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Self-efficacy and psychological well-being in a sample of Italian university students with and without Specific Learning Disorder

This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

Published Version:

Matteucci M.C., Soncini A. (2021). Self-efficacy and psychological well-being in a sample of Italian university students with and without Specific Learning Disorder. RESEARCH IN DEVELOPMENTAL DISABILITIES, 110(March), 1-11 [10.1016/j.ridd.2021.103858].

Availability:

This version is available at: <https://hdl.handle.net/11585/837265> since: 2024-05-14

Published:

DOI: <http://doi.org/10.1016/j.ridd.2021.103858>

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Self-efficacy and psychological well-being in a sample of Italian university students with and without Specific Learning Disorder

Cite as:

Matteucci, M. C., & Soncini, A. (2021). Self-efficacy and psychological well-being in a sample of Italian university students with and without Specific Learning Disorder. *Research in Developmental Disabilities*, 110, 103858. <https://doi.org/10.1016/j.ridd.2021.103858>

Abstract

Background. Despite an internationally recognized significant increase of students with a diagnosed Specific Learning Disorder (SLD) entering higher education, psychological features of university students with SLD still remain to be explored.

Aims. The study aims to investigate the perceived academic self-efficacy and to identify predictors of psychological well-being in a sample of university students with SLD, compared to a control group of students without SLD.

Methods and procedure. 60 Italian undergraduate students with SLD and 283 students without SLD were included in this study.

Outcomes and results. Results indicated that university students with SLD, compared to students without SLD but with comparable academic achievement, did not report significantly lower levels of academic self-efficacy. Furthermore, a multiple regression analysis indicated that self-esteem and perceived social support by significant others did significantly predict the value of psychological well-being in students with SLD.

Conclusions and Implications. The findings suggest that undergraduate students with SLD may represent a particular category of young adults who have beaten the odds, who have persisted in effort even if they struggled and then who have succeeded.

Keywords: specific learning disorder; university students; psychological well-being; self-efficacy; self-esteem; social support.

What this paper adds?

This study expands the research on psychological features in university students with SLD and especially on their perceived academic self-efficacy and psychological well-being. Research on adults with SLD is growing but remains scarce, as a large amount of research still concerns SLD in childhood. University students with SLD thus are a specific target of research as, despite their difficulties in learning activities, they attained a higher education level. Furthermore, to the best of our knowledge, this is the first study comparing self-efficacy in university students with SLD and in students without SLD with a similar achievement level in terms of GPA. Our results indicated that a sample of Italian university students with SLD, compared to students without SLD but with comparable academic achievement, did not report significantly lower levels of perceived academic self-efficacy. Furthermore, the study also indicated the significant contribution of self-esteem, academic self-efficacy level, and perceived social support as predictors of the value of psychological well-being in undergraduate students, but not the presence/absence of a diagnosis of SLD. On the other hand psychological well-being of students with SLD is significantly predicted by self-esteem and perceived

social support by significant others. Undergraduate students with SLD may represent a particular category of young adults who have beaten the odds, who have persisted in effort even if they struggled and then who have succeeded. Thus, the findings of this study may inform policy and practice in university support services for students with SLD, as well as for students without SLD but with achievement difficulties.

1. Introduction

As indicated in the International Classification of Diseases (ICD)-11 diagnostic system (World Health Organization [WHO], 2018), Specific Learning Disorder (SLD) is a group of neurologically-based developmental disorders characterized by significant and persistent difficulties in learning academic skills, which may include reading, writing, or arithmetic. The individual's performance in the affected academic skill(s) is markedly below what would be expected for chronological age and general level of intellectual functioning and results in significant impairment in the individual's academic or occupational functioning.

SLD¹ is considered developmental in nature and usually first manifests during the early school years. However, according to the ICD-11

¹ SLD is the term used for diagnosis, which entails the legal status of a recognized disability to qualify for accommodations and services in school. However, the literature often refers to as “learning disorder” or “learning disability”, terms used by both the educational and legal systems (American Psychiatric Association, 2018). Moreover, research often concerns just the diagnosis of dyslexia, the most common learning disability. The analyses of the literature will, therefore, be focused on all the research contributions which are concerned with SLD, even when defined as learning disability or when focused explicitly only on students with dyslexia.

description and recent research, difficulties related to this disorder persist across the lifespan and can cause substantial troubles such as difficulties in academic skills and tasks in higher education students (Mortimore & Crozier, 2006), in work-related variables in adults with dyslexia (i.e., work self-efficacy, anxiety, perceived competence) (Nalavany et al., 2018), and generally in psychosocial well-being (Eloranta et al., 2019; Hellendoorn & Ruijsenaars, 2000; Nalavany et al., 2011).

A large amount of research concerns SLD in childhood, and there is a dearth of research that explores correlates of SLD through the life span, and especially in university students. Indeed, despite an internationally recognized significant increase of students with a diagnosed SLD in higher education, estimates of the prevalence of SLD in the university student population still remain inaccurate (Longobardi et al., 2019), and, consequently, research on their psychological features.

A search for existing literature on university students with SLD conducted via two main databases (i.e. Scopus and WOS) identified a very limited number of sources. Despite this limited literature, the population of university students with SLD is rapidly rising in western countries. In Italy, the educational system is characterized by a full inclusion of pupils with disability or special education needs, and in 1999 a national law (n. 17/1999) extended into the higher stages of education the right of all students (regardless of their physical, mental or sensory condition) to have equal access to academic education. The law (supplemented by the following Decree of the President of the Council of Ministers on April 9, 2001, outlined “Measures for the treatment of the right on higher education”) promotes the inclusion of youths with disability into university communities by addressing to universities specific directives about their inclusion policies. In particular, universities are

required to provide services, including technical and teaching aids, specialized tutoring, and individualized exam conditions. Although there are no national statistical data on the percentage of students with SLD in Italian private and public universities, a recent study estimated the prevalence rate of students with SLD in Italian universities in a range between 0.03% and 0.48% (Longobardi et al., 2019).

This lack of literature and research on university students with SLD in Italy is an important gap to fill in. In this paper we focused specifically on academic self-efficacy of undergraduate students with SLD and their perceived psychological well-being. In the next paragraphs we will present the most relevant studies addressing the two main issues of the paper (i.e. academic self-efficacy beliefs and psychological well-being).

1.1 Academic self-efficacy beliefs

Self-efficacy refers to a domain-specific belief about one's capabilities to learn or perform behaviors at designated levels and academic self-efficacy indicates a personal belief in one's ability to perform the tasks necessary for success in academic achievement (Bandura, 1997; Bandura & Locke, 2003). Self-efficacy has been shown to play an important role in achievement contexts, as the person's degree of academic self-efficacy has been confirmed by several research contributions and meta-analyses to be a robust predictor of individual's direction, level of motivation, persistence and performance, as well as to be indirectly related to stress, health, and overall satisfaction (Chemers, et al., 2001). These effects have been found across time, environments, and populations (Komarraju & Nadler, 2013; Multon, et al., 1991; Schunk & Pajares, 2002). As concerns university students with SLD, they have been found to score lower than their peers on academic self-efficacy (Baird et al.,

2009; Ben-Naim et al., 2017; Stagg et al., 2018). However, it is essential to note that in these studies, students with SLD were compared to a control group of typically achieving students and not to students who present comparable academic performance.

With a small sample of college students with physical and learning disabilities, Blake and Rust (2002) found self-efficacy to be related to self-esteem, but unrelated to disability status. Hen and Goroshit, (2014), found students with SLD to have lower academic self-efficacy than non-SLD students, but in their sample, there was no difference in academic achievement (measured as self-reported grade point average scores [GPA]) between SLD and non-SLD student groups. Through a meta-analysis conducted in 2002, Klassen concluded that the research on the self-efficacy beliefs of students with learning disabilities -in other domains than writing- is inconclusive and somewhat contradictory. Moreover, none of the reviewed studies included control groups made up of low-achieving students, and the author suggested that it may be that non-SLD low-achieving students present similar self-efficacy profiles.

1.2 Psychological well-being in students with SLD

Psychological well-being relates to a person's psychological functioning, life-satisfaction, ability to establish and maintain positive relationships, sense of autonomy, self-acceptance, personal growth, purpose in life and self-esteem (Stewart-Brown & Janmohamed, 2008). Self-esteem has been conceptualized as a set of thoughts and feelings about his/her own worth and importance (Rosenberg, 1965).

As concerns university students with SLD (and especially dyslexia), some studies have found that they experience higher levels of somatic complaints, social problems, lower self-esteem, more negative emotions, anxiety, sadness and depression scores than controls (Carroll &

Iles, 2006; Davis et al., 2009; Ghisi et al., 2016; Riddick et al., 1999). Inversely, other studies found no differences between university students with and without SLD: a nonsignificant trend was found for students with learning disability to report more depression (Hoy et al., 1997; Mattek, & Wierzbicki, 1998), as well as no significant difference on anxiety level (Riddick et al., 1999). Students with dyslexia reported that when receiving a diagnosis, they experienced, as a consequence, more confidence in their own abilities (Gibson & Kendall, 2010). Some authors maintained that the incidence of social and emotional problems among people with dyslexia may begin to decrease as they grow older (for a review see Burden, 2008). Nelson and Gregg (2012) found that college students with dyslexia did not significantly differ on self-reported symptoms of depression and anxiety when these groups are compared to a group of college students without dyslexia. Similarly, Jordan, McGladdery, and Dyer (2014) found that undergraduate students with and without dyslexia have comparable general mental health.

1.2.1 Social support

Such inconclusive results inspire further research aimed at identifying protective factors, compensative processes, or adaptive coping skills in individuals with SLD. Among protective factors, in college students and adults without SLD the social support has been consistently related to functioning and psychological well-being (Coffman & Gilligan, 2002; Karademas, 2006). University students with dyslexia were found to perceive lower levels of emotional, practical and general social support (Kalka & Lockiewicz, 2018). Nonetheless, positive perceived family support has been found to significantly buffer, mitigates, and protects the effects of negative emotional experiences in adults with dyslexia, as - especially in early adulthood- perceiving family support promotes self-esteem (Hellendoorn & Ruijsenaars, 2000; Nalavany & Carawan, 2012).

According to McNulty (2003), in late adolescence and young adulthood, new roles and positions, resources within the environment, and improvement of the individual's areas of competence held the potential to improve compensation dramatically. In this vein, university students with SLD "represent a select group of individuals who have beaten the odds by attending college; they, therefore, may possess characteristics that make them less prone to internalizing psychopathology than are their counterparts who do not attend college" (Nelson & Gregg, 2012, p. 252). However, personal and social resources which may act as protective characteristics in university students with SLD, still need to be clearly identified.

2 The present study

The literature review shows that research on psychological features of university undergraduate students with SLD is extremely limited, also because their participation in higher education is a recent (but increasing) phenomenon. Thus, the present study contributes to the study of an area still little investigated. Moreover, the research on self-efficacy beliefs of students with learning disabilities is inconclusive and somewhat contradictory and there is a lack of research comparing SLD students with control groups made up of low-achieving students (Klasse, 2002). Although research on the role of self-efficacy on psychological well-being is scant, some results have confirmed that in students without SLD academic self-efficacy is significantly linked to psychological well-being (Chemers et al., 2001). Moreover, the psychological well-being of undergraduate students with SLD is worth studying as results are mixed and controversial (see par. 1.1 and 1.2).

Based on the above background, the study has three main purposes. First, to explore differences between students with and without SLD in their psychological features, i.e. perceived academic self-efficacy, psychological well-being, self-esteem and social support. Second, we aim to investigate differences in the perceived academic self-efficacy of university undergraduate students with SLD compared to a control group of undergraduate students without SLD, controlling for their academic results. Previous studies have not always produced consistent results and failed to control for the role of academic results. Self-efficacy beliefs are strictly connected to academic achievement, as previous performance outcome and vicarious experiences are two major sources of self-efficacy beliefs (Hampton & Mason, 2003). Thus, in this study we investigated the role of academic results and we compared students with SLD with a group of university students without SLD but with an equivalent academic achievement level. We expected that (a) low achieving students without SLD do not differ from students with SLD with comparable academic results; (b) high achieving students with SLD do not significantly differ from their peers without SLD. The third purpose is twofold: a) to test the predictive effect of the presence of an SLD diagnosis on the perceived psychological well-being in the whole sample of students with and without SLD, and b) to test the predictors of psychological well-being in the group of students with SLD. In order to determine the specific contribution of the diagnosis of SLD, we jointly tested the influence of the presence/absence of the diagnosis, as well as of three main determinants of psychological well-being, as suggested by the literature (cfr. par. 1.2): perceived social support, self-esteem and academic self-efficacy. In previous studies, perceived social support and self-efficacy were analysed as predictors or mediators of psychological well-being (e.g., Maciejewski, Prigerson, & Mazure, 2000; Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016; Stack-Cutler et al., 2016) and previous

research with adults and college students (without SLD) has shown both these variables to be related to health, functioning, well-being and mental health (e.g., Karademas, 2006; Zhou, et al., 2013). According to Nelson and Gregg (2012), we hypothesized no difference between the students with and without SLD in the psychological well-being and that the presence of a diagnosis of SLD is not a sufficient condition to undermine psychological well-being of university students, as personal and social conditions (e.g. academic self-efficacy, self-esteem and social support) have been found to be reliable predictors of psychological well-being, despite a condition of learning disorder. In addition, we tested predictors of psychological well-being in the group of students with SLD and we hypothesized that social support and self-esteem will be significant predictors of psychological well-being.

3 Method

3.1 Participants and procedure

The Ethical Board of the first author's university approved the study protocol (protocol number 72191, dated 1st April 2019). The data collection was conducted in Spring 2019 through a Qualtrics online survey.

All the students with SLD included in the mailing list of the university service for students with SLD of the University of [removed for blind review]² were invited to participate via email. Of the total number of students registered with the service, 11% accepted to participate and completed the questionnaire. Consequently, the SLD group comprised 60 students (26.7 % males; *M* age = 21.55, years, *SD* = 3.52) attending an undergraduate degree in different subject areas (such as psychology, engineer, business, law, political science, social work, medicine). As concern the diagnosis, 23 declared to have a single deficit diagnosed (either dyslexia, dysgraphia, dyscalculia, or dysorthographia), and 35 a mixed form of SLD with two or three impairments (e.g., dyslexia and dyscalculia). Dyslexia was the most common disorder (*n* = 45). In Italy, in line with the policy of the Italian Ministry of Health and the Regional Health System, the diagnosis is provided in accordance with the ICD-10 diagnostic classification system which refers to the category called “Specific developmental disorders of scholastic skills” (ICD-10 code: F81) and subtypes concerning specific reading, spelling disorder, disorder of arithmetical skills, and mixed types. The diagnosis of SLD must be provided by the local health authority or by private professionals (e.g., psychologists, neuropsychiatrists) and subsequently approved by the local health authority. The students with SLD who declared to take advantage of the services provided by the University Service were 44.

² In order to be registered with the service and getting special facilities (e.g. extended examination time), students have to voluntarily contact the university service and provide documentation confirming the presence of a diagnosis of SLD.

The control group was composed of 283 students who declared not to have a SLD (22.3% males; M age = 21.22 years, SD = 3.05) attending an undergraduate degree in psychology (98.8%). They were invited to participate via email through the mailing list of the university and through the campus website's homepage via a link to the online survey. The invitation email included a link to the Qualtrics online survey which was preceded by a cover letter informing the students about main purpose and characteristics of the study, anonymity, voluntary nature of participation and absence of compensation nor benefits. Informed consent was explicitly asked before the beginning of the questionnaire.

No significant differences between the two groups emerged concerning gender ($\chi^2 = .46$) and age $t(341) = -.74$, $p = .46$.

From the total number of students who started to fill in the questionnaire, only 5.5% of students abandoned the online survey before finishing (completing less than 76% of the questionnaire) and 90.1% of participants had a 100% completion rate

3.2 *Measures*

The online self-report questionnaire included the following items and measures.

3.2.1 *Demographics, academic, and clinical information*

The demographic information included gender, age, nationality, university degree of enrolment, academic achievement (self-reported GPA³), parental education (to deduce SES), presence of a diagnosis of SLD and, only for students who reported a diagnosis of SLD, diagnostic label, presence of co-morbidity in terms of behavioral or conduct disorders, enrolment to the university service for students with SLD, and need of help in completing the questionnaire.

3.2.2 The Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS is a 12 item self-report measure of subjectively assessed social support, which includes three subscales, each addressing a different source of support: (a) Family, (b) Friends, and (c) Significant Other (Zimet, et al., 1988). Each item has to be responded on a 6-point Likert scale from 1 "very strongly disagree" to 6 "very strongly agree." The research has demonstrated that the MSPSS has good internal and test-retest reliability as well as moderate construct validity, and that high levels of perceived social support are associated with low levels of depression and anxiety. The Italian validation study has demonstrated that the scale possesses good internal concurrent validity and is adequate for accurate measurement of perceived social support in an Italian context (Di Fabio & Busoni, 2008). In this study, the three sub-scales demonstrated excellent reliability (α = from .91 to .94).

³ In the Italian university system, the equivalent of the GPA is the average grade obtained at the exams taken. Universities in Italy use a 30-point scale that can be divided into failing (0 to 17) and passing (18 to 30 cum laude) grades.

3.2.3 Self-esteem.

To measure global self-esteem, we used the single-item self-esteem scale (SISES). This measure was created and validated by Robins and colleagues (Robins, et al., 2001) and contains only one item, i.e., "I have high self-esteem," with a 7-point Likert-type scale ranging from 1 = "Not very true of me" to 7 = "Very true of me." The validation study has proved that the SISES has good psychometric quality in terms of convergent validity with the Rosenberg Self-Esteem Scale and ultimately is a reliable measure used in scientific studies on self-esteem (e.g., De Cremer et al., 2005).

3.2.4 Academic Self-Efficacy scale (ASES)

Perceived academic self-efficacy was assessed by a 12-item scale aimed at measuring students' self-efficacy in different domains related to the academic context (Pastorelli & Picconi, 2001). For the present study, the wording of the items was adapted to the academic context (i.e., items concerning students' perceived capability to perform well in the classroom and to organize school-related tasks have been referred to academic activities). The following statement precedes the items: "To what extent do you feel able to.....:" Students should respond on a 5-point Likert scale (from "not at all" to "a great extent"). In this study, the reliability of the scale was $\alpha = .89$.

3.2.5 Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

The WEMWBS is a 14-item scale of mental well-being covering subjective well-being and psychological functioning. All items are worded positively and relate to an individual's state of mental well-being (thoughts, feelings, and functions) in the previous two weeks (example items:

"I've been feeling optimistic about the future"; "I've been feeling loved"). This scale has been included as a measure of general psychological well-being as it addresses aspects of positive mental health, and together it covers several attributes of mental well-being. The scale measures both (1) the subjective experience of happiness (affect) and life satisfaction (i.e., the hedonic perspective), and (2) the positive psychological functioning, good relationships with others, and self-realization (i.e., the eudaimonic perspective). Responses are made on a 5-point scale ranging from 'none of the time' to 'all of the time'. The scale is scored by summing responses to each item. The minimum scale score is 14, and the maximum is 70. The scale has not been designed to identify people who have or probably have a mental illness; thus, the WEMWBS does not have a 'cut off' level to divide the population into those who have 'good' and those who have 'poor' mental well-being. The scale has been widely used internationally for monitoring and evaluating projects and programs, as well as for studying the determinants of mental well-being. The Italian validation of the WEMWBS revealed good psychometric qualities (Gremigni & Stewart-Brown, 2011). In this study, the reliability of the scale was $\alpha = .91$.

4 Results

The analyses were performed using SPSS version 21.0. The level of significance was set at .05, and all the tests were 2-tailed. The amount of missing data on each variable ranged from 0% to 3.4%. and the Little's MCAR test confirmed that data were missing at random ($p =$

.71). Therefore, missing data were imputed by means of a maximum likelihood approach with the Expectation-Maximization (EM) algorithm (single imputation) (Becker et al., 1997).

4.1 Preliminary results of psychological features of students with and without SLD

To achieve the first aim, a series of t-tests were conducted to assess differences between the SLD group of students and the control group. We tested differences among all the variables (i.e., psychological well-being, self-esteem, academic self-efficacy, social support and academic results) between the two groups. The analyses showed a significant difference only in the academic self-efficacy and academic results. As for the academic self-efficacy, students with SLD showed significantly, $t(341) = 3.09, p = .002$, lower academic self-efficacy ($M = 39.53, SD = 8.33$) than students without SLD ($M = 42.82, SD = 7.27$). As for the academic results, a comparison of the GPA revealed a statistically significant difference, $t(341) = 3.11, p = .002$, as students without SLD significantly outperformed ($M = 26.48, SD = 1.91$) the students with SLD ($M = 25.61, SD = 2.22$).

4.2 Perceived academic self-efficacy in students with and without SLD diagnosis

To pursue the second aim, we tested the perceived academic self-efficacy of undergraduate students with SLD compared to the control group of undergraduate students without SLD, controlling for their academic performance. An analysis of covariance (GLM univariate procedure) was

performed including the academic self-efficacy as dependent variable, the presence vs. absence of a diagnosis of SLD as independent variable, and the GPA score as covariate (see Table 1 for descriptive statistics of all variables).

There was a significant effect of the covariate (i.e. GPA) on the dependent variable (i.e. academic self-efficacy), $F(1, 333) = 51.78, p < .001, \text{partial } \eta^2 = .135$ and of the presence of a diagnosis of SLD, $F(1, 333) = 3.89, p = .05, \text{partial } \eta^2 = .012$. Subsequently, to ascertain differences due to the presence vs absence of the diagnosis and, at the same time, of the academic achievement, we created a new variable to distinguish four groups according to academic achievement (lower vs. higher than the GPA median of students with SLD) and presence vs. absence of the SLD diagnosis. Thus, an analysis of variance (GLM univariate procedure) with self-efficacy as dependent variable, revealed a significant effect due to the sub-group belonging (i.e. considering GPA score and diagnosis) $F(3, 339) = 14.51, p < .001, \text{partial } \eta^2 = .114$. Multiple comparisons revealed that high achiever students without SLD ($n = 198$) have significantly higher academic self-efficacy ($M = 44.33, SD = 6.92$) compared to their low achiever peers without SLD ($n = 85$), $M = 39.29, SD = 6.86$, $p < .001$, 95% CI [2.58, 7.49]; low achieving students with SLD ($n = 28$) did not differ significantly from their high achieving peers with SLD ($n = 32$), $p = .36$, 95% CI [-8.38, 1.43]; high achieving students without SLD have significantly higher academic self-efficacy than low-achieving students with SLD ($M = 37.68, SD = 9.13$), $p < .001$, 95% CI [2.82, 10.48], but did not differ from high achieving students with SLD ($M = 41.81, SD = 7.32$), $p = .12$, 95% CI [-.44, 6.78]; finally, low achieving students with SLD did not differ from their low achiever peers without SLD, $p = .100$, 95% CI [-5.75, 2.51].

Table 1

4.3 Predictors of SLD students' psychological well-being

The following step and third aim of the study was to test differences in the psychological well-being of university undergraduate students with and without SLD and determine the predictors of psychological well-being in our sample of students with and without SLD. Specifically, we assessed the predictive effect of the presence of an SLD diagnosis on the perceived psychological well-being, along with social support, self-esteem, self-efficacy. Subsequently we tested the predictors of psychological well-being in students with SLD.

As concerns differences between students with and without SLD, we did not find a significant difference in the mean values of perceived psychological well-being between the two groups (see par. 4.1). Thus, to test whether the presence of a diagnosis of SLD contributes significantly to the prediction of psychological well-being, we performed a multivariate regression analysis on the whole sample to determine the most significant variables for prediction of psychological well-being.

A significant regression equation was found, $F(6, 336) = 70.85, p < .001; R^2 = .56, R^2_{Adjusted} = .55$. The analysis has shown that the presence of a diagnosis of SLD did not significantly predict the value of psychological well-being ($\beta = .01, p = .76$), whereas self-esteem ($\beta = .47, p < .001$), perceived academic self-efficacy ($\beta = .21, p < .001$), and all the three sub-dimensions of social support were significant predictors

(significant others: $\beta = .12, p = .006$; family: $\beta = .16, p < .001$; friends: $\beta = .10, p = .02$). Overall, the predictors accounted for 56% of the variance of psychological well-being.

As the preliminary regression analysis confirmed that the diagnosis is not a significant predictor in our whole sample of students (with and without SLD), we conducted two additional regression analyses to separately assess the predictors of psychological well-being in students with SLD and without SLD. The predictors included in the regression analyses were the same of the previous regression analysis and were selected on the basis of the aforementioned research and theoretical models (Palmer & O'Connell, 2009). Thus, we entered as predictors: self-esteem (Cheng & Furnham, 2003; Ghisi et al., 2016; Riddick et al., 1999), social-support indexes (Hellendoorn & Ruijsenaars, 2000; Nalavany & Carawan, 2012), and academic self-efficacy beliefs (Cheng & Furnham, 2003; Chermers et al., 2001; Fanning, 2016).

As for students without SLD, a significant regression equation was found, $F(5, 282) = 62.79, p < .001$, and all the variables were significant. As for students with SLD, we also found a significant regression equation, $F(5, 59) = 23.12, p < .001$, but only self-esteem and social support provided by significant others significantly predicted students' well-being (see Table 2).

Table 2

5 Discussion

In this study, a sample of Italian university students with SLD were compared to a control group of students without SLD. The first aim was to explore the investigated issues testing for differences between students with and without SLD. As a second aim, we investigated the perceived academic self-efficacy of university undergraduate students with SLD compared to a control group of undergraduate students without SLD, controlling for their academic performance. Students with SLD were found to have lower self-efficacy compared to students without SLD, however the following in-depth analyses found that low achieving students without SLD did not differ from students with SLD with comparable academic results; and high achieving students with SLD did not significantly differ from their peers without SLD. These findings support our hypotheses based on previous studies which found self-efficacy to be unrelated to disability status (Blake & Rust, 2002) and confirm Klassen's suggestion (2002) that non-SLD low-achieving students may present similar self-efficacy profiles. These findings suggest that many motivational or self-beliefs issues of students with SLD may be nonspecific of the disorder condition. In this vein, the full inclusion policy of the Italian educational system may have contributed. In Italy, pupils and students with SLD are included in mainstream schools and classes, and school-based inclusive practices are provided. Thus, a plausible outcome of this context condition is that students may not experience stigmatization, which can be associated with negative academic and emotional effects (Daley & Rappolt-Schlichtmann, 2018). Moreover, multiple processes may guide self-evaluation such as individual differences and life circumstances, and self-evaluation in turn affect self-efficacy, as well as motivation and learning (Schunk, 2003).

As for differences in psychological well-being between students with and without SLD, our findings are in line with previous studies that found no differences in general mental health between students with SLD and the control group (Carroll & Iles, 2006; Jordan et al., 2014), as we did not find significant differences in the psychological well-being of students with vs. without SLD. It is important to note that in our study, we used a general construct of psychological well-being, using a measure of the individual's state of mental well-being (thoughts and feelings), as measured by the WEMWBS, that is more than mental illness or depression and anxiety scores. Additionally, this finding can be interpreted in line with Jordan and colleagues (2014) as they suggest that university students with SLD (i.e., dyslexia) do not have poorer mental health than non-dyslexic students. Rather, according to the authors, students with SLD are more likely to have lower academic related mental health (not general mental health), as well as they have a greater risk of developing negative self-perceptions of themselves as learners, but not of their overall self-worth (Gibby-Leversuch et al., 2019).

Furthermore, according to our third aim and related hypotheses, the findings of the preliminary regression analysis confirm that the presence/absence of a diagnosis of SLD was not a sufficient condition to determine psychological well-being, as the diagnosis did not emerge as a significant predictor. The other variables included in the regression equation contributed all to explain the variance, thus confirming the predictive role of self-esteem and self-efficacy on psychological well-being (Cheng & Furnham, 2003; Fanning, 2016). Additionally, the findings are consistent with previous research on the “protective” effect of perceived social support in preventing depression and anxiety (Zhou et al.,

2013), and its role in happiness (Diener & Seligman, 2002), positive self-perceptions (Gibby-Leversuch et al., 2019), and psychological well-being of adults with SLD (i.e. dyslexia) (Nalavany & Carawan, 2012; Nalavany et al., 2013).

The regression analyses on the two sub-groups of students without and with SLD gave us a more detailed overview of psychological well-being predictors for both students with and without SLD diagnosis. As for the latter group of students, self-esteem, academic self-efficacy and social support indexes resulted to be predictors of well-being, as pointed out by previous research (Cheng & Furnham, 2003; Chemers et al., 2001; Ghisi et al., 2016). As for the students with SLD, our results showed that only self-esteem and support of significant others predict psychological well-being. Contrary to our hypotheses, in this sub-sample we did not find a significant effect of family and peers support.

In both groups self-esteem had the strongest effect among the other predictors. The definition of mental well-being provided by the authors of the WEMWBS offers a plausible interpretation of this strong relationship found between self-esteem and well-being, as the concept of mental well-being that the instrument is designed to measure covers two perspectives: (1) the subjective experience of happiness and life satisfaction; and (2) positive psychological functioning, including self-acceptance and competence. Thus, perceived self-esteem may be comprised in this concept of positive mental health.

With regards to the social support as predictor of psychological well-being in students with SLD, previous studies found a positive effect of perceived family support on negative emotional experiences in adults with dyslexia (Hellendoorn & Ruijsenaars, 2000; Nalavany & Carawan, 2012), and other studies found that both family and significant others support were significantly protective factors for depression (Roohafza et

al., 2014) and make a crucial contribution in supporting young people with depression (McCann et al., 2012). However, in our study the role of significant others emerges as the predominant one. This finding is coherent with the results of Field and colleagues (2003) who found that the most important interpersonal relationships of post-secondary students with learning disabilities were dyadic relationships with significant others. The interviewed students reported that a happy and stable relationship provided them with a holistic appreciation of themselves and affirmed them as individuals. Moreover, they reported to incorporate academic activities into time spent with their significant others.

5.1 Strengths, limitations and future perspectives

The current findings expand our knowledge on psychological features of SLD in university students and especially on their academic self-efficacy and psychological well-being. Research on adults with SLD is growing, however a large amount of research still concerns SLD in childhood or adults who are no more in training. University students with SLD thus are a specific target of research, as they are emerging adults enrolled in an education program and, additionally, despite their difficulties in learning activities, they attained a higher education level. So, it should be considered that undergraduate students with SLD may represent a particular category of young adults who have beaten the odds, who have persisted in effort even if they struggled and thus who are succeeding. Therefore, findings cannot be generalized to young adults without SLD who do not attend university training courses.

To the best of our knowledge, this is the first study comparing perceived academic self-efficacy in university students with SLD to students without SLD by considering their achievement level in terms of GPA. Furthermore, studies on the predictors of psychological well-being in undergraduate students with and without SLD are still scant and this paper made a unique contribution to the literature.

Several limitations of this study call for further research. First, the present results are limited by a small sample size of students with SLD, since those who accepted to be involved in the study represent the 11% of the total number of students with SLD enrolled at the University of [removed for blind review]. A future study with all the students with SLD would allow for a more extensive examination. Furthermore, self-selection bias is a risk and a potential limit of all the studies using convenience sampling, and especially when the required sample characteristic is atypical, as SLD is. This sample may be biased towards the inclusion of those students with SLD who have milder difficulties with text reading and comprehension (only two students with SLD declared at the end of the questionnaire to have asked for help filling in the questionnaire), or those who are more concerned about and proactive toward their psychological well-being or more engaged in academic activities and therefore, may represent a subgroup of the more resilient students. In addition, it is interesting to note that 20.8% of students with SLD have declared that they do not receive assistance nor take advantage of the facilities provided by university service. The literature has identified several important issues that contribute to a student's decision about whether and when to seek services. Key issues related to stigma, knowledge of one's disability, lack of information about presence and quality of services (Lightner et al., 2012). However, it is plausible that the self-selection gave rise to a sub-group of students with SLD with slight difficulty, who do not need support services or facilities. Indeed students with SLD who do

not receive assistance had a significant higher GPA score, ($t(44.84) = -2.55, p = .014$). Additionally, students with SLD were taking a range of courses, while the students without SLD were all psychology students. Most psychological studies rely on convenience-samples of university students; however, little is known about the nature of the differences between psychology students and other subjects' students. More research is certainly necessary to better understand if it is inappropriate to compare academic students of different subjects.

Furthermore, previous research has shown long-term psychological implications of SLD in a population of Italian university students (Ghisi et al., 2016), as well as in adults (Nalavany et al., 2013). The current study offered only data from a single point of time. Longitudinal studies to prospectively follow children from the moment of the diagnosis until adulthood, along with multiple-source data collections (e.g., parents, family, significant others), could yield more significant insights on the psychological well-being of people with SLD.

Another limit of the study may be connected to the scale adopted to measure psychological well-being as the WEMWBS does not allow to investigate sub-dimensions but provides a general score of mental well-being. Previous studies have investigated anxiety and depression and/or life satisfaction in students with SLD, constructs that are all contained in the WEMWBS, and which could have a distinct contribution to the perceived well-being.

A final limitation was that there were other potential variables, previously found to be related to the condition of being a student with SLD, and that could have been included in this study, as self-concept and attributional style (Gibby-Leversuch et al., 2019; Tabassam & Grainger, 2002), resilience (Ghisi et al., 2016), hope and investment of effort (Lackaye et al., 2006), and self-determination (Field et al., 2003).

Moreover, further research needs to look into gender differences as previous research has found gender differences in psychological well-being, perceived social support and self-efficacy (Day & Livingstone, 2003; Huang, 2013; Nelson & Gregg, 2012; Tops et al., 2020).

In this perspective, we believe that future studies should focus on “within group” characteristics of students with SLD, to identify protective factors that may influence their psychosocial and academic adjustment (such as resilience, adaptive coping strategies, personal strengths, acceptance of the disability, personality features, availability and quality of support services, university culture), and which may contribute to explain what, beyond the diagnosis, makes the difference between those who succeed and those who fail and are at risk of dropping out.

Conclusion and implications

In conclusion, our results suggest that the presence of a diagnosis is not a significant predictor of negative self-beliefs and socio-emotional difficulties, however far more research is needed on psychological features of university students with SLD and especially on the protective role of personal, social and contextual characteristics.

The findings have also specific implications for universities. In general, the growing number of university students with SLD suggests the importance for universities to statistically monitor their needs and academic achievements. However, our findings suggest implementing psychological interventions targeting all students who, beyond diagnosis, may need support. In this vein, an improvement in academic self-

efficacy will support academic motivation, learning, and achievement (Pajares, 1996), as academic self-efficacy has been proved to be a significant predictor of academic performance, beyond cognitive ability. Overall, self-efficacious students have been found to achieve academically because they monitor and self-regulate their impulses and persist when faced with the difficulties (Komarraju & Nadler, 2013), thus specific intervention with teachers and tutors (on effective instructional strategies) and training programs to improve academic self-efficacy might be especially useful for students with an SLD who face tough learning difficulties throughout their school and academic life. In conclusion, the findings of the present study suggest the need to monitor and provide support to all students who could be considered at risk of dropping out, by offering psychological interventions focused especially on acknowledging and improving students' strengths to support their academic pursuit, in an attempt to intervene before academic or psychological concerns appear.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

- Baird, G. L., Scott, W. D., Dearing, E., & Hamill, S. K. (2009). Cognitive self-regulation in youth with and without learning disabilities: Academic self-efficacy, theories of intelligence, learning vs. performance goal preferences, and effort attributions. *Journal of Social and Clinical Psychology, 28*, 881-908. <https://doi.org/10.1521/jscp.2009.28.7.881>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman and Company.
- Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology, 88*, 87–99. <https://doi.org/10.1037/0021-9010.88.1.87>
- Becker, M. P., Yang, I., & Lange, K. (1997). EM algorithms without missing data. *Statistical Methods in Medical Research, 6*, 38-54. <https://doi.org/10.1177/096228029700600104>
- Ben-Naim, S., Laslo-Roth, R., Einav, M., Biran, H., & Margalit, M. (2017). Academic self-efficacy, sense of coherence, hope and tiredness among college students with learning disabilities. *European Journal of Special Needs Education, 32*, 18-34. <https://doi.org/10.1080/08856257.2016.1254973>
- Blake, T. R., & Rust J.O. (2002). Self-esteem and self-efficacy of college students with disabilities. *College Student Journal, 36*, 214-222. <https://www.questia.com/library/journal/1G1-89809972/self-esteem-and-self-efficacy-of-college-students>

- Bücker, S., Nuraydin, S., Simonsmeier, B. A., Schneider, M., & Luhmann, M. (2018). Subjective well-being and academic achievement: A meta-analysis. *Journal of Research in Personality*, 74, 83-94. <https://doi.org/10.1016/j.jrp.2018.02.007>
- Burden, R. (2008). Is dyslexia necessarily associated with negative feelings of self-worth? A review and implications for future research. *Dyslexia*, 14, 188-196. <https://doi.org/10.1002/dys.371>
- Carroll, J. M., & Iles, J. E. (2006). An assessment of anxiety levels in dyslexic students in higher education. *British Journal of Educational Psychology*, 76(3), 651-662. <https://doi.org/10.1348/000709905X66233>
- Chemers, M. M., Hu, L.-T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55-64. <https://doi.org/10.1037/0022-0663.93.1.55>
- Cheng, H., & Furnham, A. (2003). Attributional style and self-esteem as predictors of psychological wellbeing. *Counselling Psychology Quarterly*, 16(2), 121-130. <https://doi.org/10.1080/0951507031000151516>
- Coffman, D. L., & Gilligan, T. D. (2002). Social support, stress, and self-efficacy: Effects on students' satisfaction. *Journal of College Student Retention: Research, Theory & Practice*, 4(1), 53-66. <https://doi.org/10.2190/BV7X-F87X-2MXL-2B3L>
- Daley, S. G., & Rappolt-Schlichtmann, G. (2018). Stigma consciousness among adolescents with learning disabilities: Considering individual experiences of being stereotyped. *Learning Disability Quarterly*, 41(4), 200-212. <https://doi.org/10.1177/0731948718785565>

Davis, T. E., Nida, R. E., Zlomke, K. R., & Nebel-Schwalm, M. S. (2009). Health-related quality of life in college undergraduates with learning disabilities: The mediational roles of anxiety and sadness. *Journal of Psychopathology and Behavioral Assessment*, 31(3), 228-234.
<https://doi.org/10.1007/s10862-008-9110-4>

Day, A. L., & Livingstone, H. A. (2003). Gender differences in perceptions of stressors and utilization of social support among university students. *Canadian Journal of Behavioural Science / Revue Canadienne des Sciences du Comportement*, 35(2), 73–83.
<https://doi.org/10.1037/h0087190>

De Cremer, D., van Knippenberg, B., van Knippenberg, D., Mullenders, D., & Stinglhamber, F. (2005). Rewarding leadership and fair procedures as determinants of self-esteem. *Journal of Applied Psychology*, 90, 3-12. <https://www.apa.org/pubs/journals/apl>

Di Fabio, A., & Busoni, L. (2008). Misurare il supporto sociale percepito: proprietà psicometriche della Multidimensional Scale of Perceived Social Support (MSPSS) in un campione di studenti universitari. *Risorsa Uomo*, 14(3), 339-350. Franco Angeli
https://www.francoangeli.it/Riviste/Scheda_Rivista.aspx?IDarticolo=34109

Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science*, 13(1), 81–84. <https://doi.org/10.1111/1467-9280.00415>

Eloranta, A. K., Närhi, V., Ahonen, T., & Aro, T. (2019). Does childhood reading disability or its continuance into adulthood underlie problems in adult-age psychosocial well-being? A follow-up study. *Scientific Studies of Reading*, 1-14.
<https://doi.org/10.1080/10888438.2018.1561698>

Fanning, G. (2016). *Academic Stress and Academic Self-Efficacy as Predictors of Psychological Health in College Students*. (Electronic Thesis or Dissertation). <https://etd.ohiolink.edu/>

Field, S., Sarver, M. D., & Shaw, S. F. (2003). Self-determination: A key to success in postsecondary education for students with learning disabilities. *Remedial and Special Education*, 24(6), 339-349. <https://doi.org/10.1177/07419325030240060501>

Ghisi, M., Bottesi, G., Re, A. M., Cerea, S., & Mammarella, I. C. (2016). Socioemotional features and resilience in Italian university students with and without dyslexia. *Frontiers in Psychology*, 7, 478. <https://doi.org/10.3389/fpsyg.2016.00478>

Gibby-Leversuch, R., Hartwell, B. K., & Wright, S. (2019). Dyslexia, Literacy Difficulties and the Self-Perceptions of Children and Young People: a Systematic Review. *Current Psychology*, 1-18. <https://doi.org/10.1007/s12144-019-00444-1>

Gibson, S., & Kendall, L. (2010). Stories from school: Dyslexia and learners' voices on factors impacting on achievement. *Support for Learning*, 25(4), 187-193. <https://doi.org/10.1111/j.1467-9604.2010.01465.x>

Gremigni, P., & Stewart-Brown, S. (2011). Una misura del benessere mentale: validazione italiana della Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). *Giornale Italiano di Psicologia*, 38(2), 485-508. <https://doi.org/10.1421/35174>

Hampton, N. Z., & Mason, E. (2003). Learning disabilities, gender, sources of efficacy, self-efficacy beliefs, and academic achievement in high school students. *Journal of School Psychology, 41*(2), 101-112. [https://doi.org/10.1016/S0022-4405\(03\)00028-1](https://doi.org/10.1016/S0022-4405(03)00028-1)

Hellendoorn, J., & Ruijsenaars, W. (2000). Personal experiences and adjustment of Dutch adults with dyslexia. *Remedial and Special Education, 21*(4), 227–239. <https://doi.org/10.1177/074193250002100405>

Hen, M., & Goroshit, M. (2014). Academic procrastination, emotional intelligence, academic self-efficacy, and GPA: A comparison between students with and without learning disabilities. *Journal of Learning Disabilities, 47*(2), 116-124. <https://doi.org/10.1177/0022219412439325>

Hoy, C., Gregg, N., Wisenbaker, J., Manglitz, E., King, M., & Moreland, C. (1997). Depression and anxiety in two groups of adults with learning disabilities. *Learning Disability Quarterly, 20*(4), 280-291. <https://doi.org/10.2307/1511226>

Huang, C. (2013). Gender differences in academic self-efficacy: a meta-analysis. *European Journal of Psychology of Education, 28*(1), 1-35. <https://doi.org/10.1007/s10212-011-0097-y>

Jordan, J. A., McGladdery, G., & Dyer, K. (2014). Dyslexia in higher education: Implications for maths anxiety, statistics anxiety and psychological well-being. *Dyslexia, 20*(3), 225-240. <https://doi.org/10.1002/dys.1478>

Kalka, D. & Lockiewicz, M. (2018). Happiness, Life Satisfaction, Resiliency and Social Support in Students with Dyslexia. *International Journal of Disability, Development and Education, 65*(5), 493-508. <https://doi.org/10.1080/1034912X.2017.1411582>

Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and Individual Differences*, 40(6), 1281-1290. <https://doi.org/10.1016/j.paid.2005.10.019>

Klassen, R. (2002). A question of calibration: A review of the self-efficacy beliefs of students with learning disabilities. *Learning Disability Quarterly*, 25(2), 88-102. <https://doi.org/10.2307/1511276>

Komarraju, M., & Nadler, D. (2013). Self-efficacy and academic achievement: Why do implicit beliefs, goals, and effort regulation matter?. *Learning and Individual Differences*, 25, 67-72. <https://doi.org/10.1016/j.lindif.2013.01.005>

Lackaye, T., Margalit, M., Ziv, O., & Ziman, T. (2006). Comparisons of self-efficacy, mood, effort, and hope between students with learning disabilities and their non-LD-matched peers. *Learning Disabilities Research & Practice*, 21(2), 111-121. <https://doi.org/10.1111/j.1540-5826.2006.00211.x>

Lightner, K. L., Kipps-Vaughan, D., Schulte, T., & Trice, A. D. (2012). Reasons university students with a learning disability wait to seek disability services. *Journal of Postsecondary Education and Disability*, 25(2), 145-159. <https://eric.ed.gov/?id=EJ994283>

Longobardi, C., Fabris, M. A., Mendola, M., & Prino, L. E. (2019). Examining the selection of university courses in young adults with learning disabilities. *Dyslexia*, <https://doi.org/10.1002/dys.1611>

Maciejewski, P. K., Prigerson, H. G., & Mazure, C. M. (2000). Self-efficacy as a mediator between stressful life events and depressive symptoms: Differences based on history of prior depression. *The British Journal of Psychiatry*, 176(4), 373-378.

<https://doi.org/10.1192/bjp.176.4.373>

Mattek, P. W., & Wierzbicki, M. (1998). Cognitive and behavioral correlates of depression in learning-disabled and nonlearning-disabled adult students. *Journal of Clinical Psychology*, 54(6), 831-837. [https://doi.org/10.1002/\(SICI\)1097-4679\(199810\)54:6<831::AID-](https://doi.org/10.1002/(SICI)1097-4679(199810)54:6<831::AID-JCLP11>3.0.CO;2-M)

[JCLP11>3.0.CO;2-M](https://doi.org/10.1002/(SICI)1097-4679(199810)54:6<831::AID-JCLP11>3.0.CO;2-M)

McCann, T. V., Lubman, D. I., & Clark, E. (2012). Views of young people with depression about family and significant other support: interpretative phenomenological analysis study. *International Journal of Mental Health Nursing*, 21(5), 453-461. <https://doi.org/10.1111/j.1447-0349.2012.00812.x>

McNulty, M. A. (2003). Dyslexia and the life course. *Journal of Learning Disabilities*, 36(4), 363-381.

<https://doi.org/10.1177/00222194030360040701>

Mortimore, T., & Crozier, W. R. (2006). Dyslexia and difficulties with study skills in higher education. *Studies in Higher Education*, 31(2), 235-251. <https://doi.org/10.1080/03075070600572173>

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38(1), 30-38. <https://www.apa.org/pubs/journals/cou>

Nalavany, B. A., & Carawan, L. W. (2012). Perceived family support and self-esteem: The mediational role of emotional experience in Adults with Dyslexia. *Dyslexia*, 18(1), 58-74. <https://doi.org/10.1002/dys.1433>

Nalavany, B. A., Carawan, L. W., & Rennick, R. A. (2011). Psychosocial experiences associated with confirmed and self-identified dyslexia: A participant-driven concept map of adult perspectives. *Journal of Learning Disabilities*, 44(1), 63-79. <https://doi.org/10.1177/0022219410374237>

Nalavany, B. A., Carawan, L. W., & Sauber, S. (2013). Adults with dyslexia, an invisible disability: The mediational role of concealment on perceived family support and self-esteem. *The British Journal of Social Work*, 45(2), 568-586. <https://doi.org/10.1093/bjsw/bct152>

Nalavany, B. A., Logan, J. M., & Carawan, L. W. (2018). The relationship between emotional experience with dyslexia and work self-efficacy among adults with dyslexia. *Dyslexia*, 24(1), 17-32. <https://doi.org/10.1002/dys.1575>

Nelson, J. M., & Gregg, N. (2012). Depression and anxiety among transitioning adolescents and college students with ADHD, dyslexia, or comorbid ADHD/dyslexia. *Journal of Attention Disorders*, 16(3), 244-254. <https://doi.org/10.1177/1087054710385783>

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543-578. <https://doi.org/10.3102/00346543066004543>

Palmer, P. B., & O'Connell, D. G. (2009). Regression analysis for prediction: understanding the process. *Cardiopulmonary Physical Therapy Journal*, 20(3), 23-26. <https://journals.lww.com/cptj/pages/default.aspx>

Pastorelli, C., & Picconi, L. (2001). Scala di Autoefficacia Scolastica Percepita. In G.V. Caprara (Ed.), *La valutazione dell'autoefficacia* (pp. 87-104). Erickson.

Riddick, B., Sterling, C., Farmer, M., & Morgan, S. (1999). Self-esteem and anxiety in the educational histories of adult dyslexic students. *Dyslexia*, 5(4), 227-248. [https://doi.org/10.1002/\(SICI\)1099-0909\(199912\)5:4<227::AID-DYS146>3.0.CO;2-6](https://doi.org/10.1002/(SICI)1099-0909(199912)5:4<227::AID-DYS146>3.0.CO;2-6)

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, 27(2), 151-161.
<https://doi.org/10.1177/0146167201272002>

Roohafza, H. R., Afshar, H., Keshteli, A. H., Mohammadi, N., Feizi, A., Taslimi, M., & Adibi, P. (2014). What's the role of perceived social support and coping styles in depression and anxiety?. *Journal of Research in Medical Sciences*. 19(10), 944-949.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274570/>

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton UP.

Schönfeld, P., Brailovskaia, J., Bieda, A., Zhang, X. C., & Margraf, J. (2016). The effects of daily stress on positive and negative mental health: Mediation through self-efficacy. *International Journal of Clinical and Health Psychology*, 16(1), 1-10.
<https://doi.org/10.1016/j.ijchp.2015.08.005>

Schunk, D. H. (2003). Self-efficacy for reading and writing: Influence of modeling, goal setting, and self-evaluation. *Reading & Writing Quarterly*, 19(2), 159-172. <https://doi.org/10.1080/10573560308219>

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In *Development of achievement motivation* (pp. 15-31). Academic Press.

Stack-Cutler, H. L., Parrila, R. K., & Torppa, M. (2016). University Students with Reading Difficulties: Do Perceived Supports and Comorbid Difficulties Predict Well-Being and GPA?. *Learning Disabilities Research & Practice*, 31(1), 45-55.
<https://doi.org/10.1111/ldrp.12092>

Stagg, S. D., Eaton, E., & Sjoblom, A. M. (2018). Self-efficacy in undergraduate students with dyslexia: a mixed methods investigation. *British Journal of Special Education*, 45(1), 26-42. <https://doi.org/10.1111/1467-8578.12200>

Stewart-Brown, S., & Janmohamed, K. (2008). *Warwick-Edinburgh mental well-being scale. User guide*. Version, 1.
<http://www.ocagingservicescollaborative.org/wp-content/uploads/2014/07/WEMWBS-User-Guide-Version-1-June-2008.pdf>

Tabassam, W., & Grainger, J. (2002). Self-concept, attributional style and self-efficacy beliefs of students with learning disabilities with and without attention deficit hyperactivity disorder. *Learning Disability Quarterly*, 25(2), 141-151. <https://doi.org/10.2307/1511280>

Tops, W., Glatz, T., Premchand, A., Callens, M., & Brysbaert, M. (2020). Study strategies of first-year undergraduates with and without dyslexia and the effect of gender. *European Journal of Special Needs Education*, 35(3), 398-413.
<https://doi.org/10.1080/08856257.2019.1703580>

World Health Organization (2018). *The ICD-11 Classification of Mental and Behavioral Disorders. Clinical descriptions and diagnostic guidelines*. World Health Organization.

Zhou, X., Zhu, H., Zhang, B., & Cai, T. (2013). Perceived social support as moderator of perfectionism, depression, and anxiety in college students. *Social Behavior and Personality: An International Journal*, 41(7), 1141-1152. <https://doi.org/10.2224/sbp.2013.41.7.1141>

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30-41. https://doi.org/10.1207/s15327752jpa5201_2

Table 1 Descriptive statistics of the investigated variables divided into the four experimental groups

	Students with SLD						Students without SLD					
	Low Achievers (n = 28)		High Achievers (n = 32)		Total (n = 60)		Low Achievers (n = 85)		High Achievers (n = 198)		Total (n = 283)	
	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range
Psychological well-being	46.07 (8.06)	30-63	46.08 (8.40)	31-65	46.08 (8.42)	30-65	47.05 (8.23)	23-67	47.72 (8.12)	19-68	47.49 (8.15)	19-68
Self-esteem	3.29 (1.76)	1-6	3.43 (1.80)	1-6	3.63 (1.77)	1-6	3.47 (1.84)	1-7	3.73 (1.88)	1-7	3.65 (1.87)	1-7
Academic self-efficacy	37.67 (9.13)	18-56	41.16 (7.32)	29-55	39.53 (8.32)	18-56	39.29 (6.86)	22-59	44.33 (6.92)	27-60	42.89 (7.28)	22-60
Social support – significant others	18.50 (4.05)	5-24	18.06 (5.30)	5-24	18.26 (4.85)	5-24	18.91 (3.98)	7-24	19.34 (3.55)	7-24	19.19 (3.66)	7-24
Social support - family	17.32 (5.07)	4-24	18.44 (4.31)	4-24	17.91 (4.68)	4-24	17.13 (4.43)	5-24	18.04 (3.95)	4-24	17.77 (4.66)	4-24
Social support - friends	16.11 (5.11)	4-24	18.25 (4.49)	5-24	17.25 (4.94)	4-24	17.59 (4.36)	5-24	18.26 (3.95)	5-24	18.01 (4.08)	5-24
Social support - total	51.93 (11.00)	28-67	54.75 (12.03)	22-72	53.43 (11.55)	22-72	53.62 (10.29)	23-72	53.64 (9.24)	21-72	54.98 (9.49)	21-72
GPA	23.51 (1.53)	19-25.70	27.36 (1.08)	26-30	25.61 (2.22)	19-30	24.11 (1.18)	20-25.75	27.50 (1.08)	26-30	26.49 (1.88)	20-30

Table 2. Results of regressions analyses of psychological well-being predictors in students with SLD diagnosis (N = 60) and students without SLD diagnosis (N = 283), analysed separately.

Variable	Students with SLD			Students without SLD		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Self-esteem	2.52	.43	.53***	2.02	.19	.47***
Academic self-efficacy	.16	.09	.16	.24	.05	.21***
Social support (MSPSS) – other significant	.34	.16	.19*	.23	.11	.10**
Social support (MSPSS) - family	.32	.17	.18	.28	.08	.16**
Social support (MSPSS) – friends	.08	.18	.04	.22	.09	.11**
R^2		.68			.53	
F		23.12***			62.79***	

Note. N = * $p < .05$. ** $p < .01$. *** $p < .001$.

