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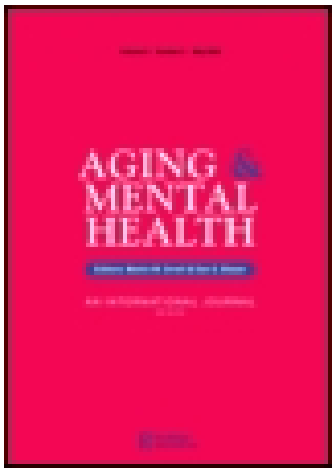

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Emotional experience with dyslexia and self-esteem: the protective role of perceived family support in late adulthood

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Emotional experience with dyslexia and self-esteem: the protective role of perceived family support in late adulthood

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Objectives: Despite the growing body of evidence that suggests dyslexia persists through the life span, there is a dearth of research that explores the complicating factor of dyslexia in late adulthood. Based upon stress and coping theory, this study examined whether perceived family support protects the impact of negative emotional experience with dyslexia on self-esteem.
Methods: Adults aged 21 years and older with diagnosed or self-reported dyslexia were participants in a web-based survey. A total of 224 individuals completed the survey. These findings are from the 50 participants who reported to be 60 years or older. Completed measures include their perception of family support, emotional experience with dyslexia, self-esteem, and demographic variables.
Results: Preliminary analysis revealed that negative emotional experience with dyslexia negatively impacts self-esteem. Hierarchical moderated regression analysis demonstrated that positive perceived family support significantly buffers, mitigates, and protects the effects of negative emotional experiences with dyslexia on self-esteem in individuals with dyslexia in late adulthood.
Conclusion: In this study, family support promoted self-esteem because as a protective dynamic, it helped older adults cope with the emotional distress associated with dyslexia. Implications of these findings are discussed.

Keywords: coping; family support; emotional experience with dyslexia; self-esteem

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Introduction

Dyslexia, the most common specific learning disability in the United States with estimates of prevalence ranging from 5% to 12% of the population (Shaywitz, 1998), is typically characterized by difficulty in acquiring and processing language. Dyslexia is often manifested through reading, spelling, and writing difficulties (Shaywitz, 1998). Although dyslexia is frequently presented as an educational construct, the current research supports that dyslexia impacts more than education and in fact impacts social and emotional experiences throughout the life span (McNulty, 2003). There is a gap in the literature, however, when one compares the etiology of dyslexia and instructional interventions to the empirical inquiry into the psychosocial experiences on adults with dyslexia (Ingesson, 2007; Morris & Turnbull, 2006). This lack of attention to the psychosocial issues of adults with dyslexia is surprising since the current research suggests that dyslexia persists throughout the life span (Goldberg, Higgins, Raskind, & Herman, 2003). In fact, the empirical literature not only suggests that children and adolescents with dyslexia are at risk for low self-esteem, but adults with dyslexia are at risk as well (Burden, 2008). While this body of research is in its embryonic stage, a comprehensive review of the literature using systematic research synthesis methodology (Rothman, Damron-Rodriquez, & Shenassa, 1994) revealed virtually no research on dyslexia in late adulthood. This study aims to address this gap in the literature by exploring the protective role of perceived family support (PFS) in the development of negative emotional experiences with dyslexia and self-esteem. Additional knowledge can play an important role in how professionals can best assist adults who are both older (late adulthood) as well as have the complicating factor of dyslexia.

As the backdrop for our discussion of this subject, we will first describe emotional experience and self-esteem in late adulthood in general. We will then describe the broad relevance of family support as a protective factor in well-being in late adulthood. Finally, we will describe the interrelationships among emotional experience, PFS, and self-esteem in adults with dyslexia and extrapolate the literature to older adults with dyslexia.

Literature review

Self-esteem and emotional experience in late adulthood

Self-esteem indicates the degree to which one experiences oneself as worthy and capable, while low self-esteem results in feelings of unworthiness, inadequacies, and deficiencies (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). We consider self-esteem to be a multi-faceted construct, tapping into one's overall self-worth, social competence, problem-solving ability, intellectual ability, and self-competence, and worth relative to others (Nugent & Thomas, 1993). Self-esteem is an important concept as it

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has been shown to be important in one's psychosocial adjustment, ability to function, and general sense of well-being throughout the life course (Benyamini, Leventhal, & Leventhal, 2004; Hunt & Guindon, 2010; Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009). In an early essay on successful aging, Schwartz (1975) argued that self-esteem was the linchpin of well-being for older adults.

The extant research on the development of self-esteem during late adulthood is in its nascent stages (McMullin & Cairney, 2004; Robins, Trzesniewksi, Tracy, Gosling, & Potter, 2002). Additionally, there is little consistency in the results of existing research on self-esteem in old age (Orth, Trzesniewski, & Robins, 2010). However, a large study ($n = 326{,}241$) of self-esteem across the life span by Robins et al. (2002) showed that older adults are at risk for lower self-esteem. Later adulthood is a time of transition consisting of stressful life events that can have a negative impact on self-esteem and well-being. The onset of morbidity that accompanies aging leads to decreased well-being and mental health problems such as depression and anxiety disorder (Prakash, Gupta, Singh, Singhal, & Verma, 2007). The death of family members and friends, and particularly the loss of a spouse, are traumatic events for most people and result in higher levels of depression among survivors (de Paula Couto, Koller, & Novo, 2011; Zhang & Li, 2011). Following this line of research, Bodner, Palgi, and Kaveh (2013) found that negative emotional experience (e.g., sad) is related to declines in self-esteem. Bodner and colleagues stress that the relationship between emotions and self-esteem in older adults is an understudied but important avenue for future research.

Buffering/protective role of PFS and self-esteem in late adulthood

The predominant conceptualization used in social support research has been the stress and coping theoretical framework (Freeman & Rees, 2010). Inherent in this theory is that social support including that from families is hypothesized to moderate or buffer the association between stressful life events and psychosocial outcomes (Lakey & Cohen, 2000). In other words, when one is confronted with a stressful life experience but believes that social support is available, the individual is able to reframe the threatening experience, enhance perceived coping skills, and transform the emotional, physiological, or behavioral reactions (Cohen, Gottlied, & Underwood, 2000). Stress and coping theory provides a useful conceptualization for understanding the role of PFS and self-esteem in late adulthood. There is a substantial body of literature showing that PFS is positively associated with and, in fact, plays a key role in well-being at older ages (Antonucci, 2001; Fuller-Iglesiasa, Sellarsa, & Antonuccia, 2008; Grundy & Henretta, 2006; Merz & Consedine, 2009; Prakash et al., 2007; Reinhardt, Boerner, & Horowitz, 2006). Stress and coping theory suggests that older adults may be protected from the potentially negative effects of stressful life events through support from others, particularly family members (Cohen, 2004; Cohen & Wills, 1985). That is, PFS can moderate or buffer the possible adverse effects to older adults emanating from the stress of coping with aging-related challenges. The literature contains much support for this theory. Perceived support has been shown to serve as a buffer to the stresses associated with the declines in health and in physical and cognitive function that many aging adults experience (Bierman & Statland, 2012; Cohen, 2004; Himes, 2000). Marital satisfaction has been shown to buffer or moderate the adverse impacts of failing vision on functional limitations and depression (Bookwala, 2011; Reinhardt et al., 2006). Emotional support from family and friends can moderate the negative effects of reduced economic status on life satisfaction, particularly for the oldest members of the aging population (Krause, 2005). The negative effects of functional limitations on psychological well-being can be moderated by family support (Bierman & Statland, 2012). A study by Dickinson, Potter, Hybels, McQuoid, and Steffans (2011) showed that declines in cognitive function were related to perceived reductions in social support. Thus, it is evident that perceived support does buffer or protect many older adults from the negative consequences of stressful life events.

Dyslexia in adulthood

Individuals with dyslexia can experience a unique constellation of emotional experience resulting in feelings of sadness, depression, stress, anxiety, and insecurity throughout the life course (McNulty, 2003; Nalavany, Carawan, & Rennick, 2011). This emotional experience with dyslexia (EDD) may stem from living in a society that associates literacy with educational and occupational success. Thus, societal expectations for achievement in these areas can lead to adults with learning disabilities such as dyslexia becoming the subject of negative perceptions, stereotypes, misunderstandings, and discrimination (Denhart, 2007). Recollections of feeling different, stupid, lazy, inferior, and ashamed often can leave emotional scars through adulthood (Ingesson, 2007; Nalavany et al., 2011; Riddick, 2003). Nalavany and Carawan (2012) found a direct effect of negative EED and lower levels of self-esteem among adults in early, middle, and late adulthood. This finding is congruent with the recent research that indicates the link between negative emotions and lower self-esteem in late adulthood in general (Bodner et al., 2013).

Stress and coping theory seems especially applicable to adults with dyslexia. There is a small but growing body of research that indicates that adults with dyslexia who perceive their parents or family as supportive report more positive self-esteem than those who do not perceive their family as such (Ingesson, 2007; McNulty, 2003; Nalavany & Carawan, 2012; Stampoltzis & Polychronopoulou, 2009). The research has shown the importance of families providing emotional support and respite for the adult who lives in a world that is not dyslexic/learning disability (LD)/difference friendly (Hellendoorn & Ruijssenaars, 2000). Family support influences self-esteem in adults with dyslexia/LD as they continue to experience difficulty and the need to adapt to the changing demands of adulthood (Hellendoorn & Ruijssenaars, 2000; Ingesson,

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2007). Research suggests that the family may assist them in finding 'niches' or areas that fit their strengths and by offering much needed emotional support (Goldberg et al., 2003; Hellendoorn & Ruijssenaars, 2000; McNulty, 2003). When they do find an area of strength on which to focus, it may help adults with dyslexia to reconcile distressing emotional experience which is important to self-esteem (McNulty, 2003). While there is little research on the effects of LD/dyslexia on older adults' well-being, a briefing sheet produced by National Institute of Adult Continuing Education (2007) suggests that they may experience difficulty in accessing services and benefits because they have problems understanding official literature or filling out forms, thus indicating a special need for familial support.

The current study

The current research is informed by the findings from a recent study by the authors (Nalavany & Carawan, 2012) that examined the mediating role of EED in the relationship between PFS and self-esteem across early, middle, and late adulthood (Nalavany & Carawan, 2012). A mediating variable answers 'how' and 'why' the relationship between an independent variable and an outcome variable comes to be (Holmbeck, 1997). Consistent with our hypothesis, adults in early and middle adulthood tended to have higher self-esteem because PFS directly decreased negative EED which subsequently directly facilitated positive self-esteem. The mediating role of emotions in the relationship between PFS and self-esteem was not evident in late adulthood. It was reasoned that in early and middle adulthood, adults with dyslexia benefit directly from the emotional and tangible support of family to help reconcile complex emotions that often accompany educational and vocational challenges. However, it is likely that educational and vocational goals are less pronounced in late adulthood compared to early stages of life. As such, the role of PFS in directly influencing EED, which then indirectly affects self-esteem, may be less pronounced in late adulthood. Another possible explanation is that according to Crocker and Wolfe (2001), personality changes that transpire across adulthood tend to represent in more stable levels of emotional stability and self-esteem. Higher levels of maturity and adjustment may decrease the influence of social support indirectly affecting emotional well-being. This is not to say that social support including that received from family is trivial in late adulthood. Rather, drawing upon stress and coping theory, older adults may be protected from the aversive emotional toll that dyslexia has exerted on their lives through positive PFS. In accordance to stress and coping theory and earlier literature, we conceptualize EED as a stressful life event similar to earlier research that conceptualizes failing vision (Bookwala, 2011), declines in physical and cognitive functioning (Dickinson et al., 2011), reduced economic status (Krause, 2005), and negative emotions (Bodner et al., 2013) as risk factors to well-being including self-esteem in late adulthood.

While in the current study we utilized the sample of older adults with dyslexia used in the earlier mediator analysis, the current study is conceptually different. In light of the sparse research on self-esteem in late adulthood (McMullin & Cairney, 2004; Robins et al., 2002) and the inconclusive findings (Orth et al., 2010), the aim of the current study is to help address this gap in the literature. We do so by focusing only on the late adulthood sample in the current study. In this study, PFS is conceptualized as a protective factor and EED as a risk factor. In general, protective and risk factors are special types of moderating variables (Rose, Holmbeck, Coakly, & Franks, 2004). In contrast to a mediating variable which answers 'how' and 'why,' a moderator variable addresses 'when' or 'for whom' a variable most strongly predicts an outcome (Holmbeck, 1997). Any effects of the independent variable on the outcome variable are conditional on, or dependent upon, values of the moderator. We hypothesized that the availability of supportive family members can be expected to play a protective or moderating role for adults with dyslexia in late adulthood. Specifically, a perceived supportive family would buffer negative EED whereby, in comparison to their counterparts who perceive their family as less supportive, older adults with unsettled emotions who have supportive family members would experience higher self-esteem.

Methods

Survey development and procedures

This study involved a cross-sectional, web-based survey of adults with self-identified dyslexia. The purpose of the project was to identify the experiences that facilitate or hinder adults with dyslexia in living successful and satisfying lives. We systematically followed proposed guidelines for web-based survey research (Dillman, 2000) and the same for individuals with disabilities (Cook et al., 2007).

Perhaps it is important to note that the original idea of using a web-based survey was the brainchild of participants from Phase I of our research. It is important to us as researchers that each phase of our research on dyslexia be informed by our participants. Attempting to develop a web-based survey that would be assessable for adults with dyslexia, we pilot tested the survey and followed the suggestions of participants. For instance, recognizing the visual processing challenges of some individuals with dyslexia (Laasonen et al., 2012), horizontal and vertical scrolling was kept to a minimum. Participants were also able to re-access the survey link and use text-to-speech software. Additionally, at the end of the survey, we asked an open-ended question: 'Please share any final comments, thoughts, or feelings about any aspect of this survey or topics we covered.' Due to the attributes that typify individuals living with dyslexia, we were surprised that more than 50% of the total number of participants responded to the final open-ended question and did so with an average of 97.0 words per comment. As well, the majority of comments by those who responded to the open-ended question were personal and focused on life

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lived with dyslexia rather than comments about the survey format. Also, we have discovered the importance of creating relationships with participants; therefore, our website included a video and narrative overview of the study, biographies of the researchers and contact information, and project updates, as well as a URL link to the survey. Adults with dyslexia are a difficult population to find, and providing information about our research as well as our biographies has proven important to our research. Although, this way of introducing a survey may be unusual, it has been effective with this particular population.

Adults aged 21 years and older with diagnosed or self-reported dyslexia were eligible for the University IRB approved study and were recruited with non-random sampling methods due to the difficulty with gaining access to this population (Gerber, 2009). First, we attempted to recruit respondents through various social-media optimization methods, such as Facebook. Second, announcements were placed in the various newsletters of organizations that advocate on behalf of adults with dyslexia/LD. Third, 15 International Dyslexia Association state branch presidents agreed to post information about the project on their home web page or inform their membership via their listserv. Finally, alumni who were enrolled in a private school exclusively for adolescents with dyslexia/LD were contacted via email and invited to visit the project homepage.

To access the survey, participants clicked on a link on the website's homepage. This led them to an introductory webpage and informed consent information. Participants who wished to keep their responses anonymous did not fill out the contact information at the end the survey. Survey completers could choose to enter a lottery to win 1 of the 10 $25 prizes.

Participants

A total of 228 individuals completed the survey (i.e., at the end of the survey clicked 'submit survey') and 22 individuals partially completed it (i.e., did not click 'submit survey'). This represents a 91.2% completion rate. We also omitted one participant who was under age 21 and three participants who did not provide their birth data, yielding a final sample of 224. The findings described herein are only from those 50 participants who reported to be 60 years of age or older (mean age = 68.73, SD = 6.80). The majority of the sample was male (76%) and 92% were Caucasian. Seventy-two percent reported that they were married. Twelve percent reported that they had a high school diploma, 16% had some college credit, 44% were college graduates, and 28% had a masters or doctoral degree. Sixty-two percent reported to be retired.

Measures

Dyslexia

Although the authors were aware of limitations associated with self-reported dyslexia, it was reasoned that this sample allowed for an extensive and rich opportunity to examine a large, heterogeneous sample of adults with self-reported dyslexia. Three arguments supported the use of self-reported dyslexia in this study. First, self-identification has been shown to be a valid measure of reading difficulties (Schulte-Korne, Deimel, & Remschmidt, 1997). Second, self-identification was used in the International Adult Literacy Survey (Vogel & Holt, 2003) and most recently in the Canadian Community Health Survey: Mental Health and Well-Being, Cycle 1.2 (Wilson, Armstrong, Furrie, & Walcot, 2009). Third, in arguing for the validity of self-identification for dyslexia, Wilson et al. (2009) stressed that 'those who also identify as dyslexic would more likely typify those who meet the narrow criteria of reading difficulties within the more heterogeneous category of LD' (p. 26). Finally, the researchers were more concerned with participants' definitions and perceptions of their dyslexia than with how professionals would diagnose them. Given these caveats, a majority of the participants (72%) responded 'yes' to having a specific diagnosis of dyslexia while all participants self-identified as having dyslexia.

Independent/risk variable

Based on a previous concept mapping study on adults with dyslexia (Nalavany et al., 2011) the data that comprise the risk variable, EED, were based on three clusters: On Being Overwhelmed, Emotional Downside, and Pain, Hurt, and Embarrassment from Past to Present. Concept mapping is suitable for the development of scale domains or factors (Kane & Trochim, 2007). Participants were instructed to rate the items given their personal experience with dyslexia. Items were rated on a seven-point scale ranging from (1) *Strongly disagree* to (7) *Strongly agree*. In addition to the original cluster items, 14 additional items were assessed for their use in the present study.

Based on the confirmatory factor analysis and reliability analysis (Nunnaly & Bernstein, 1994), 20 items were summated (17 of the original cluster items) to represent a single-factor EED indicator, whereby higher scores reflect elevated levels of stress, anxiety, sadness, depression, exhaustion, and self-consciousness, and other emotionally based experiences associated with dyslexia. The EED indicator demonstrated excellent internal consistency yielding an alpha coefficient of .95. Example items are 'Coping with dyslexia leads to exhaustion,' 'Even as an adult I experience sadness about my dyslexia,' 'I have concerns, worries, and anxieties about others understanding what I'm trying to communicate,' and 'I experience a lot of anxiety and stress regarding my dyslexia.'

Moderator variable

PFS was measured by the Provisions of Social Relations (PSR) (Turner, Frankel, & Levin, 1983) family support dimension. Six items (e.g., 'My family lets me know they think I am a worthwhile person') are rated on a five-point scale ranging from (1) *Not at all like me* to (5) *Very much like me* to. The items were summed, with higher scores

reflecting more family support. The Cronbach's alpha reliability of this measure was .88.

Dependent variable

Self-esteem was measured using the Self-Esteem Rating Scale (SERS) (Nugent & Thomas, 1993). The SERS is a 40-item instrument designed to provide a measure of self-esteem as a multifaceted concept capable of assessing problematic as well as positive dimensions of self-esteem in adults. The SERS has excellent psychometric properties (Nugent & Thomas, 1993). The items are rated on a seven-point Likert scale, with total scores ranging from −120 to +120. Positive scores reflect higher self-esteem. The items focus on a range of areas that are important as they relate to dyslexia, including overall self-worth, social competence, problem-solving ability, intellectual ability, and self-competence, and worth relative to others (e.g., 'I feel confident in my ability to learn new things; I feel that other people are smarter than I am'). The Cronbach's alpha reliability of this measure was .97.

Control variables

We include several demographic characteristics commonly conceptualized as covariates in previous research on adjustment in adulthood (Riggs & Han, 2009), previous research on older adults (Bookwala, 2011), and previous research on adults with dyslexia (Nalavany & Carawan, 2012). Demographic variables included age (in years), gender (0 = female, 1 = male), marital status (0 = not currently married, 1 = married or partnered), and private school attendance specifically for individuals with dyslexia and other LDs (0 = non-private school, 1 = private school attendance). Because emotional health and other attention disorders can covary with the emotional experiences with dyslexia and self-esteem, attention deficit disorder (ADD = 1, 0 = no ADD), attention deficit hyperactivity disorder (ADHD = 1, 0 = no ADHD), and a current diagnosis of depression or anxiety (0 = No, 1 = Yes) were included in the analyses. We incorporated characteristics that demonstrated a significant correlation with the risk factor variable (i.e., EED), the protective factor variable (i.e., PFS). and/or the dependent variable (i.e., self-esteem) as covariates in the hierarchical moderated regression analysis.

Missing data

Item response, i.e., when some participants do not answer every required item, is typical in both mail and web-based survey research. The methods undertaken to increase the likelihood of a positive survey experience for adults with dyslexia (described in the Survey Development section) may have resulted in a small percentage of missing values. The overall percentage of missing values was 1.4% and 1.6% for the final sample and for the late adulthood subsample, respectively. Although the percentage of missing data is considered to be small, complete case analysis would discard 44% of the cases. Eliminating 44% or 22 of the 50 cases with complete case analysis would jeopardize the power of the analyses. We use the multiple imputation (MI) to address this problem (Rubin, 1996). MI is considered a state-of-the-art approach to missing data that has advantages over other methods such as complete case analysis, pairwise deletion, and mean replacement in terms of producing unbiased estimates of correlations and covariances (Rubin, 1996). According to Allison (2002), MI is not deterministic, integrates uncertainty into the imputed values, and the data can be analyzed with any bivariate and multivariate analysis.

An assumption of MI is that the data are completely missing at random (MCAR). We used Little's MCAR chi-square test (Little, 1988) to evaluate the missing data patterns. Our analysis suggested that the missing data in this study was MCAR for both the final sample ($\chi^2 = 15{,}229$, $df = 15{,}062$, $p < .17$) and the late adulthood sample ($\chi^2 = 6.022$, $df = 1608$, $p < 1.0$). In other words, no systematic pattern exists to the missing data. MI was employed with the final sample using all analysis variables in this study, as well as auxiliary variables theoretically or statically associated to the analysis variables (Schafer & Graham, 2002). The findings reported herein are based upon the first of the two implicates of the data generated.

Data analytic strategy

A hierarchical moderated regression (Aiken & West, 1991) analysis was conducted to test for an interaction between the EED (hypothesized risk factor) and PFS (hypothesized protective factor) in the prediction of self-esteem. In other words, the goal of moderation analyses was to estimate the effect of EED on self-esteem and how much, if at all, the effect depends on PFS. Sociodemographic and personal characteristics (control variables) were entered in Step 1; EED and PFS were entered in Step 2; and in Step 3, the interaction of EED by PFS was entered. EED and PFS were mean centered before conducting the analyses. According to Hayes, Glynn and Huge (2011), mean centering ensures that the coefficients for the two variables that compose the interaction will be interpretable within the range of the data. Put differently, mean centering EED and PFS will yield an estimate of the effect of EED (or PFS) on self-esteem that is conditioned on a value of PFS (or EED) that will be at the sample mean. Support for a moderator effect is noted in Step 3 by a statistically significant change in R^2 (i.e., ΔR^2) due to the interaction variable and beta weight. We used a new SPSS macro, PROCESS (available for download on www.afhayes.com), which accompanies the paper by Hayes (2012) to test the main effects and conditional effects (i.e., simple slopes) of PFS as a moderator in the relationship between EED and self-esteem. Simple slopes were examined across three levels of PFS, i.e., average PFS (the mean of the sample), lower PFS (1 SD below the mean), and higher PFS (1 SD above the mean). Using PROCESSS output, we constructed a graph of predicted values of self-esteem in order to visualize and interpret the nature of the moderating effect of PFS on EED. PROCESS situates the control variables to their sample mean

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when producing the predicted values. An alpha level of .05 was the criterion for statistically significant findings in this study. Preliminary analyses of the data were also conducted. For instance, Breusch and Pagan (1979) and Koenker (1981) tests for heteroscedasticity were produced by using an SPSS macro (available at http://www.spsstools.net/). The results of these preliminary analyses did not reveal a violation of homoscedasticity or the assumption that the variance of the regression errors is constant.

Cohen's f^2 (Cohen, Cohen, West, & Aiken, 2003) was the effect size index for the unique contribution of the moderator's (PFS) effect on EED on self-esteem (i.e., Step 3, ΔR^2). Interaction effects of $f^2 = .02$, $f^2 = .15$, and $f^2 = .35$ are considered small, medium, and large effect sizes, respectively (Cohen et al., 2003). This study had >.80 power to detect a medium effect with a sample size of 50. Effect size and power analysis were conducted using Soper's calculators (available at http://www.danielsoper.com/).

Results

Table 1 presents the descriptive statistics and Pearson correlation coefficients among the main study variables. All control variables except for marital status and ADHD are negatively or positively associated with EDD and PFS. As such, marital status and ADHD were excluded from the hierarchical moderated regression analysis.

Table 2 presents the results of the hierarchical moderated regression models. In Step 1, the results revealed a significant negative effect of a current diagnosis of anxiety/depression on self-esteem ($b = -44.06$, $\beta = -0.42$, $p < .05$). Step 2 illustrates that EED and PFS as a set explained a significant amount of variance in self-esteem ($\Delta R^2 = .402$, $F(2, 42) = 29.99$, $p < .001$). Over and beyond the influence of the control variables, EED was a significant predictor of lower self-esteem ($b = -1.11$, $\beta = -0.82$, $p < .05$), while PFS was not a significant predictor of self-esteem ($b = 1.26$, $\beta = -0.17$, $p =$ n.s.).

Step 3 presents the results for the test of PFS as a moderator of the relationship between EED and self-esteem. EED ($b = -1.05$, $p < .01$) and PFS ($b = 1.43$, $p < .05$) were significant predictors of self-esteem over and beyond the control variables. However, when included in the equation with the interaction, the correct interpretation of EED and PFS on self-esteem is not a direct effect but a conditional effect (Hayes et al., 2011). Because EED and PFS were mean centered prior to computing the interaction, the correct interpretation of PFS, for example, is that two people who differ by one unit in PFS but have an EED score at the sample mean are estimated to differ by 1.43 in their self-esteem ($p < .05$). With this stated and supporting the moderation hypothesis, the addition of the EED × PFS interaction resulted in a significant improvement in model fit when predicting self-esteem ($\Delta R^2 = .050$, $F(1, 41) = 8.93$, $p < .01$). Controlling for the influence of demographic and personal characteristics, a significant interaction of EED × PFS indicated that higher PFS buffered the effect of EED on self-esteem ($b = 0.05$, $p < .01$). The estimated effect size for the additional variance in self-esteem accounted by the moderating effect of PFS on EED was .217 (Cohen's f^2); the power to detect this effect was .854.

As depicted in Figure 1, the conditional effect analysis showed that individuals of different levels of PFS did not differ in self-reported self-esteem under conditions of lower EED; however, significantly large differences were noted under conditions of higher EED (e.g., more depression, anxiety, and self-consciousness): older adults with dyslexia reporting higher levels of PFS ($b = -0.77$, $p < .01$, $CI_{95} = -1.15, -0.39$) and average levels of PFS ($b = -1.05$, $p < .001$, $CI_{95} = -1.35, -0.74$) experienced significantly higher self-esteem than older adults with dyslexia who reported lower levels of PFS ($b = -1.32$, $p < .001$, $CI_{95} = -1.66, -0.98$). Put differently, the conditional effect analysis suggests that higher levels of PFS significantly buffers, mitigates, and protects the effects of negative EED on self-esteem in individuals with dyslexia in late adulthood.

Discussion

Although previous studies have examined the buffering role of family support in the association among various life stressors including visual impairment, physical disability, negative emotions, and functional decline on well-being in late adulthood, no study could be found that had examined the role of negative EED. Our results

Table 1. Means, standard deviations, percentages, and correlation matrices of all variables ($N = 50$).

Variable	M (SD) or %	1	2	3	4	5	6	7	8	9	10
1. Gender (male)	76%		.23	−.07	.52**	.12	−.08	−.10	.28*	−.17	.22
2. Marital status (living with a partner)	74%			.10	.13	.12	−.22	.03	..22	−.17	−.01
3. Age	68.73 (6.80)				.10	−.10	.13	−.13	.00	−.40**	.07
4. Private school	46%					−.19	−.09	−.22	.27	−.31*	.32*
5. ADHD	4%						.24	.17	−.06	.12	−.17
6. ADD	12%							.31*	−.30*	.36*	−.28
7. Anxiety/depression	18%								−.24	.60**	−.50**
8. PFS	24.12 (5.67)									−.39**	.50**
9. EED	80.58 (30.36)										−.79**
10. SERS	57.90 (41.01)										

Notes: PFS, perceived family support (provisions of social relations); EED, emotional experience with dyslexia; SERS, self-esteem rating scale.
*$p < .05$, **$p < .01$.

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Table 2. Perceived family support as a moderator in the association from emotional experience with dyslexia to self-esteem ($n = 50$).

	Step 1		Step 2		Step 3	
	Control variables		Perceived family support and emotional experience with dyslexia		Perceived family support x emotional experience with dyslexia	
Variables	*B* (*β*)	95% CI	*B* (*β*)	95% CI	*B* (*β*)	95% CI
Gender (male)	7.80 (.08)	(−20.24, 36.23)	−.02 (.00)	(−18.84, 18.80)	.00 (.00)	(.17.27, 17.26)
Age	−.07 (−.01)	(−1.62, 1.49)	−1.56 (−.26)**	(−2.29, −.43)	−1.40 (−.23)	(−2.41, −.35)
ADD (1 = yes)	−15.85 (.172)	(−49.04, 17.34)	5.32 (.04)	(−17.44, 28.07)	12.30 (.10)	(−9.10, 33.71)
Anxiety/depression (1 = yes)	−44.06 (−.48)**	(−72.63, −15.48)	−.69 (−.01)	(−22.95, 21.56)	−1.91 (−.02)	(−22.35, 18.52)
Private school (1 = yes)	14.01 (.17)	(−10.63, 38.65)	3.52 (.04)	(−12.9, 19.98)	.50 (.01)	(−14.74, 15.74)
Perceived family support		1.26 (.17)	(−.13, 2.64)	1.43 (.20)*	(.16, 2.71)	
Emotional experience with dyslexia		−1.11 (−.82)***	(−1.44, −.76)	−1.05 (−.77)***	(−1.34, −.74)	
Perceived family support x emotional experience with dyslexia			.05 (.24)**	(02, .08)		
ΔR^2	.32**		.40***		.05**	
R^2	.32		.72		.77	
F (df)	4.01** (5, 44)		29.99*** (2, 42)		8.93 (1, 41)**	
f^2					.217	

Notes: *$p < .05$; **$p < .01$; ***$p < .001$.

demonstrated that in late adulthood, dyslexia is a risk factor for a well-lived life. Preliminary analysis showed that higher levels of EED were related to lower levels of self-esteem. This finding is consistent with the recent research that supports the association between negative emotional states and lower self-esteem in elders (Nalavany & Carawan, 2012). The association between EED and lower self-esteem may be felt for two reasons. Throughout the life course, adults with high levels of EED may have been unable to identify successful adaptive strategies for their dyslexia when they were younger and have thus continued to experience negative and distressful feelings. However, we could argue that it might also be at least a partial result of facing some of the challenges that are associated with aging into a new phase of the life course. Young adults with dyslexia struggle with the challenges of adapting to the changing demands of adulthood (Hellendoorn & Ruijssenaars, 2000; Ingesson, 2007; McNulty, 2003). Many are able to identify their niche in life and use a focus on this area of strength to help them cope with the emotional distress associated with LD (McNulty, 2003). We suggest that adults with dyslexia entering late adulthood may find that the challenges associated with aging (i.e., stressful life events such as retirement, the onset of disability, loss of a spouse) reintroduce feelings of distress that had been overcome by adaptive strategies in earlier life stages. It is not possible to determine whether the presence of high levels of EED is due to one or the other of these possibilities given that the data is cross-sectional. It may very well be that it is a combination of the two, in fact, at least for some individuals. In either case, these adults are at higher risk for decreased well-being and lower self-esteem.

In support of stress and coping theory and most pivotal to the study's purpose is that higher or positive PFS was a compelling buffer of the effects of high or negative levels of EED on self-esteem for adults in late adulthood. The findings suggested that the buffering dynamic of PFS is of moderate influence. To the best of our knowledge, this is the first study that shows that positive PFS may be a critical resource to self-esteem when older adults experience emotional distress associated with dyslexia. Our findings are consistent with the Bierman and Statland (2012) study of adults without LD. They found that activities of daily living limitations were less likely to increase depressive symptoms for late-life older adults, but only in the presence of strong social support from family. In our study, family support promoted self-esteem because, as a protective dynamic, it helped older adults cope with the emotional distress caused by dyslexia. Consequently, family support provided a buffer against lower self-esteem because it helped older adults cope with the emotional distress caused by dyslexia. Thus, our study provides added support to the literature showing the central role family members play in maintaining older adults' well-being.

Implications

This is important information for adults with dyslexia and their families, as well as for those professionals who

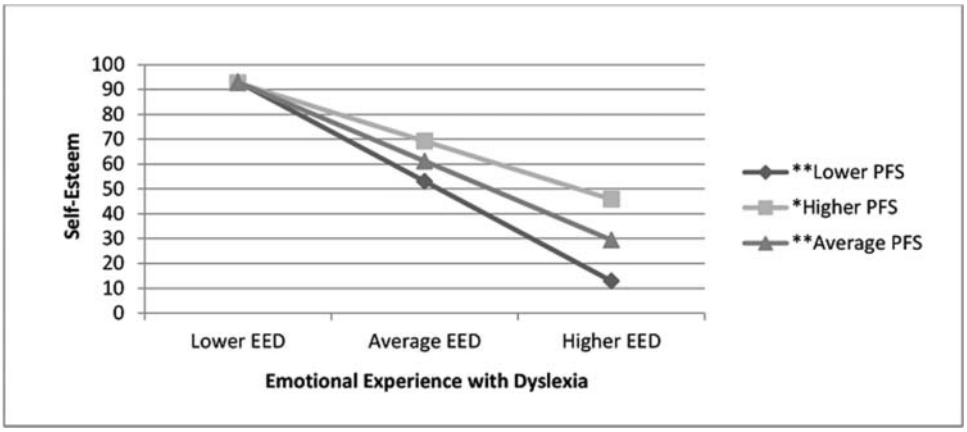

Figure 1. Moderating effect of perceived family support (PFS) in the association from emotional experience with dyslexia (EED) to self-esteem ($n = 50$). $^{*}p < .01$; $^{**}p < .001$.

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provide services to older adults. The lack of specialized training in gerontology or geriatrics for service providers, including social workers (Scharlach, Damron-Rodriguez, Robinson, & Feldman, 2000), physicians (Laditka, Jenkins, Eleazer, & Kelsey, 2007), and nurses (Kovner, Mezey, & Harrington, 2002), is well documented. Thus, they are often ill-prepared to provide effective services to older adults in general and will face additional challenges when providing services to older adults with LD/dyslexia.

Many of the difficulties associated with dyslexia (e.g., difficulty taking in oral information, poor organization, problems finding the right words) may present similarly to the symptoms of mild cognitive decline and/or dementia (i.e., impairments in core mental functions such as communication and language, feeling overwhelmed by planning steps to accomplish a task) and both can cause anxiety and/or depression in adults (Alzheimer's Association, 2014; Mayo Clinic, 2013). When these similarities are combined with a lack of geriatric expertise, the potential exists for older adults with dyslexia seeking to access services to be judged erroneously, at least initially, as experiencing cognitive decline or early dementia. This could result in negative consequences including incorrect referrals, unnecessary screenings, mistaken medication regimes, as well as other unnecessary services. This type of experience is likely to increase EED because it is reminiscent of early life experiences when the disclosure of their dyslexia/LD to others was met with misunderstanding and discrimination (Denhart, 2008). Thus, it may ultimately cause embarrassment and increased distress for those adults.

These findings highlight the importance of educating family members and service providers about this issue. Given the importance of family support for older adults with dyslexia, knowledge of the potential for confusion when accessing services will help them better prepare for interactions with providers. Family members can create the emotional support that a family member with dyslexia in late adulthood may need to help educate providers about the reality of living with dyslexia and the particular challenges associated with their aging process. Family members can also provide their own observations and experiences of the support needed for an older family member with dyslexia. Programs that offer educational training for providers should ensure that program graduates are prepared to recognize and respond to the needs of both adults with dyslexia and their family members. Perhaps it would also be wise to consider family members who have already experienced the needs of an older family member with dyslexia as becoming a component in the educational training of others. They may hold a kind of expertise that could be of great value to both professionals and other families. This may be of particular importance for professionals who provide services to family caregivers since these individuals are also at risk for negative impacts from the stress that is often associated with caregiving.

Support services for caregivers, given the importance of family support and the possible declines in their own health, call for professional attention. As adults with dyslexia age, so do their spouses, children, and other family members who may have provided lifelong support for the individual (son, daughter, wife, husband, parent, etc.) with dyslexia. Caregivers may begin to face health issues of their own and therefore often require support services. Helping families plan for the possibility of future needs for both the aging adult with dyslexia as well as the aging caregiver is an issue that needs to be addressed.

Study limitations and future directions

Despite the contributions of this study, as with all research this study possessed several limitations. The first concern is the generalizability of these findings due to sample biases inherent in online surveys and the small sample size. Although the number of college graduates who completed the study survey may seem high, it is commonly understood that many adults with dyslexia including the most severely dyslexic use assistive technology (McNeany, 2007). Another reason for more highly educated participants may have been due to more opportunities (private schooling) preparing one for higher education. Additionally, in the case of our survey, text-to-speech technology made more global participation

possible for individuals with dyslexia and may have contributed to the low percentage of missing data. This low percentage of missing data suggests the feasibility of using a web-based survey with individuals who have dyslexia. However, we are unable to determine the extent to which our sample is representative of the general population of adults with dyslexia. Future research should strengthen the present findings with larger and more representative samples. Second, the cross-sectional design limited causal inferences about relationships among the study variables. Longitudinal data will yield a developmental portrait with greater insights on the relationships among EED, PFS, and self-esteem. Third, as the data were collected from the perspective of the adult with dyslexia only, shared method bias may have influenced the results. Future research should consider the perspective of family members including spouses, adult offspring, and siblings to provide more nuanced understanding of the trajectory of dyslexia-related challenges in late adulthood.

The findings in this research highlight that PFS can provide a buffer against the emotional toll that dyslexia takes on the individual even in late adulthood. The low self-esteem that is often a result of the negative emotional experience of dyslexia can certainly be positively affected by the perceived support of family. Clearly, we must attend to the needs of elderly caregivers, as well. It is clear that just as dyslexia does not go away; neither does the need for family support!

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