandura, 1977; Britner & Pajares, 2006). In relation to vicarious experiences, students are often asked to rate the degree to which they are exposed to peer or adult models who demonstrate competence in their academic subject of interest (Palmer, 2006). Social persuasion refers to information the individual receives from others, such as parents, teachers and peers. Individuals rely heavily on both positive and negative evaluative feedback from others regarding their academic performance (Usher, 2009) and family can play an important role in bolstering self-confidence (Nalavany & Carawan, 2012). Finally, emotional and physiological states, such as anxiety and mood both moderate levels of stress, which can energise high achievers, but can negatively affect low achievers, (Palmer, 2006).

In educational settings, self-efficacy is a highly effective predictor of students’ motivation and learning (Zimmerman, 2000), and it predicts academic achievement and career decisions across domains and age levels (Betz & Hackett, 1981; Britner & Pajares, 2006). It might be thought that undergraduate students with dyslexia have managed to overcome poor self-evaluation. However, even when dyslexic students successfully obtain university places, they still face difficulties with a range of academic skills (Mortimorea & Crozier, 2006). These students have often faced distress and failure during their schooling (Ingesson, 2007), and some feel that academics have little knowledge of dyslexia (Mortimorea & Crozier, 2006) and feel that they are considered lazy (Humphreys, 2002). University students with dyslexia report higher levels of somatic complaints, social problems, lower self-esteem, and higher depression scores than their peers (Ghisi, Bottesi, Re, Cerea, & Mammarella, 2016, Carroll & Iles, 2006). Students with dyslexia are reluctant to seek help at university for fear of being stigmatised and work considerably harder to keep up with courses than their non-dyslexic peers (Denhart, 2008). Given the association between self-efficacy and academic achievement, it is important to investigate the levels of self-efficacy in undergraduate students with dyslexia.

In this study two self-report scales adapted for this study were used to measure students overall academic self-efficacy. We also employed a semi-structured interview format to invite participants to elaborate on those experiences that have been most significant to them over time. It is hypothesised that non-dyslexic students will score higher than the dyslexic students on the Academic Self-Efficacy Scale which measures feelings about the student’s current work. The Sources of Academic Self-Efficacy Scale is composed of four subscales, each measuring the potential influence they have on student’s self-efficacy. Implementing Bandura’s theory, it is hypothesised that the dyslexic students will score lower on each of the scales when compared to the non-dyslexic students. For the qualitative data, the following research question was considered: How do students feel that their self-efficacy beliefs have developed throughout their education?

**Method**

*Participants*

A self-selected sample of 44 undergraduate students (18-32 years) with and without dyslexia took part in this study (15 male and 29 female). All students were studying at XXXXXXXX University at the time of the research. There were 22 participants in the non-dyslexia group (13 female and 9 male) and 22 participants (16 female and 6 male) in the dyslexic group. Students with dyslexia were asked to show a copy of their diagnostic assessment from an educational psychologist before taking part in the study. All participants carried out the quantitative part of the study and eight participants were interviewed, four of whom were dyslexic (see Table 1). This study gained ethical approval from the Department of Psychology Research Ethics Panel \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*. Participants gave their informed consent, agreeing to take part in an online survey, eight participants also consented to take part in a semi-structured interview.

*PLACE TABLE 1 HERE*

*Materials*

Banadura (2006) stated that scales of perceived self-efficacy must be tailored to the domain of functioning that is the object of interest, in this case, academic self-efficacy. Therefore, two scales were developed by the lead researcher. An eight-item academic self-efficacy scale (α = .85), which was developed following the advice set out by Bandura (2006) and a 32 item sources of academic self-efficacy scale (α = .87), which was developed using guidance from a review of the sources of self-efficacy by Usher and Pajares (2008; see appendix for full set of scales).

*Academic self-efficacy scale* – Referring to Bandura’s (2006) “Guide for constructing self-efficacy scales”, an eight-item academic self-efficacy scale was developed (α = .85) Participants were asked to rate on a 10-point Likert scale their confidence level for each statement, such as “I am confident that I can take well organised notes in lectures”. This measure was designed to cover a variety of skills relevant to academic achievement by including general statements regarding academic confidence.

*Sources of academic self-efficacy scale* - A second scale consisted of four subscales, each containing eight items, tailored to measure each of the four sources: Past Achievements (α = .87), Vicarious Experience (α = .61), Social Persuasion (α = .74) and Psychological State (α = .75). These included questions such as “I achieved good grades in my previous school”, which is a measure of mastery experience by looking at past achievements. The scale was developed by looking at a collection of sample items from Usher and Parajes’s 2008 review, in which they assessed and analysed methods of measuring the sources of self-efficacy.

*The interview*

The interview combined the use of nondirective and semi-structured questions, which allowed for both the flexibility required during each interview and the standardisation needed to acquire similar information from each participant. The interview protocol was developed using Bandura’s (1977) four sources of self-efficacy as a theoretical framework to explore the development of student’s academic beliefs. A copy of both the scales and interview protocol are available in the appendices.

*Procedure*

Participants completed the study online. After logging onto the site, they completed a brief demographic information questionnaire, and were asked if they were dyslexic or not. If students clicked yes, they then were asked if they would be able to show the researcher a copy of their diagnosis, if participants with dyslexia were unable or unwilling to do this they were thanked for their time, but did not go on to the next stage of the study. Participants then completed the measures on line taking between 15 and 20 minutes. The qualitative interviews were face-to-face and took place in a quiet study room and lasted between 20-45 minutes. The interview was audio recorded and transcribed verbatim.

*Data Analysis*

The qualitative data was analysed using a thematic analysis protocol as described in Braun and Clarke (2006). The first stage involved familiarisation with the data set. This began with the transcription of the interviews. This was followed by several readings of the data, whereby points of interest and significance were noted. The second stage involved the generation of initial codes. This was carried out with the advice taken from Braun and Clarke, to code for as many potential themes/patterns as possible. At the third stage, potential themes were developed from the initial codes. Relevant quotes were then compiled for each emergent theme. These themes were defined to ensure the purpose of each theme. This process was repeated for each transcript, and the overarching themes from each interview were developed. Thematic maps were finally produced to note the boundaries of each sub-theme, and to graphically illustrate the relationship between them (see Figure 1).

Place Figure 1 here

**Results**

Multiple independent-samples *t*-tests were conducted to compare the self-efficacy beliefs and the sources of self-efficacy beliefs between university students, with and without dyslexia (Table 2). Due to the number of comparison being made a more stringent alpha value of .001 was used. There was a significant difference between the two groups on the academic self-efficacy scale, with non-dyslexic students scoring higher than dyslexic students. Non-dyslexic students’ scores were also significantly higher than dyslexic students for past achievements, social persuasion and physiological state. There was no significant difference for vicarious experiences.

PLACE TABLE 2 HERE

Thematic Analysis

Three distinct themes emerged from the analysis and these were ‘*Ability Awareness*’, ‘*Impact of School*’, and ‘*Observing others”*. Some of the themes are in line with the quantitative data; although the theme “observing others” was only important to the students without dyslexia.

 *Ability Awareness*

A dominant theme that occurred in all the interviews, was the extent to which the participants were aware of their academic or practical ability. All four of the dyslexic students stated that they were weak in Maths, English or Science and had always struggled with those subjects.

I didn’t do very well at school, either in Maths or English. It was only Fine Art that I did really well. (Sophia, dyslexic)

Maths, English, Science, I’m not confident at all, it’s more practical subjects… Sports, Textiles, Media, I’m absolutely fine. (Lily, dyslexic)

The students without dyslexia did not mention many struggles with their academic performance at school, and this increased confidence is mirrored in their quantitative general-efficacy results.

I have a relatively high academic confidence…because I’ve always set myself a high standard and I’ve always hit my targets. (Ben, Non-dyslexic)

For my GCSE’s I got all A’s and A\*s…when I started my A-levels… I got an A\* in Psychology and a B in Philosophy and Ethics, I got a B in English AS and C in Spanish. (Kerry, Non-dyslexic)

Despite poor school grades in most subjects, the students with dyslexia had one subject area in which they excelled and may have aided in the development of their academic self-efficacy.

I find practical stuff so much more easier and enjoyable, that’s why I chose a practical course. (Lily, Dyslexic)

I was never very good at English, Maths or Science so that kind of closed that door. And one of the reasons she went on to study sports was because “It was the only thing that seems logical…because I was also best at it. (Jade, Dyslexic)

*Impact of school*

The theme is concerned with the impact past schooling, as well as, previous and current teachers had on the student’s academic self-efficacy. The impact of school on the development of self-efficacy only emerged from the students with dyslexia. The theme is made up of two sub-themes, ‘lack of support’ and ‘encouragement from significant teachers’. Lack of support, specifically from teachers, is highlighted as having a negative impact on psychological wellbeing and confidence in academic ability.

I didn’t get enough help off my teachers in secondary school…I thought I was failing, I didn’t know what my options were because I didn’t have the support system at my first school... the experience was horrendous (Lily, dyslexic)

The lack of support from teachers meant that Lily had to move school to get more support. Gary similarly perceived a lack of support from his teachers. Following this, he suffered academically because he lacked the basic skills to learn.

Through primary school… I couldn’t read properly, I struggled... they (the teachers) just thought, ‘oh it’s a learning phase, he’ll get through it’…when I went to secondary school, I didn’t do well because I couldn’t learn anything. I didn’t have the skills to learn anything. (Gary, dyslexic)

“In primary school, there was one teacher that didn’t really believe that what I had was real, she just thought I was lazy. (Jade, dyslexic)

Jade’s comment here is unique in this study, as none of the other students with dyslexia mentioned anyone having this opinion. Training in dyslexia for more recent recruits to the teaching profession has promoted positive beliefs and values about dyslexia (Gwernan-Jones and Burden, 2010). This in turn could increase the self-efficacy beliefs students come to hold regarding their academics.

The second sub-theme covers the impact of positive encouragement from specific teachers. Often it was the teachers in the subject area in which they excelled who provided the encouragement.

My PE and textiles teachers were fantastic as I was really good at those subjects. (Lily, dyslexic)

I did have a brilliant Art teacher between year 10 and 11… she was the person that pushed me to go to university and do a fine art degree. (Sophia, Dyslexic)

I’ve gained a lot of confidence… they’re brilliant the lecturers, the course leader, he’s just brilliant, really sort of encouraging... makes you feel like I’m actually doing something worthwhile. (Sophia, dyslexic)

With the lecturers in college…they were so good to me. …they knew that I was struggling… they sat me down and said, ‘look Gary, you are physically good with what you do in sports, and it’s a good job you are doing sports because you are really good at it… but what’s holding you down is the, your academics…don’t take it to heart that your academics down, take that as a great positive, see that as a strength than a weakness. If you do that, you can achieve anything’. So that’s helped me a lot. It really helped me a lot. (Gary, dyslexic)

*Observing others*

The theme ‘observing others’ was notably present only in the non-dyslexic data sets. Observing and learning from others was a strong factor in boosting self-efficacy beliefs in students without dyslexia.

“I had a friend and she was always in the… the top classes…I got moved to the top in some of her classes… Because I was working with her, I could see a difference in the level of her work and my work, and I think I just kind of learnt off her to do it in her style… I gained better grades and better confidence. (Amy, non-dyslexic)

Students will seek out a model competent at tasks to which they aspire, particularly a model with status, power, and prestige (Bandura, 1997). This is evident in both Michael and Ben’s case where they observed high-status models and expressed how this affected their confidence in academics.

 Nothing inspires me more than watching people do what I want to do. Seeing how high profile some of these great filmmakers are, and seeing how good they are. It really motivates me to get to that level… I gained confidence. (Ben, non-dyslexic)

I watched a documentary about Victoria Pendleton the cyclist, and she eventually married her sport scientist on the team … I thought I could have a crack at that. (Michael, non-dyslexic)

**Discussion**

The modified self-efficacy scales reported in this research successfully differentiated the dyslexic group from the non-dyslexic comparison group. The findings demonstrated that students with dyslexia reported overall lower self-efficacy beliefs than non-dyslexic students, even though they had successfully gained entry onto undergraduate courses. This was the case for all the subscales apart from ‘Vicarious Experience’. These findings support previous research reporting that students with learning difficulties demonstrate lower self-efficacy for academic work (Hampton & Mason, 2003; Margolis & McCabe, 2003), and the data reported in this paper extends this to an undergraduate dyslexic sample.

The dyslexic students scored lower than the non-dyslexic students on the ‘Past Achievements’ scale. In the interviews, they reported low grades and a general lack of confidence during their school years, especially in core curriculum subjects. In general students with dyslexia face recurrent academic failure at school (Singer, 2008). Coping with repeated academic failure can hinder an individual’s development of self-efficacy. However, the students in our study all reported excelling in one subject area, and it was this area that they went on to pursue at university.

‘Social Persuasion’ scores were also significantly lower for the dyslexic group. The qualitative analysis suggested a mixed picture with students reporting both negative and positive social persuasion, especially from teachers. Gwernan -Jones and Burden (2010) suggested that the commitment and capability of teachers are the most important determinant of learning outcome in children with dyslexia. Positive social persuasion is an important factor in boosting confidence, and praise can diminish previous pejorative evaluations the student may have received (Klassen & Lynch, 2007). At university level, staff engagement with dyslexic students also has the deleterious effect of raising the teaching professional’s knowledge of dyslexia, and engagement increases the amount of support the staff member provides to students with dyslexia (Cameron & Nunkoosing, 2012). In situations where academic underachievement is occurring, the qualitative analysis in our study suggests that positive social persuasion plays an important role in building self-efficacy beliefs.

A few of the non-dyslexic students talked highly of people who are high profile individuals in their line of work/subject area. The link between the actions of others and self-confidence in the observer was not mentioned by any of the dyslexic participants, but no difference between the two groups was reported on the scale measuring ‘Vicarious Experiences.’ This suggests that role-models are still important motivators for individuals with dyslexia. The importance of seeing others succeed supports Bandura’s theory that individuals will seek out models that are competent at tasks to which people aspire.

 Previous research has found that students with learning disabilities tend to use the four self-efficacy sources reported in this paper less to develop their self-efficacy beliefs (Hampton & Mason, 2003). The findings from this study support this theory. Our findings suggest that students with dyslexia maintain low self-efficacy, even as they pursue their chosen university course. Of note was the low scores reported by students with dyslexia on the measure of ‘Physiological State’ which measures physical and emotional discomfort in academic situations, and demonstrates that being dyslexic continues to have a negative psychosocial impact even in higher education. With withdrawal from university courses and low-achievement being prevalent among university students with dyslexia (Richardson & Wydell, 2003), focus on building self-efficacy has a role to play in student success. Our study suggests that the efficacy beliefs of students is more complex than initially believed. Students with dyslexia may have generally low self-efficacy for academic ability; however, their efficacy beliefs for a subject area may be high. When exploring this, it is important to see how their self-efficacy belief was developed and widen this confidence to other areas of self-efficacy.

Acknowledgement of the boarder psychosocial issues faced by students with dyslexia is beginning to have an impact on early education and research is providing positive ways forward for educators and individuals with dyslexia. For example, Lindeblad, Svensson, and Gustafson (2016) report that a sample of dyslexic children aged 10 years to 16 years did not report a negative self-image when compared to non-dyslexic peers and did not display higher levels of anxiety or depression. The authors suggest that this outcome is due to educators focusing less on problems relating to reading and instead developing a more positive and encouraging learning environment; thus, supporting children without overtly focusing on their disability. Psychologist and educators have a positive role to play in improving self-efficacy in pupils and interventions programmes are generally positive and have a higher than average effect size (Samadi, Abedi, Shamsi, & Ahmadzadeh, 2015). In higher education, students with dyslexia who can overcome past experiences of negative schooling are better at taking control of their learning and accepting limitations (Lam, 2016). The negative effects of being a university students with dyslexia can also be mediated by positive family support (Nalavany & Carawan, 2012) as well as adaptations such as adaptive techniques, special provisions from lecturers and general assistance provided by the university (MacCullagh, Bosanquet & Badcock, 2017).

*Limitations*

Dyslexia is a complex learning difficulty that manifests differently in each individual. The present study did not look at the severity of dyslexia. This may have affected the participants’ perceived self-efficacy. The study also did not consider coping mechanisms the dyslexic students may have learnt from early interventions. Future research may explore how different levels of severity impact the processing of information from the environment that might affect sources of efficacy and the development of self-efficacy beliefs.

The validity and reliability of measured self-efficacy must be taken into consideration as the scales used in this study were composed by the author and have so far only been used in this study for measuring self-efficacy and the sources. The scales were developed by looking at a collection of sample items from Usher and Parajes’s review (2008), in which they assessed and analysed methods of measuring the sources of self-efficacy. This was in addition to following Bandura’s guide to contrasting scales for measuring academic self-efficacy. The scales have good internal reliability and differentiated between a dyslexia and non-dyslexia group, but they represent a first step in learning more about self-efficacy in this population.

*Conclusion*

Our research suggests that even dyslexic students who have achieved a place at university suffer from low self-efficacy beliefs when compared to their peers. The research suggests that these beliefs stem from negative appraisals at school and a failure to achieve across academic subjects. University support teams need to engage with the self-efficacy beliefs of their students with dyslexia and seek to reverse these areas of potential weakness. The measures developed in this paper provide a first-step to assessing self-efficacy beliefs in university students, and highlight specific domains where improvements could be made. Further research is needed to develop effective interventions to build self-efficacy in a manner which can be measured to chart improvement.

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Table 1 Characteristics of participants used in the interview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Participant** | **Gender** | **Age** | **Dyslexic / Non-dyslexic** | **Degree title** |
| **Kerry** | Female | 21 | Non-dyslexic | Psychology |
| **Ben** | Male | 22 | Non-dyslexic | Film and TV production  |
| **Michael** | Male | 30 | Non-dyslexic | Sports Science |
| **Amy** | Female | 22 | Non-dyslexic | Sports Science |
| **Jade** | Female | 21 | Dyslexic | Sports Science |
| **Gary** | Male | 20 | Dyslexic | Sports Coaching |
| **Sophia** | Female | 21 | Dyslexic | Fine Art |
| **Lily** | Female | 22 | Dyslexic | Film and TV production |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Measure | Participant Type | M | SD | *t*  | *p*  | *d* |
| Self-Efficacy | Dyslexic | 5.36 | 1.24 | 5.01 | <.001 | 1.52 |
|  | Non-dyslexic | 7.12 | 1.06 |
| Past Achievements | Dyslexic | 5.19 | 1.36 | 5.23 | <.001 | 1.60 |
|  | Non-dyslexic | 7.12 | 1.02 |
| Vicarious Experiences | Dyslexic | 6.17 | 1.21 | 1.21 | .232 | 0.38 |
|  | Non-dyslexic | 6.61 | 1.17 |
| Social Persuasion | Dyslexic | 5.94 | 1.41 | 3.62 | <.001 | 1.09 |
|  | Non-dyslexic | 7.23 | .89 |
| Physiological State | Dyslexic | 4.36 | 1.41 | 5.10 | <.001 | 1.56 |
|  | Non-dyslexic | 6.42 | 1.22 |

Table 2 Results from the qualitative analysis

Figure 1. Final thematic map, showing final three main themes

Appendix A

Academic Self-Efficacy Scale

On a scale of 1 to 10 please rate how confident you are about doing each of the behaviours listed below.

1. I am confident that I am able to complete my work on time and to a good standard
2. I am confident that I will pass an exam after revising hard
3. I am confident in understanding a journal article or academic book after trying hard to understand.
4. I am confident in my ability to search effectively for relevant background reading when writing an essay
5. I am confident that I can take well organised notes in lecture
6. I am confident in answering questions in class
7. I am confident that I will achieve the grades I want
8. I am confident in my ability to manage my time effectively

Sources of Self-Efficacy Scale

On a scale of 1 (definitely false) to 10 (definitely true) rate these statements on how true/false they are to you.

**Mastery experience**

1. I achieved good grades in my previous school
2. I achieved good grades in my previous college/6th Form
3. I achieve good grades in my university work
4. Even when I study hard, I achieve low grades
5. I do well in the majority of assignments
6. I get good grades on even the most difficult assignments
7. I have always had a natural talent for academic work
8. I get poor grades on the most difficult assignments
9. When I study hard, I achieve high grades

**Vicarious experience**

1. Successful public social models (such as renowned scientists, athletes or filmmakers) have encouraged me to perform better at my work
2. I have had a chance to watch people actually doing jobs in this area or talked to people about jobs in this area (your subject choice)
3. People I admire are good at academic work
4. My career role models (those people I want to be like) are mostly people who went to

University

1. Seeing adults do well in my subject choice pushes me to do better.
2. No one at home is any good at academic work
3. When I see my class mates perform well, this pushes me to perform well too
4. In lectures I rarely get the answer before my classmates do

**Social Persuasion**

1. My teachers/lecturers often encouraged me by praising my academic ability
2. My classmates say that I understand everything that is taught in class
3. People often tell me that I am good at academic work
4. Adults in my family believe I can do well in my course
5. I feel confident when my parents tell me I’m doing well in my course
6. I feel confident when my lecturers tell me I’m doing well in my course
7. I feel more of an achievement when my lecturers tell me I am doing well compared to when my family tell me I am doing well
8. Encouragement from my peers is more effective on my work than encouragement from lecturers or my family

**Physiological state**

1. Doing university work makes me nervous and uncomfortable
2. My mind goes blank and I am unable to think clearly when doing coursework or revising for exams
3. I get enthusiastic about a piece of work I have to complete for university
4. I have always and still do get anxious when I have deadlines
5. My heart starts pounding and I feel sick when I do my work
6. I feel happy when I am doing a piece of university work
7. I feel good about myself when I have completed a piece of work