

## RESEARCH ARTICLE

# The relationship between emotional experience with dyslexia and work self-efficacy among adults with dyslexia

Blace A. Nalavany<sup>1</sup>  | Julie M. Logan<sup>2</sup> | Lena W. Carawan<sup>1</sup>

<sup>1</sup>School of Social Work, College of Health and Human Performance, East Carolina University, Greenville, NC, USA

<sup>2</sup>Cass Business School, 106 Bunhill Row, London EC1Y 8TZ, UK

## Correspondence

Blace A. Nalavany, School of Social Work, College of Health and Human Performance, East Carolina University, Greenville, NC, USA.  
Email: nalavanyb@ecu.edu

Julie M. Logan, Cass Business School, 106 Bunhill Row, London EC1Y 8TZ, United Kingdom.  
Email: julielogan57@gmail.com

This study responds to a call for more research on working adults with dyslexia investigating how employment-related factors affect and relate to one another. Two important work-related factors are self-efficacy and emotional experience with dyslexia. Work self-efficacy is viewed one of the most vital intrapersonal capacities in the work environment. It can be viewed as a subjective indicator of work success and is conceptualized as a multidimensional construct. Research speaks to a unique emotional experience stemming from living with an often misunderstood and stereotyped learning difference. The participants were 173 working adults with dyslexia (average age = 43.5 years, females = 56.6%) who participated in a web-based survey. Hierarchical multiple regression analyses revealed that more negative or uncomfortable emotions emanating from living with dyslexia predicted lower levels of total work self-efficacy, work attributes, work competency, and work anxiety over and beyond background contextual variables. Implications of these findings are discussed.

## KEYWORDS

adults, dyslexia, emotional, self-efficacy, work

## 1 | INTRODUCTION

There is considerable evidence that dyslexia affects individuals throughout their lives in many spheres of activity including work (de Beer, Engels, Heerkens, & van der Klink, 2014; Leather & Kirwan, 2012; McLoughlin & Leather, 2013). Despite the passage of U.S. and U.K. disability policy aimed at reducing discrimination and enabling those with dyslexia, in a recent study, de Beer et al. (2014) found that employees with dyslexia, their employers, and work colleagues all viewed having dyslexia as a disadvantage. In others studies, adults with dyslexia (AWD) were found to have lower self-esteem than their non-dyslexic peers (Riddick, Sterling, Farmer, & Morgan, 1999) and lower job satisfaction (Leather, Hogh, Seiss, & Everatt, 2011). Job satisfaction is related to self-efficacy (Bandura, 1997) and was found to be critical to success for AWD (Leather et al., 2011; Madaus, Ruban, Foley, & McGuire, 2003). De Beer et al. (2014) stress that it is important for researchers to examine more closely the relationships among work-related

factors. Emotional experience with dyslexia (EED) and work self-efficacy are two work-related factors that could impact work outcomes among AWD.

Although objective conceptualizations of work success include promotion, income, and career status, subjective conceptualizations of work success include job satisfaction and personal success characteristics (Heslin, 2005) including self-efficacy. Self-efficacy is a belief that one can successfully complete a task or course of action in a specific context (Bandura, 1989). Research has demonstrated that self-efficacy is one of the most vital intrapersonal capacities in the work environment and is an important resource for understanding work behaviour (Loeb, Stempel, & Isaksson, 2016; Maertz, Mosley, Posthumad, & Campion, 2005). Self-efficacy can also be conceptualized as a subjective indicator of work success (Leather et al., 2011). Leather et al. (2011) found that AWD with high levels of self-efficacy and job satisfaction were more likely to have self-awareness and self-understanding, take control, and plan, which reduced cognitive failures and influenced feelings of competency in their job.

Before one enters the field of employment, there has likely been a history of difficulty with learning beginning with childhood. Memories from childhood may include struggles with reading, writing, and spelling as well as negative emotional experience. Children and adolescents voice a host of emotions to describe their early school experience with dyslexia including disappointment, frustration, embarrassment, shame, sadness, depression, anger, and low self-esteem (Davis, Nida, Zlomke, & Nebel-Schwalm, 2009; Glazzard, 2010). These emotions often follow AWD into adulthood (Nalavany, Carwan, & Rennick, 2011; Hellendoorn & Ruijsenaars, 2000; McNulty, 2003). De Beer et al. (2014) found in their seminal research that risk and protective factors influence work participation of AWD. It is not surprising that emotions about having dyslexia were one of the most frequently mentioned work-related factors cited throughout the extant research.

Bandura (1997) explains emotional states such as enthusiasm and anxiety also influence self-efficacy (p. 106), suggesting that despite AWD being well qualified, they may not be successful in their work roles if inhibiting personal emotional factors come into play. Work self-efficacy and EED may have important implications for working AWD. The following literature review on EED was informed by a systematic research synthesis (Rothman, Damaron-Rodriguez, & Shenessa, 1994) of the available psychosocial literature on AWD. Similarly, the systematic research synthesis on self-efficacy focused on AWD in the workplace as well as self-efficacy in business.

## 2 | LITERATURE REVIEW

### 2.1 | Emotional experience with dyslexia

Dyslexia has long been described as a language-based disorder focused on struggles with reading, writing, and spelling. From research covering a decade, we have come to learn that although the formal definition of dyslexia is about learning, the implications of having dyslexia affects these individuals in ways that are much more far-reaching than the concept of learning. A small but growing body of research has addressed the psychosocial and emotional issues that AWD experience in their daily lives (see, e.g., Alexander-Passe, 2015a; Hellendoorn & Ruijsenaars, 2000; Ingesson, 2007; McNulty, 2003; Stampoltzis & Polychronopoulou, 2009; Whitehouse, Spector, & Cherkas, 2009). Negative EED is often reported in the lived lives of adults with this learning difference. Keeping this in mind, our construct EED should not be confused with a general Diagnostic Statistical Manual diagnosis of depression or anxiety. The Diagnostic Statistical Manual specifies symptoms of depression or anxiety such as poor appetite, insomnia, low self-esteem, feelings of hopelessness, excessive anxiety and worry, irritability, and panic attacks (American Psychiatric Association, 2013). Any such life experiences such as complicated grief, living with alcohol or drug dependent parents, and abuse and neglect may underlie a diagnosis of depression or anxiety, but such experiences do not constitute a diagnosis by themselves. However, we conceptualize EED as a host of negative emotions including sadness, depression, emotional pain, stress, anxiety, and other emotionally based experiences inherent in living with dyslexia. In other words, EED are negative emotions that are unique to dyslexia based on a growing body of psychosocial research on AWD.

Negative EED may be related to living in a society that associates literacy with educational and occupational success (Nalavany & Carawan, 2012). AWD often describe negative school experiences as being emotionally painful and not easily forgotten in adulthood no matter how long ago the experience occurred (Alexander-Passe, 2015b; Nalavany et al., 2011; Denhart, 2008; McNulty, 2003). These traumatic experiences may be replicated in adulthood when their dyslexia is disclosed to others, including teachers (educational pursuits) and bosses (work/career). The disclosure of this information is often met with misunderstanding and discrimination (Denhart, 2008). Such experiences can heighten the global anxiety that is already a part of the emotional challenge that often accompanies dyslexia/learning disability. In their systematic review of the literature, de Beer et al. (2014) found that negative emotions from dyslexia were frequently voiced among the participants when reflecting upon their working lives. This finding is compelling as persistent literacy issues, keeping a job, and mostly negative emotions about dyslexia were mentioned most often in this comprehensive work. While learning issues are at the heart of dyslexia, one wonders if the emotional scars may not be the bigger challenge (McNulty, 2003).

## 2.2 | Work self-efficacy

Self-efficacy can be defined as an individual's belief that they have the skills and ability to execute a particular set of tasks, their self-confidence (Bandura, 1997). Self-efficacy is conceptualized as the task-specific (e.g., how individuals evaluate their employment abilities) counterpart to self-esteem or how individuals feel about themselves (Chen, Gully, & Eden, 2004). Self-efficacy affects intention, and this in turn affects behaviour. Self-efficacy influences motivation and ability to engage in and execute specific activities (Bandura, 1997). If people have a high level of self-efficacy, they are more likely to expect that they will succeed at a given task. If they have a low level of self-efficacy pertaining to a particular task, they will not believe they can be successful and may not try or they may approach the task with anxiety. Self-efficacy is not based on actual performance but upon perceived performance (Bandura, 1997). In a work setting, opportunities for personal mastery experiences, vicarious experiences, encouragement from peers, and "affective" or emotional states can all influence self-efficacy. Negative messages from those who are respected or in authority can lead to anxiety and subsequent poor performance reinforcing low self-efficacy (Bandura, 1997).

Ford (1996) suggested that self-efficacy influences an individual's creative decision-making in the workplace (Farmer, Tierney, & Kung-McIntyre, 2003; Tierney & Farmer, 2002), and self-efficacy has been found to influence career decisions (Mau, 2003). For example, Morris and Turnbull (2006) found that students were handicapped in pursuing their careers; they would choose not to go for further training because it might highlight their difficulties caused by dyslexia. This might suggest that dyslexia acts as a barrier to career progression.

De Beer et al. (2014) found only 3 of 33 studies that addressed self-efficacy in the work environment. It could be that researchers are conceptualizing dyslexia-related work factors by alternative labels other than "work self-efficacy." We review this small body of literature using Bandura's (1997) conceptualization of self-efficacy and recent research (Drnovsek, Wincent, & Cardon, 2010), which describes self-efficacy as a multidimensional construct that is best understood by focusing on a specific context and activity domain. In other words, AWD may have low work self-efficacy in some domains, but high work self-efficacy in others.

## 2.3 | Low work self-efficacy

There is evidence that many AWD have low levels of job satisfaction, which may be due to a lack of control over their work situation (Witte, Philips, & Kakela, 1998). Low job satisfaction may also occur because some AWD have under achieved educationally and therefore are unable to apply for work that would be mentally stimulating (Beddington et al., 2008). In their report "The Mental Wealth of Nations," Beddington et al. (2008) suggest that this may result in stress and mental health problems. According to Bandura (1997), low job satisfaction is related to low self-efficacy.

Doyle and McDowall (2015) found that job coaches and managers identified the executive function areas of working memory, organizational skills, and time management, as well as spelling, as the most challenging areas for

working AWD. Research also suggests that there is a negative association between executive functioning, reading, and writing challenges and work self-efficacy (Leather et al., 2011).

## 2.4 | High work self-efficacy

Although the workplace may be a difficult environment for some AWD, there are studies on the differences that point to high (positive) work self-efficacy attributes acquired by those who are dyslexic. Burns, Poikkeus, and Aro (2013) found that teachers with dyslexia support their self-efficacy by cultivating and utilizing resilience strategies such as reframing, identifying strengths, and receiving ongoing support from family and friends.

Madaus et al. (2003) and a follow-up study by Madaus, Zhao, and Ruban (2008) found work self-efficacy as the most robust predictor of employment satisfaction over and beyond gender, age, length of time in current position, current salary, severity of learning disability, disclosure of learning disability, and self-regulation and accommodations. Leather et al. (2011) found that work self-efficacy was most highly correlated with a higher-order cognitive skill associated with executive functioning, planning of goals and self-understanding, and job satisfaction.

McNulty (2003) notes that if AWD could find the right career niche based upon their talents, they would be able to compensate for their literacy and organizational difficulties and go on to achieve success in the workplace. Entrepreneurs with dyslexia were able to build successful companies using their talents, which included self-efficacy attributes such as empathy, good oral communication skills, creative and problem-solving ability, and proficiency in delegation (Logan, 2009). Additionally, entrepreneurs with dyslexia reported thinking differently, being good at problem-solving and generating innovative solutions (Logan & Martin, 2012). A number of studies refer to the creative and problem-solving abilities of those with dyslexia (Galaburda, 1993; Reid & Kirk, 2001; West, 2009).

In their recent study, Leather et al. (2011) found that higher levels of self-efficacy (Bandura, 1997) and job satisfaction resulted from reframing and controlling their work environment. Reframing might include the awareness of one's strengths, limitations, and learning style. Examples of control could be goal planning and orientation, double checking for mistakes and errors in completing tasks (Morris & Turnbull, 2006), and obtaining a job that complements one's strengths (Gerber, Ginsberg, & Reiff, 1992; Leather et al., 2011). Additionally, Logan (2009; 2010) suggested that the reason AWD may be over-represented in the field of entrepreneurship is that it is easier for those with dyslexia to control their environment if it is their own company.

## 2.5 | Aims/rationale for present study

Our preceding literature review lends support to the recommendation by de Beer et al. (2014) that research on dyslexia and work should move beyond highlighting all of the relevant dynamics. The extant knowledge base primarily presents factors influencing the effects of dyslexia in employment situations—such as emotions, social relationships, and employment satisfaction—in a descriptive manner. Although this “first generation” research contributes to the understanding of how dyslexia affects work contexts, “second generation” research should, as de Beer et al. note, focus on explaining how work-related dynamics affect one another and what type of association they have and how that association is to be understood.

This study endeavors to contribute to second generation research on AWD and work contexts. Because work self-efficacy can be conceptualized as an important subjective indicator of work success among AWD (Leather et al., 2011), gaining more insight into the predictors of work self-efficacy can potentially advance the extant research base forward. Practice and policy implications can be more confidently disseminated to professionals who have contact with AWD in employment situations including coaches, managers, mental health professionals, and family members. As introduced earlier, AWD can also benefit from such research, as becoming aware of how dyslexia affects life is foundational to living a successful and satisfying existence (Nalavany et al., 2011). To the best of our knowledge, the relationship between EED and work self-efficacy as a subjective indicator of work success has not been explored in the literature. This is surprising given the central role EED has in

the everyday (Hellendoorn & Ruijsenaars, 2000; McNulty, 2003; Nalavany et al., 2011) and working lives of AWD (de Beer et al., 2014). We hypothesized that negative EED (e.g., more anxiety and sadness directly related to one's experience with dyslexia) would negatively predict work self-efficacy above and beyond background contextual factors including age, gender, educational attainment, relationship status, and mental health diagnosis.

## 3 | METHODS

### 3.1 | Survey development and procedures

The web-based survey was developed using the guidelines for web-based survey research for individuals with a broad range of disabilities (Cook et al., 2007). For example, participants could complete the survey in one session, or return at a later time. We used Qualtrics (<http://www.qualtrics.com>) to design the web-based survey and manage its distribution, participants' informed consent, and collection.

Convenience sampling methods were used for recruitment. The researcher contacted professional intermediaries working with AWD at dyslexia-related conferences and networking events across a dispersed geographical area. These professionals were asked to refer clients to complete a web-based survey exploring work experiences. The professional intermediaries were given guidelines including the need for respondents to have a formal diagnosis of dyslexia. This criterion was further checked in the opening questions of the survey. Participants were recruited either by the intermediary forwarding the URL link by email to the Qualtrics survey to clients or by the intermediary introducing the client to the researcher who then sent the link.

### 3.2 | Participants

In web-based surveys that are open-ended and anonymous in design, a response metric called the completion rate (the number of participants who completed the last page of the survey divided by number of participants who consented to participate by completing the first survey page) is often reported (Eysenbach, 2004). A total of 173 individuals completed the survey, and 20 individuals completed less than half of the survey. This represents an 89.6% completion rate. The findings reported herein are only from those who completed the survey. Table 1 presents a summary of selected characteristics of the 173 participants. Eight participants did not complete their country of residence. The majority of participants resided in the United Kingdom (70.3%), whereas 23.0% resided in the United States, and 6.7% resided in Europe or another country.

The majority of the participants (83.2%) responded "yes" to having been diagnosed by a learning disability specialist or other professional as having dyslexia and provided the year in which they were diagnosed. All participants self-identified as having dyslexia. Although self-identification has been shown to be a valid measure of reading difficulties (Gilger, 1992; Jones, Asbjornsen, Manger, & Eikeland, 2011; Schulte-Korne, Deimel, & Remschmidt, 1997) and has been used in previous survey research on AWD (Wilson, Armstrong, Furrrie, & Walcot, 2009), dyslexia was further assessed through the "Revised Adult Dyslexia Checklist" (RADC; Vinegrad, 1994; described below).

As shown in Table 1, the majority of the participants were female (56.6%) and ranged in age from 18 to 85 years ( $M = 43.5$ ,  $SD = 12.8$ ). In terms of educational attainment, the majority had a master's/doctoral degree (35.8%) or bachelor's degree (34.7%), whereas 22.0% and 7.5% had college or secondary school experience, respectively. These high levels of education were reflected in employment status where 78.6% were working full- or part-time. A majority (60.1%) of the participants were married or partnered, whereas 30.6% were single and just under 10% widowed, separated, or divorced.

**TABLE 1** Means, standard deviations, percentages, and correlation matrix of all variables (N = 173)

Variable	M (SD) or %	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	43.52 (12.88)		.10	.21	.00	-.25*	.13	-.32*	.16	-.05	.10	.04	-.06	-.13	-.05
2. Gender (male)	43.4%			.19	.21*	-.20*	-.09	-.15	-.09	.04	.03	-.13	-.14	-.06	-.14
3. Secondary	7.5%				-.15	-.21*	-.21*	-.14	.02	.09	.07	-.13	-.05	-.04	-.10
4. College	22%					-.39*	-.39*	-.05	.05	.07	.18	-.21*	-.17	-.04	-.19
5. Bachelor	34.7%						-.54*	.20*	-.04	-.01	-.05	.02	-.01	-.03	-.00
6. Master/Doctoral	35.8%							-.08	-.02	-.10	-.14	.23*	.19	.09	.23*
7. Single	30.6%								-.04	.07	.17	-.05	-.01	-.15	-.09
8. Depression/anxiety	27.2%									.06	.27*	-.10	-.23*	-.18	-.22*
9. RADC	13.45 (3.90)										.37*	-.19	-.30*	-.33*	-.30*
10. EED	4.61 (1.39)											-.50*	-.61*	-.62*	-.71*
11. WORK ATT	5.18 (1.24)												.59*	.21*	.82*
12. WORK CON	4.06 (1.30)													.44*	.86*
13. WORK ANX	3.11 (1.24)														.65*
14. WORK TOT	4.24 (0.98)														

Note. EED = emotional experience with dyslexia; RADC = Revised Adult Dyslexia Checklist; WORK ANX = work anxiety; WORK ATT = work attributes; WORK CON = work confidence; WORK TOT = work total self-efficacy.

\* $p < .01$ .

### 3.3 | Measures

#### 3.3.1 | Control variables

In order to rule out alternate explanations for work self-efficacy, we include several demographic characteristics commonly conceptualized as covariates in previous research on AWD (Nalavany & Carawan 2012). Demographic variables included age (in years), gender (0 = female, 1 = male), and marital status (0 = not currently married, 1 = married or partnered). Educational attainment was also controlled for in the analyses as research suggests that AWD may associate higher degrees as their mark of success (Alexander-Passe, 2015a). Educational attainment was categorized as secondary education (0 = No, 1 = Yes), college education (0 = No, 1 = Yes), and bachelor education (0 = No, 1 = Yes). Master/doctoral education served as the reference category. As emotional health can co-vary with emotional experiences with dyslexia and work self-efficacy, a current diagnosis by a mental health professional of depression or anxiety (0 = No, 1 = Yes) was included in the analyses.

The RADC (Vinegrad, 1994) was used to assess symptoms of dyslexia that could be seen as indicators for dyslexia and severity. The RADC contains 20 questions with a "Yes" or "No" response. The questions on the RADC are associated with more common symptoms of reading and spelling challenges and also with other neurological dynamics associated with dyslexia (e.g., organization and short-term memory). The RADC has been used in a number of recent studies (e.g., Facoetti, Corradi, Ruffino, Gori, & Zorzi, 2010; Marino et al., 2014). "Yes" responses are related with dyslexia symptoms, whereas nine or more "Yes" responses on the questionnaire as a whole are more indicative of dyslexia. Through discriminant function analysis, Vinegrad (1994) identified 12 items (RADC-12) that substantially differentiated between dyslexic and non-dyslexic adults. A high score on the RADC-12 (i.e., seven or more "Yes" responses) may further differentiate dyslexia than a high score on the RADC as a whole. In this study, participants rated each of the 20 RADC items. The mean scores of the 20 RADC items and the RADC-12 will be reported in Section 4.1.

#### 3.3.2 | Independent variable: EED

The 10 items that comprise the EED indicator are based on a previous concept mapping study on AWD (Nalavany et al., 2011). Three studies have been published using the EED measure (Carawan, Nalavany, & Jenkins, 2016; Nalavany & Carawan, 2012; Nalavany et al., 2011). Participants were instructed to rate the items, given their personal experience with dyslexia. Items were rated on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Higher scores reflect elevated levels of stress, sadness, depression, and other emotionally based experiences associated with dyslexia. In the current study, the EED indicator demonstrated excellent internal consistency yielding an alpha coefficient of .91. Example items are as follows: "Living with dyslexia hurts and sometimes I wish my dyslexia would go away" and "I experience a lot of anxiety and stress regarding my dyslexia."

#### 3.3.3 | Dependent variable: Work self-efficacy

Work questions were informed by previous research on entrepreneurial competences related to self-efficacy in the workplace (De Noble, Jung, & Ehrlich, 1999; Kickul & D'Intino, 2005) and previous research on work-related competencies reported by AWD (Eide & Eide, 2011; Logan, 2009; Logan & Martin, 2012). Additional work questions were shaped by the work of Bandura (1997) and research on AWD including Leather et al. (2011) and McNulty (2003). Participants were instructed to rate 25 work items on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*).

Three criteria were utilized to assess the factorability of the 25 work items. First, examination of the correlation matrix showed that all items correlated at least .3 with at least one other item, indicating satisfactory factorability (Cohen, Cohen, West, & Aiken, 2003). Second, the Kaiser-Meyer-Olkin measure of sampling adequacy was .80, above the frequently recommended value of .5, and Bartlett's test of sphericity was significant,  $\chi^2(300) = 1,638.54$ ,  $p < .01$ . The diagonals of the anti-image correlation matrix were also all over recommended value of .5 (Yong & Pearce, 2013). Given these findings, factor analysis was considered to be permissible with all 25 items.

Third, a combination of exploratory and confirmatory factor analyses was used to assess the factor structure of the 25 work items. Although several extraction algorithms were assessed, principal components analysis with varimax

rotation was used to establish preliminary factor structure. Examination of the scree test, eigen values over the suggested one threshold, factor loadings above .40, cross-loadings above .30, examination of the rotated factor solution, and the number of items per factor was used to determine the initial factor structure on the basis of common standards (Hair, Anderson, Tatham, & Black, 1998).

Using these guidelines, a total of six items were eliminated because their interpretation did not contribute to the factor structure. The researchers were satisfied that the theoretical and conceptual underpinnings of the self-efficacy literature and extant research on the work experiences of AWD were reflected uniquely in the factors. As a final step to confirm the factor structure, a multiple group method was conducted due to its relative ease in determining the validity of the proposed factor structure (Springer, Abell, & Nugent, 2002). Correlations (Pearson's  $r$ ) of individual work items with factor scores for each intended factor were assessed. The three factor structures were confirmed as each item correlated most highly with their respective factors, whereas cross-loadings were minimal. Global and subscale scores for the work questionnaire are determined by comparison of the mean scores obtained by dividing the sum by the number of items. Higher scores reflect more positive work self-efficacy and work experience related to dyslexia.

The elements associated with the first factor represent a variety of items at somewhat different levels of specificity relating to dyslexia (e.g., "I am able to create novel solutions to problems") herein identified as work self-efficacy attributes. The second factor encompasses items relating to dyslexia work self-efficacy confidence (e.g., "I feel confident at work"). The third factor is represented by items that reflect dyslexia work-related anxiety ("I feel anxious at work").

To assess the internal consistency of the factors and global score (the sum of all work items), Cronbach's alpha was calculated. The alphas varied from very good to moderate (DeVellis, 2003): .84 for attributes (seven items), .75 for confidence (five items), .73 for work anxiety (five items). The global scale alpha was the strongest with an alpha of .86.

### 3.3.4 | Hierarchical multiple regression

Hierarchical multiple regression (HMR; Cohen et al., 2003) was used to test the hypothesis that negative EED (i.e., more troubled emotions directly attached to one's experience with dyslexia) would account for a significant amount of variance in lower levels of work self-efficacy over and above that accounted for the control variables. In other words, we expect a statistically significant change in the variance in work self-efficacy,  $\Delta R^2$ , with the addition of EED. Predictors of work self-efficacy were tested with four hierarchical regression analyses. The first included the work attributes mean score as the dependent variable. The second included the work competency mean score as the dependent variable. The third included the work anxiety mean score as the dependent variable, whereas the fourth model included the work total mean score as the dependent variable. In Block 1, the control variables of gender, age, educational attainment, relationship status, Vinegrad total score, and current mental health diagnosis were entered into the model. In Block 2, EED was entered into the model. To protect against the family-wise error rate, given multiple hierarchical regression analyses, the alpha level for all analyses in this study was established at .01. Preliminary analyses showed no appreciable violations of the assumption tests for normality, homoscedasticity, linearity, and extreme outliers. All statistical analyses were conducted using SPSS, version 22.

## 4 | RESULTS

### 4.1 | Univariate and bivariate analyses

Table 1 presents the descriptive statistics and Pearson correlation coefficients among the control variables, EED, and the work subtotal and total scales. The mean summed score on RADC-12 was 8.25 ( $SD = 2.66$ ), which exceeded the cut-off score of 7 for dyslexia per Vinegrad (1994). The total RADC mean score was 13.45 ( $SD = 3.9$ ), which also exceed the cut-off score of 12 for dyslexia as researched by Vinegrad (1994). The total RADC mean score obtained



in this study is comparable to the sample of AWD in the Marino et al. (2014) study ( $M = 13.91$ ;  $SD = 3.99$ ). Accordingly, the adults in this current study report substantial dyslexia-related difficulties. The total sum score on the RADDC will be used in correlational and HMR analyses to follow.

The mean EED score was 4.61 ( $SD = 1.39$ ), indicating a moderate level of emotional challenges with dyslexia. Over a quarter of the sample reported a current diagnosis of depression and/or anxiety (27.2%). The percentage of adults with a current mental health diagnosis is higher than that which has been reported in previous research on AWD (21.4%; Nalavany & Carawan, 2012).

Descriptive statistics were calculated for each factor as a preliminary effort to understand the unique characteristics of the work experience of AWD. AWD perceive their attributes ( $M = 5.18$ ;  $SD = 1.24$ ) as their greatest workplace strengths. Specifically, highly endorsed attributes include "I am able to create novel solutions to problems" ( $M = 6.23$ ;  $SD = 1.07$ ), "Dyslexia makes me more creative in the work place" ( $M = 5.69$ ;  $SD = 1.50$ ), and "I can articulate a point of view in discussion" ( $M = 5.34$ ;  $SD = 1.74$ ). The mean score of confidence also slightly exceeds the midpoint on the 7-point scale. AWD report that gaining confidence in the work environment is somewhat challenging ( $M = 4.06$ ;  $SD = 1.30$ ). Within this subscale, AWD endorse their ability to "...manage a project deadline" ( $M = 5.02$ ;  $SD = 1.63$ ) and feel slightly "...confident at work" ( $M = 4.39$ ;  $SD = 1.89$ ). On the other hand, having dyslexia is viewed to be an obstacle in the workplace as noted in the following statement: "Dyslexia has not held me back at work" ( $M = 3.60$ ;  $SD = 2.10$ ). The mean score of work anxiety falls below the midpoint on the 7-point scale ( $M = 3.11$ ;  $SD = 1.23$ ). In particular, participants "... find the corporate environment a difficult place to work for someone with dyslexia" ( $M = 2.89$ ;  $SD = 1.67$ ) and believe that "... there are jobs that I would like to do but I have not applied because I think my dyslexia is a barrier" ( $M = 2.87$ ;  $SD = 1.93$ ). At the same time, they "...find writing a memo to a colleague or line manager difficult" ( $M = 3.23$ ;  $SD = 1.90$ ) and "...feel anxious at work" ( $M = 3.27$ ;  $SD = 1.68$ ). Overall, according to the participants in this study, obtaining global work efficacy strengths is somewhat elusive to obtain ( $M = 4.24$ ;  $SD = 0.98$ ).

Several significant bivariate correlations merit attention. First, a current diagnosis of depression/anxiety was negatively associated with work confidence ( $r = -.25$ ,  $p < .01$ ), work total scale ( $r = -.22$ ,  $p < .01$ ), and positively associated with EED ( $r = .27$ ,  $p < .01$ ). Second, severity of dyslexia was negatively related to work confidence ( $r = -.30$ ,  $p < .01$ ), work anxiety ( $r = -.33$ ,  $p < .01$ ), and work total scale ( $r = -.30$ ,  $p < .01$ ) and positively related to EED ( $r = .37$ ,  $p < .01$ ). As expected, EED was negatively associated with work attributes ( $r = -.50$ ,  $p < .01$ ), work confidence ( $r = -.61$ ,  $p < .01$ ), work anxiety ( $r = -.62$ ,  $p < .01$ ), and work total score ( $r = -.73$ ,  $p < .01$ ).

## 4.2 | Multivariate findings

Table 2 summarizes the four HMR models performed over the work scales. The first model explored predictors of work attributes. The control variables were entered in Block 1 and significantly explained .067% of the adjusted variance in work attributes. Participants with a college degree ( $\beta = -.26$ ,  $p < .01$ ) and a secondary degree ( $\beta = -.19$ ,  $p < .01$ ) significantly predicted work attributes. Work attributes decrease for college and secondary education relative to those with a masters/doctorate degree. Entering EED at Block 2 explained an additional 20% of the variance in work attributes ( $\Delta R^2 F = 47.43$ ,  $p < .001$ ). The model as a whole explained 27% of the adjusted variance in work attributes ( $p < .001$ ), whereas none of the control variables were significant. EED made a significant contribution to the model ( $\beta = -.52$ ,  $p < .001$ ). The negative coefficient indicates that higher or more negative levels of EED were associated with lower levels of work attributes over and beyond the control variables.

The second model explored predictors of work confidence. The control variables significantly explained 15% of the adjusted variance in work confidence. More symptoms of dyslexia as measured by the RADDC ( $\beta = -.26$ ,  $p < .001$ ) and a current mental health diagnosis ( $\beta = -.232$ ,  $p < .01$ ) were associated with less work confidence. Entering EED at Block 2 explained an additional 23% of the variance in work confidence ( $\Delta R^2 F = 64.17$ ,  $p < .001$ ). The model as a whole explained 39% of the adjusted variance in work confidence ( $p < .001$ ). Over and beyond the non-

**TABLE 2** Standard beta weights and hierarchical multiple regression analyses to predict work in adults with dyslexia

	Work attributes	Work confidence	Work anxiety	Work total self-efficacy
	$\beta$	$\beta$	$\beta$	$\beta$
Block 1				
Age	.06	-.05	-.19	-.07
Gender (1 = male)	-.08	-.13	-.08	-.12
Secondary (1 = yes)	-.19*	-.04	.00	-.12
College (1 = yes)	-.26*	-.17	-.03	-.21*
Bachelor (1 = yes)	-.11	-.13	-.07	-.13
Single (1 = yes)	-.06	-.03	-.20**	-.12
Depression/anxiety (1 = yes)	-.10	-.23*	-.15	-.20*
RADC	-.07	-.26**	-.31**	-.25**
R <sup>2</sup> adjusted	.067**	.15**	.15**	.16**
Block 2				
Age	.13	.03	-.11	.04
Gender (1 = male)	-.07	-.13	-.07	-.12
Secondary (1 = yes)	-.15	-.00	.04	-.07
College (1 = yes)	-.17	-.07	.07	-.09
Bachelor (1 = yes)	-.09	-.11	-.05	-.11
Single (1 = yes)	.05	.09	-.08	.03
Depression/anxiety (1 = yes)	.02	-.11	-.02	-.04
RADC	-.11	-.08	-.13	-.02
EED	-.52**	-.56**	-.56**	-.70**
R <sup>2</sup> adjusted	.27**	.39**	.39**	.53**
$\Delta R^2$	.20**	.23**	.23**	.36**

Note. Reference category for secondary, college, and bachelor educational history is masters/doctoral degree.

EED = emotional experience with dyslexia; RADC = Revised Adult Dyslexia Checklist;  $\Delta R^2 = R^2$  change.

\* $p < .01$ .

\*\* $p < .001$ .

significant control variables, higher or more troubled levels of EED were associated with lower levels of work confidence ( $\beta = -.56, p < .001$ ).

The third model explored predictors of work anxiety. The control variables significantly explained 15% of the adjusted variance in work anxiety. Relative to married/partnered couples, being single was associated with lower or less work anxiety ( $\beta = -.20, p < .01$ ). Having more dyslexia-related symptoms was associated with more perceived work anxiety ( $\beta = -.31, p < .001$ ). Entering EED at Block 2 explained an additional 23% of the variance in work anxiety ( $\Delta R^2 F = 65.74, p < .001$ ). The model as a whole explained 39% of the adjusted variance in work anxiety ( $p < .001$ ). None of the control variables remained significant when EED was included in the model. Having higher or more negative levels of EED was associated with lower or more negative levels of work anxiety ( $\beta = -.56, p < .001$ ).

The last model explored predictors of work total self-efficacy. The control variables significantly explained 16% of the adjusted variance in total work self-efficacy. Relative to possessing a masters/doctorate degree, college education was associated with negative total work self-efficacy ( $\beta = -.21, p < .01$ ). A current mental health diagnosis ( $\beta = -.20, p < .001$ ) and more dyslexia symptoms significantly predicted lower levels of total work self-efficacy. Entering EED at Block 2 explained an additional 36% of the variance in work attributes ( $\Delta R^2 F = 131.62, p < .001$ ). The model as a whole explained 53% of the adjusted variance in work attributes ( $p < .001$ ). This represents the largest change in

$R^2$  and explained variance of all the hierarchical regression analyses. When EED entered the model, college education, a current mental health diagnosis, and dyslexia symptoms were no longer a significant predictor of total work self-efficacy. More negative levels of EED ( $\beta = -.70, p < .001$ ) were associated with lower levels of total work self-efficacy over and beyond the influence of the non-significant control variables. The contribution of EED is most pronounced for total work self-efficacy as observed by the size of the negative coefficient and increase in explained variance.

## 5 | DISCUSSION

The purpose of this study was to contribute to the limited research on the relationship between EED and work self-efficacy among working AWD. To the best of our knowledge, this is one of the first studies that explores work self-efficacy across three domains—work attributes, work confidence, and work anxiety. This supports the work of Drnovsek et al. (2010), who theorize that self-efficacy is context specific and multidimensional. AWD perceive themselves as possessing high work self-efficacy in some domains but low work self-efficacy in others. In terms of positive work attributes, AWD endorse being creative and innovative on the job and able to articulate their point of view successfully to others. This supports a growing body of literature that reports the inventiveness, ability to see new connections, and acuity to visualize the essence of factors among AWD (Eide & Eide, 2011; West, 2009). AWD also can find it challenging but not impossible to gain confidence on the job. Despite their possessing positive attributes and gaining confidence, our study supports previous research that speaks to considerable work anxiety reported by AWD (Carroll & Iles, 2006).

The findings are compatible with research that described that emotions characteristic of dyslexia such as depression and anxiety are often reported in this group (Hellendoorn & Ruijsenaars, 2000; Nalavany & Carawan, 2012; Wilson et al., 2009). Adults in this study reported nearly the same levels of EED as obtained in previous research (Nalavany & Carawan, 2012). Again, this is noteworthy as the accomplished educational backgrounds among our sample do not seem to insulate AWD from experiencing emotions tied to dyslexia. This finding supports the research of de Beer et al. (2014) who found that negative feelings and emotions about dyslexia are among the most commonly reported work factors.

Our study responds to the call for more research on how work-related dynamics influence one another (de Beer et al., 2014). Our results showed that EED had the most predictive impact on global total self-efficacy followed by work anxiety, work confidence, and work attributes when all the covariates including age, gender, severity of dyslexia, educational attainment, marital status, and mental health diagnosis were taken into account. Higher levels of EED are associated with lower levels of work self-efficacy. Importantly, 27.2% of the respondents in our study were diagnosed with general depression and anxiety, a much higher prevalence for adults in the United Kingdom (Parker et al., 2008). Given that a mental health diagnosis was no longer significant in Block 2, our findings suggest that EED is a more robust predictor of lower levels of work self-efficacy among AWD. Our results are comparable to studies reporting a relationship between negative EED and lower self-esteem (Nalavany & Carawan, 2012). Negative EED can lead to decreased job performance, decreased work self-efficacy, and increased work anxiety.

Interestingly, EED had the smallest predicative impact on work attributes. It can be reasoned that AWD who have positively reframed their dyslexia experience less dyslexia-related emotional turmoil than those who struggle in this domain (Gerber et al., 1992). Therefore, strengths in work attributes, which included such items as “I am able to create novel solutions to problems” and “Dyslexia makes me more creative in the work place,” can become actualized.

### 5.1 | Limitations of the study

Although the results of this study highlight many vital implications presented below, as with all research, this study possessed several limitations. First, even though we controlled for relationship status, it is not a valid measure of family support. Research suggests that family support is an instrumental mediating variable in the relationship between

EED and self-esteem (Nalavany & Carawan, 2012). Seeking support from family members has been a foundational source of assistance in managing the trials and tribulations of work among AWD (Burns et al., 2013; Logan, 2009; Madaus et al., 2003). Future research can explore the potentially mediating and buffering role of family support in the relationship between EED and work self-efficacy. Second, the cross-sectional design limited causal relationships among the study variables. Although emotions have been shown to have a direct relationship on self-efficacy, Gharetepeh, Safari, Pashaei, Razaei, and Kajbaf (2015) note that self-efficacy can also predict emotional experience. Future research can explore the bidirectional influence of emotions and work self-efficacy in longitudinal research. Third, we are unable to determine the extent to which our sample is representative of the general population of AWD. Future research should advance the present findings with larger and more representative samples.

## 5.2 | Implications and conclusions

The impact EED has on work attributes, work confidence, work anxiety, and global work self-efficacy has potential implications for AWD, employers, and the professionals who assist this population. College considerations are necessary in light of the high rates of anxiety and depression compounded with the negative influence of EED on work self-efficacy of this highly educated group of AWD. Recent research may shed context on the college experience of the participants. Nelson and Gregg (2012) found that students with dyslexia experienced higher levels of anxiety and depression during the first year of college. The transition period includes physical separation from established social supports including parents, family, and peers and the task of developing new peer and social relationships. Academic demands are different from high school, including no mandated dyslexia-related support services (e.g., Individual Education Plan), larger class sizes, and more strenuous course work. Cameron (2016) found that students with dyslexia often report being stigmatized by instructors and peers throughout the higher education journey, a finding also echoed by past research (Denhart, 2008; Rose, 1998).

These findings may help explain why university students with dyslexia speak to negative emotions about dyslexia and low self-esteem as part of their experience in college (Cameron, 2016; Carroll & Iles, 2006; Grella, 2014; Rose, 1998) and graduate at significantly lower rates than their non-dyslexic peers (Cortiella & Horowitz, 2014). Students with dyslexia often report that colleges do not provide sufficient support to help them navigate and cope with the emotional challenges associated with their learning differences (Carroll & Iles, 2006; Claassens & Lessing, 2015; Davis et al., 2009). Perhaps colleges could offer students with dyslexia opportunities to increase strategies that would prepare them for the workplace. Work internships such as those offered in colleges of business, social work/psychology, nursing, and others could be a perfect place to begin this process. Research is needed to explore college-level interventions that can help this population reconcile emotions tied to dyslexia and establish a solid foundation of high work self-efficacy.

Additionally, this study points to a need for AWD to understand how dyslexia may influence their workplace performance. The ability to become aware of one's dyslexia-related strengths and areas for growth is important to employment success (McLoughlin & Leather, 2013; McNulty, 2003). Such awareness may include an intentional self-assessment of how emotions connected to dyslexia can impact work life. Also, the discovery of strategies used to reconcile negative EED and increase work self-efficacy could be a part of this intentional self-assessment. AWD may consider professional dyslexia counselling or perhaps join a dyslexia support group.

There appears to be limited research on evidence-based interventions that could potentially ease the emotional turmoil of dyslexia and enhance work self-efficacy. However, the small but growing literature on job coaching is encouraging. McLoughlin and Leather (2013) describe coaching as partnership where working adults take control of their own learning with a goal of bringing awareness and improvement to their work-related skills. Recently, Doyle and McDowall (2015) evaluated the effectiveness of a within-participant, longitudinal coaching intervention using a U.K. sample of 95 working AWD. The intervention was based on Kolb's (1984) learning cycle and social cognitive learning theory (Bandura, 1989). Following the intervention, adult workers and managers rated significant improvements in the domains of memory, organization, time, and stress management. Congruent with social cognitive learning

theory, Doyle and McDowall (2015) reasoned that improvements in these work areas are telling of the participants' enhanced work self-efficacy. Although stress management was a target area, it is unclear to what degree the coaching intervention tapped into participants' EED as conceptualized in this study. It is important to note that Leather and Kirwan (2012) recognize that coaches should not only address executive functioning skills but also attend to the "emotional factors that might prevent someone exploring different ways of working" (p. 163). There could also be value in being open to considering coaching literature from other areas. For example, there is an evolving body of health research that suggests that health coaching improves self-efficacy, motivational processes, and psychosocial variables (Ammentorp et al., 2013; Hill, Richardson, & Skouteris, 2015).

We suggest that when businesses are unaware of dyslexia and of the impact this learning difference can have on the employee's job performance, they are often subject to negative perceptions, stereotypes, misunderstanding, and discrimination, which can have negative implications for AWD (Denhart, 2008; Illingworth, 2005). Therefore, it is crucial for employers to be aware that a "dyslexia-unfriendly" work environment could exacerbate EED, resulting in lower work self-efficacy. Organizations could then realize that some of the most articulate and creative problem-solvers in the organization are likely to be those who require support to realize their potential. By providing a supportive and accepting environment through initiating an accessible dyslexia policy, organizations can contribute to cultivating a genuine inclusive work environment (Burns et al., 2013; Sanderson, 2011). Such an environment is more likely to result in a more positive outcome for AWD and the employer.

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## ORCID

Blace A. Nalavany  <http://orcid.org/0000-0001-6211-6816>

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