



## RESEARCH ARTICLE

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# Students with dyslexia between school and university: Post-diploma choices and the reasons that determine them. An Italian study

Antonella Donato<sup>1</sup>  | Maria Muscolo<sup>2</sup> | Mateo Arias Romero<sup>3</sup> |  
Tindara Capri<sup>4</sup> | Tiziana Calarese<sup>5</sup> | Eva María Olmedo Moreno<sup>6</sup> 

<sup>1</sup>Doctoral Programme of Education Sciences, Faculty of Education Sciences, University of Granada, Campus Universitario de la Cartuja, Granada, Spain

<sup>2</sup>Organizational Unit, Orientation and Placement Centre, University of Messina, Messina, Italy

<sup>3</sup>Department of Didactics of the Social Sciences, Doctoral Programme of Education Sciences, University of Granada, Campus Universitario de la Cartuja, Granada, Spain

<sup>4</sup>Department of Experimental and Clinical Medicine, University of Messina, Messina, Italy

<sup>5</sup>Neuropsychiatrist, Italian Dyslexia Association (Messina Section), Messina, Italy

<sup>6</sup>Research Methods and Diagnosis in Education Department, Doctoral Programme of Education Sciences, University of Granada, Campus Universitario de la Cartuja, Granada, Spain

## Correspondence

Antonella Donato, Doctoral Programme in Education Sciences, Faculty of Education Sciences, University of Granada, Campus Universitario de la Cartuja, s/n, 18071, Granada, Spain.

Email: antodonato@correo.ugr.es, antonella.donato.me@gmail.com

## Funding information

Italian Dyslexia Association (Messina section); Orientation and Placement Centre - University of Messina (Italy)

Although the number of students with dyslexia enrolled in Italian universities is constantly growing, their presence remains relatively limited. The aim of this study was therefore to investigate the choices made by students with dyslexia in relation to university studies, and the underlying reasons for their choices. This study also compares these choices for students with and without dyslexia. In all, 440 high school students and their families agreed to take part in this project. Socio-demographic data was collected for the 47 students with dyslexia and 47 class-matched students without dyslexia, along with information on their current schools and their future educational plans. A specially developed questionnaire was used for the students, in

The corresponding author and the co-authors all meet the journal criteria for authorship, and nobody who meets these criteria has been omitted from the authors.

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combination with structured interviews with their families. The results show significant differences between these groups regarding both choices for university studies and the underlying motivations for these choices. Furthermore, certain psychological and emotional factors are implicated here in the decisions of the students with dyslexia regarding both university studies and their underlying reasons. Future research is needed to further investigate these factors in the educational choices of students with dyslexia.

**KEYWORDS**

choices, dyslexia, reasons, students, university

**Practitioner points**

- The study aim was to investigate choices of students with dyslexia concerning university education, and the reasons behind their choices.
- A specially developed questionnaire was completed personally by students with and without dyslexia, and combined with structured family interviews.
- Choice and reasons for university education were compared between students with dyslexia and without dyslexia in the same school classes.
- There were significant differences between the student groups for their decisions concerning university studies and the reasons behind them.
- The results implicate psychological–emotional aspects in the choice motivation of the students with dyslexia, unlike for those without dyslexia.

## 1 | INTRODUCTION

### 1.1 | Dyslexia and its psychological–emotional consequences

According to DSM-5 (American Psychiatric Association, 2013), specific learning disorder (SLD) is a neurodevelopmental disorder characterized by persistent and impairing difficulties with the learning of foundational academic skills in reading, writing and/or mathematics. SLD is diagnosed when there are specific deficits in the ability of an individual to perceive or process information efficiently and accurately. In Italy, in the absence of neurological and sensory deficits, SLD is diagnosed by psychologists and doctors using specifically developed standardized tests. These are in line with the indications of the Consensus Conference, the Panel of Updates and Revisions of the Consensus Conference and the “Italian National Institute of Health” (Italian Dyslexia Association, 2020).

Recent studies have argued that dyslexia involves not only reading processes but also other areas, such as working memory, information processing, attention and language (Cornoldi, Giofrè, Orsini, & Pezzuti, 2014; Fostick & Revah, 2018; Stella, Ferrara, Scorza, Zonno, & Boni, 2018). The British Dyslexia Association (2019) specified that dyslexia affects information processing, to influence the learning processes and the acquisition of literacy.

These difficulties generally manifest during schooling, and they can present with shared characteristics, although there is also the need to take into account individual experiences. Studies have shown that students with dyslexia have inferior scores across all aspects of reading (i.e., speed, comprehension, vocabulary and decoding) and that they need more time to understand questions that involve comprehension (Carroll & Iles, 2006; Lewandowski, Berger, Lovett, & Gordon, 2016). For the majority of cases, during reading, writing and calculations, students with SLD expend more energy and tire more rapidly, and they also often obtain disappointing results, which can lead to lower scholastic achievement (Greco, 2018; Ingesson, 2007; Schultz, 2015; Shaywitz, 2003). The experience of learning in a different way to others can have a significant impact not only on the cognitive and scholastic side but also on the emotional and psychological side. These students can manifest behaviours and signs of discomfort that extend also to areas that are not connected to learning (Carroll & Iles, 2006; Curatola & Ciambone, 2012; Gibson & Kendall, 2010).

Numerous studies have concentrated on the psychological and emotional aspects of dyslexia. Indeed, Livingston, Siegel, and Ribary (2018) reported that over 100 articles had discussed these consequences. Other studies have illustrated the need for adequate understanding and consideration of the emotional and psychological aspects of dyslexia (Carvalho & Silva, 2007; Riddick, 2009; Sako, 2016). While these are not considered as primary characteristics of dyslexia, they can influence the learning processes and significantly affect scholastic achievement. They can also result in a series of social and personal disorders that can in some cases degenerate in adulthood.

When experienced daily at school, the painful feelings of inferiority, inadequacy, frustration and shame can weaken the motivation to learn of a dyslexic child, which can lead to “motivation damage” (Ghione, 2005). This can not only be responsible for low school performance, failure and “dropping out” but it can also compromise the positive construction of self-identity (Lithari, 2019) and damage self-esteem and self-efficacy (Carawan, Nalavany, & Jenkins, 2016; Gibson & Kendall, 2010; Novita, 2016; Stagg, Eaton, & Sjoblom, 2018). This can then result in psychopathological disorders, such as anxiety and depression (Chiappedi & Baschenis, 2016; Haft, Duong, Ho, Hendren, & Hoeft, 2019; Mugnaini, Lassi, La Malfa, & Albertini, 2009).

Students who face school activities with learning difficulties that are often difficult to recognize, such as dyslexia, can develop higher levels of somatic disorders, a low attention span, social problems and low self-esteem. This can in turn lead to higher levels of depression than their peers (Ghisi, Bottesi, Re, Cerea, & Mammarella, 2016), and more behavioural problems (as both internalizing and externalizing) than students without dyslexia (Michaels & Lewandowski, 1990). This thus defines greater risk for the development of difficulties in psychosocial adjustment (Greenham, 1999), and reduced levels of life satisfaction, positive emotions and resilience (Kalka & Lockiewicz, 2018).

Other studies on university students with dyslexia have suggested a major risk of psychological consequences, and in particular for depression and anxiety (Re, Ghisi, Guazzo, Boz, & Mammarella, 2014). Also, in comparison to study controls, students with dyslexia have significantly inferior levels of self-esteem and significantly higher levels of anxiety (Riddick, Sterling, Farmer, & Morgan, 1999), with higher test anxiety (Nelson, Lindstrom, & Foels, 2015) and mean scores of anxiety (Nelson & Harwood, 2011). According to Scorza, Zonno, and Benassi (2018), male students with dyslexia are at higher risk for anxiety disorders compared to their female counterparts. However, this is contrary to Nelson and Gregg (2012), who indicated that female students with dyslexia reported more symptoms of depression and anxiety than male students with dyslexia.

The results of such studies suggest that university students with dyslexia are at risk of symptoms that are, overall, linked to low self-esteem and anxiety and depression, and that in general, the psychological and emotive consequences of dyslexia can last a lifetime.

## 1.2 | The role of protective factors in dyslexia

The possible risks that can arise from not adequately considering the emotive and psychological components of dyslexia are therefore multiple. Some studies have emphasized the impact of anxiety and self-esteem on educational

achievement. Van Ameringen, Mancini, and Farvolden (2003) reported that anxiety disorders are a determining factor for poor educational achievement and early dropout. In addition, other studies have suggested that there are strong links between self-esteem and scholastic performance (Nevill & Rhodes, 2004; Pollak, 2005). As Grasselli (2012) stated, "If the environment does not provide the support and compensation factors needed, dyslexia triggers its full potential, thereby becoming a real disability." Therefore, without intervention with protective factors, the psychological aspects of dyslexia can lead to serious consequences not only within the school environment but also within the personal, family and social life of the dyslexic, and these can also persist into adulthood.

Some of the facilitating factors that can support students with dyslexia during their education were identified by Soni (2017). These included age at dyslexia diagnosis, family support, dyslexic identity, self-advocacy skills and learning resources. Various studies have shown that family support can strengthen self-esteem and improve the well-being of these students (Carawan et al., 2016; Nalavany, Carawan, & Sauber, 2015; Yu, Zuk, & Gaab, 2018), provided that this takes on the key role of an "educational and formative resource" (Grasselli, 2012). In particular, Nalavany et al. (2015) stated that unconditional family support is decisive for the dyslexic, not only during childhood but on a lifelong basis.

In line with these studies, the importance and impact of the quality of relationships have also been suggested. A child's sense of relatedness can be fundamental for their academic motivation, engagement and performance, and the relationships with parents, teachers and peers can be decisive for the emotional involvement of students (Furrer & Skinner, 2003). Attachment-based factors can also have mediational roles between learning disorders and socio-emotional adjustment (Al-Yagon & Mikulincer, 2004). Furthermore, high-quality teacher-student relationships provide a protective factor against negative effects, such as insecurity, and can promote a child's achievements (O'Connor & McCartney, 2007).

More recent studies have underlined the influence of two environmental factors that facilitate the development of language and reading abilities: socio-economic status, which can ensure early diagnosis and adequate support for the student's education (Macdonald & Deacon, 2019); and home literacy, as defined by Yu et al. (2018) as an "enriched home literacy environment, characterised by many children's books in the home, shared reading in early infancy, and frequent shared-reading experiences with parents and caregivers."

Furthermore, personal and environmental factors can limit or avoid the risk of emotional psychological disorders, and ameliorate the quality of learning and school performance of students with dyslexia. These can strengthen their motivation and self-esteem, and promote the development of cognitive and meta-cognitive skills, to improve the psychological-emotional well-being of students with dyslexia. These factors that can help to protect students with dyslexia include high IQ; low level of dyslexia; external support and personal resources, such as resilience (Kalka & Lockiewicz, 2018); early identification of dyslexia (Battistutta, Commissaire, & Steffgen, 2018; Soni, 2017; Volkmer, Galuschka, & Schulte-Koeme, 2019); key supporting relationships (Caskey, Innes, & Lovell, 2018); teachers trained and updated on the various aspects of dyslexia (Knight, 2018) and therapeutic strategies available (Lodygowska, Chec, & Samochowiec, 2017).

Among the protective factors correlated with the risk of school failure and dropout, orientation appears to be of crucial importance to promote the processes of social inclusion (Lizalde, Casanova Lopez, Serrano Pastor, & Escolano Perez, 2018; Occhini, 2018) Biasi, De Vincenzo, and Patrizi (2018) emphasized the need for specific orientation interventions aimed at reducing and contrasting the possible states of motivation deficit or the "lack of motivation regarding the specific studies undertaken." According to these studies, orientation interventions can provide students with efficient tools and self-orientation opportunities to enable them to make independent choices in line with their personal and professional aspirations.

Therefore, the existence and interaction of some of these factors can determine different ways of experiencing and perceiving dyslexia. It can also prevent or interrupt the vicious circles of disorders, discomfort and school failure, as well as stimulate a gradual process of student awareness and acceptance of their difficulties. Students can come to consider dyslexia as another way of learning and processing information that can be frequently combined with strengths and particular talents. Indeed, this has been demonstrated in biographies of many famous people who

had (and have) dyslexia; despite their dyslexia, they have performed effectively in scientific, artistic, economic and cultural fields.

## 2 | THE PRESENT STUDY

According to a study by the *Centro Studi Investimenti Sociali* (CENSIS, 2017) that involved 40 Italian universities (65% of all Italian universities), the number of students with dyslexia in schools and universities is growing. More specifically, it was shown that in 2012–2013, there were 1,439 students with dyslexia enrolled in Italian universities, which doubled to 2,996 by 2014–2015. However, despite this growing trend, the number of students with dyslexia enrolled in Italian universities is still limited if compared to the thousands of students without dyslexia.

Therefore, the following questions are posed: To what extent do students with dyslexia pursue university studies? What are the reasons that determine their choices? Which factors can facilitate their transition into higher education? On the contrary, what hinders their transition? Are there any common traits identifiable in students with dyslexia who enrol in universities?

The present study aimed to investigate the choices made by students with dyslexia regarding university studies and to determine the reasons that prompted these choices. Socio-demographic data of students in their last year of high school, along with information on their schooling and their future educational intentions, were collected and compared with the same data gathered from students without dyslexia. These data were collected through a specially developed questionnaire for the students, which was devised by the research team, and through structured family interviews.

The study presented here is part of the project “SLD between school and university: interventions of re-motivation and educational orientation to promote aware choices.” This project is part of the Doctorate Programme (PhD) in Education Sciences of the University of Granada (Granada, Spain), and it is aimed to observe the role and efficiency of specific interventions targeted for students with dyslexia, to support them in their post-diploma training choices.

A partnership between the Orientation and Placement Centre of the University of Messina (Messina, Italy), the University of Granada, and the Italian Dyslexia Association (Messina section) carried out this project during the 2017/2018 school year. This was included within the project called “Inclusion Orientation Paths,” with the purpose of increasing student motivation, and also helping these students acquire competencies that are useful in making choices.

This project was part of the European Project known as “New Tools for Inclusion of Dyslexic Students” (TIDE), and it obtained the Patronage of the Italian Dyslexia Association and Foundation “U. Bonino and M.S. Pulejo” of Messina.

## 3 | METHODS

### 3.1 | Participants

The participants in this study were students, families and teachers from 12 high (upper secondary) schools in Messina that agreed to participate in the “Inclusion Orientation Paths” project. This followed the presentation of the research proposal and communications from the University of Messina to all high schools in the Messina area (total, 19). Of the 12 involved here, 10 were public schools, and two were private schools, and they covered different fields of study (i.e., classical, artistic, human sciences, vocational and technical). A total of 440 students, 440 families and 50 teachers initially participated, with 47 of these students diagnosed with dyslexia.

From these 440 students, two groups were defined: the first comprised the 47 students diagnosed with dyslexia at the 12 schools involved in the project. To ensure homogeneity between the study groups, the control group was intentionally formed of 47 students without dyslexia who were from the same school and class as the students with dyslexia, and who presented (as closely as possible) the same socio-demographic characteristics. However, due to the composition of the classes attended by the students with dyslexia, it was not possible to precisely match the two groups by gender, age, nationality and domicile.

In the group of 47 students with dyslexia, 29 were male (61.7%) and 18 were female (38.3%). In all, 44 (93.6%) were Italian nationals, and 42 (89.3%) were residents in Messina. Their ages ranged from 17 to 20 years, as 12.8% aged 17 years, 70.2% aged 18 years, 6.4% aged 19 years and 10.6% aged 20 years.

For the second (control) group of 47 students without dyslexia, 28 (59.6%) were male and 19 (40.4%) were female. Here, 47 (100%) had Italian nationality, and 36 (76.6%) were residents in Messina. Their ages also ranged from 17 to 20 years, as 14.9% aged 17 years, 70.2% aged 18 years, 12.8% aged 19 years and 2.1% aged 20 years.

For subdivision of the students with dyslexia by fields of study, the greatest proportion attended technical schools (44.7%), and the lowest proportion attended lyceums (academic high schools) (8.6%). As indicated above, the subdivision of the students without dyslexia across the different fields of study was the same, as both groups were taken from the same schools and classes.

A specially developed questionnaire was completed by the student participants, with their families also interviewed to obtain further information.

## 3.2 | Instruments

The authors of the present study were the project team members. They devised two instruments that were specifically targeted for these students (questionnaire) and their families (structured interviews), as shown below.

The questionnaire for the students consisted of 16 multiple-choice items, divided into three sections: the first collected their socio-demographic data; the second collected information regarding the reasons underlying their choice of their current school and their academic experience; and the third aimed to investigate the decisions of the students regarding university studies and the reasons behind their choices (see attachment 1 for the questions from the third section of the questionnaire).

The structured interviews for the families covered 15 items subdivided into three sections: the first collected the sociodemographic data of the parents; the second collected information regarding their children's school careers and the reasons behind the parent choices of the current schools attended; and the third was only for families of the students with dyslexia, as it gathered information concerning the dyslexia status of their children (e.g., age of diagnosis, co-occurring disorders and supporting interventions).

## 3.3 | Procedure

All of the participating schools declared their willingness to participate in the "Inclusion Orientation Paths" project proposed by the University of Messina. A Protocol of Agreement was signed between the University of Messina, the University of Granada, the Italian Dyslexia Association (Messina section), the Foundation "Bonino Pulejo," and the 12 participating schools. Following the formal adhesion of the schools to the "Inclusion Orientation Paths," the families authorized their children to participate in the research by signing an informed consent document and participating in the structured interviews.

The students with and without dyslexia received an explanation of the project and its purposes from the lead researcher, carried out in their classrooms during school hours, when they filled in the questionnaires. The time to

completion of the questionnaires was ~20 min, which was preceded by a presentation and explanation for the students of the three sections of the questionnaire.

Data privacy was guaranteed for both the students and the families.

## 4 | RESULTS

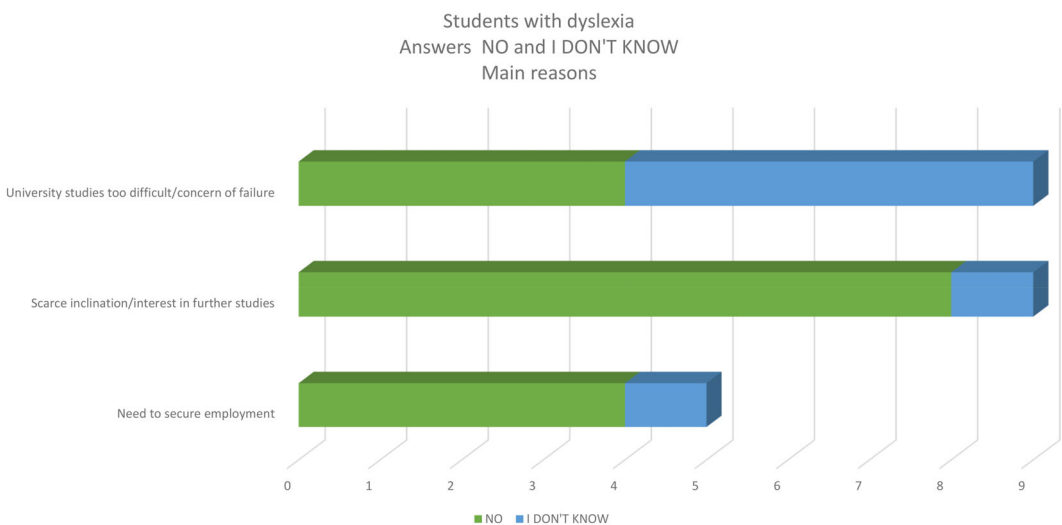
### 4.1 | University intentions for the two student groups: Descriptive statistics and significant differences

This student questionnaire was designed to investigate the decisions regarding the intended university studies of the students with dyslexia, and the reasons behind their choices, as a comparison with the control students (without dyslexia).

For the question of “Are you planning on pursuing university studies?,” Table 1 shows that the greatest proportion of the students with dyslexia answered “No,” as 40.4%, while 31.9% answered “Yes” and 27.7% answered “I

**TABLE 1** University intentions for the two groups of students

Students	Responses	Response frequency			
		(n)	(%)	Valid (%)	Cumulative (%)
With dyslexia	Yes	15	31.9	31.9	31.9
	No	19	40.4	40.4	72.3
	I don't know	13	27.7	27.7	100.0
	Total	47	100.0	100.0	
Without dyslexia	Yes	26	55.3	55.3	55.3
	No	12	25.5	25.5	80.9
	I don't know	9	19.1	19.1	100.0
	Total	47	100.0	100.0	



**FIGURE 1** The most indicated reasons by the students with dyslexia who answered “No” and “I don’t know” [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

don't know." The same replies for the students without dyslexia showed that 55.3% answered "Yes," 25.5% answered "No" and 19.1% answered "I don't know."

For the reasons behind their decisions, Figure 1 shows that the two reasons most indicated by the students with dyslexia who had decided not to pursue university studies or who had answered "I don't know" (total, 68.1%) were the following: "University studies considered too difficult and concern of failure" and "Scarce inclination or interest in further studies." These two reasons were indicated in the same proportions, at 19.1% each. The third reason that was indicated by 10.6% of the students with dyslexia was, "Need to secure employment as soon as possible."

As shown in Tables 2 and 3, the other options proposed by the questionnaire (i.e., job already secured, financial reasons, lack of information concerning university organization, university degree programmes available and work opportunities) had either been indicated at very low proportions or had not been indicated at all (e.g., location of the university).

For the students without dyslexia who had decided not to pursue university studies, or who remained undecided (total, 42%), as shown in Figures 2, 12.7% chose the reason "Need to secure employment as soon as possible" as their motivation for not going to university. Also, 8.5% selected "Job already secured" (e.g., job in the family

**TABLE 2** Reasons indicated by the students with dyslexia who decided that they would not pursue university studies

Status	Response	Response frequency			
		(n)	(%)	Valid (%)	Cumulative (%)
Valid	Scarce inclination/intention	8	17.0	42.1	42.1
	Financial reasons	1	2.1	5.3	47.4
	Concern of failure	4	8.5	21.1	68.4
	Need employment	4	8.5	21.1	89.5
	Job secured	2	4.3	10.5	100.0
	Total	19	40.4	100.0	
Missing		28	59.6		
Total		47	100.0		

**TABLE 3** Reasons indicated by the students with dyslexia who had not decided whether to enrol or not at university (i.e., "I don't know" responders)

Status	Response	Response frequency			
		(n)	(%)	Valid (%)	Cumulative (%)
Valid	Lack of information about organisation	4	8.5	30.8	30.8
	Lack of information about programme	2	4.3	15.4	46.2
	Lack of information about work opportunities	1	2.1	7.7	53.8
	Scarce inclination/intention	1	2.1	7.7	61.5
	Concern of failure	5	10.6	38.5	100.0
	Financial reasons	1	2.1	7.7	92.3
	Need employment	1	2.1	7.7	100.0
	Total	13 <sup>a</sup>	27.7	100.0	
Missing		34	72.3		
Total		47	100.0		

<sup>a</sup>Total number of students who replied, as two students gave two responses here.



business), 6.4% selected “University studies considered too difficult and concern of failure,” and 6.4% selected “Scarce inclination or interest in further studies.”

These findings showed that the last two reasons indicated by the students without dyslexia, paradoxically, turned out to be equivalent to the first reasons indicated by the students with dyslexia. Likewise, again for the students without dyslexia, and as is shown in Tables 4 and 5, the other reasons here proposed by the questionnaire were chosen with a considerably lower frequency.

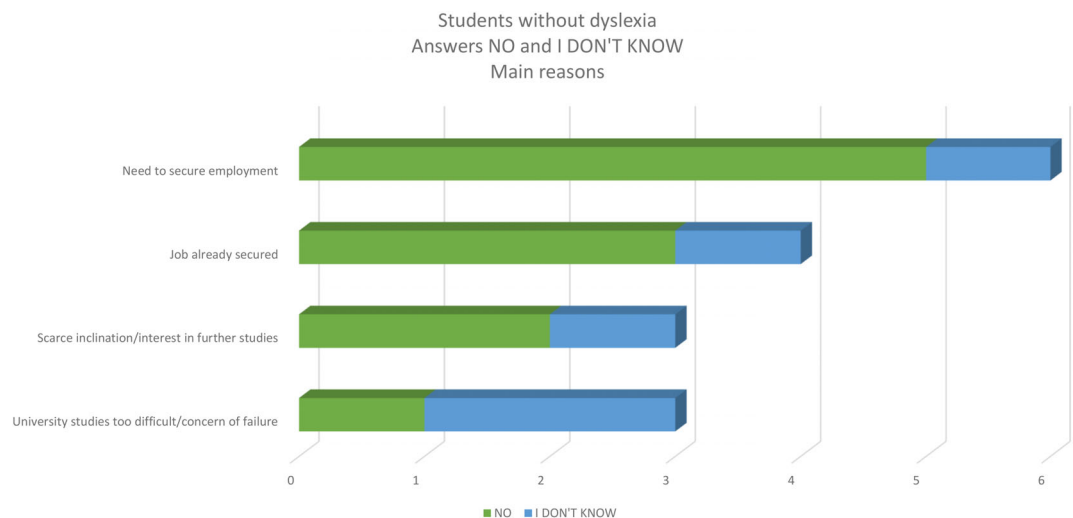
Kolmogorov–Smirnov tests indicated normal distributions with statistical relevance ( $p = .0001$ ) for the data for “Reasons behind the choices regarding university studies,” “Subjects of interest,” “Difficulty experienced with school subjects,” and “Decisions regarding university studies.” Therefore, these data were analysed using variance analysis with repeated measurements.

Here, the *Group* variable showed statistically significant effects ( $F[1, 92] = 8.54, p < .001$ ). The factor “Reasons behind the choices regarding university studies” showed statistically significant effects ( $F[1, 92] = 4.60, p = .05$ ), thus indicating significant differences between the two groups of students. The factor “Decision regarding university studies” also showed statistically significant effects ( $F[1, 92] = 3.62, p < .01$ ), which again indicated significant differences between the two groups of students. No significant effects were seen for the variables “Subjects of interest” and “Difficulty experienced with the school subjects” ( $F(1, 92) = 1.91, p = .17$ ;  $F(1, 92) = 1.80, p = .18$ ; respectively).

## 4.2 | Interview data

One-way ANOVA with the Bonferroni method was used to define the effects of the socio-demographic variables. No statistically significant effects were seen for the variables of *Gender* ( $F[1, 93] = .200, p = .65$ ), *Age* ( $F[1, 93] = 2.02, p = .15$ ), *Place of birth* ( $F[1, 93] = .033, p = .35$ ) and *Residence* ( $F[1, 93] = .200, p = .85$ ). Thus, there were no differences between the two groups of students for these variables.

For the subdivision of the students into their different fields of study (according to schools attended), Figure 3 shows that the greatest proportion of the students (44.7%) attended a technical school.



**FIGURE 2** The most indicated reasons by the students without dyslexia who answered “No” and “I don’t know” [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

**TABLE 4** Reasons indicated by the students without dyslexia who had decided that they would not pursue university studies

Status	Response	Response frequency			
		(n)	(%)	Valid (%)	Cumulative (%)
Valid	Scarce inclination/intention	2	4.3	16.7	16.7
	Financial reasons	1	2.1	8.3	25.0
	Concern of failure	1	2.1	8.3	33.3
	Need employment	5	10.6	41.7	75.0
	Job secured	3	6.4	25.0	100.0
	Total	12	25.5	100.0	
Missing		35	74.5		
Total		47	100.0		

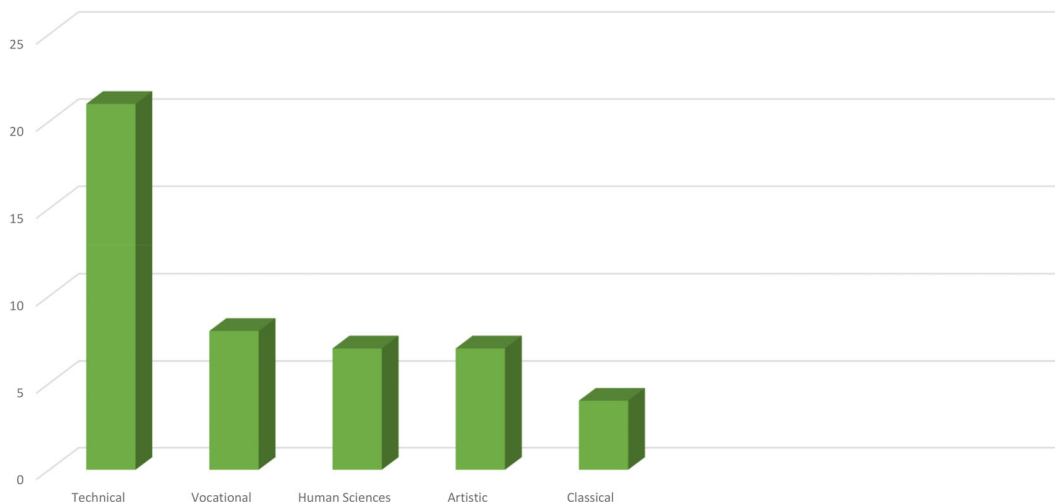
**TABLE 5** Reasons indicated by the students without dyslexia who had not decided whether to enrol or not at university (i.e., “I don't know” responders)

Status	Response	Response frequency			
		(n)	(%)	Valid (%)	Cumulative (%)
Valid	Lack of information about organisation	2	4.3	22.2	22.2
	Lack of information about programme	2	4.3	22.2	44.4
	Scarce inclination/intention	1	2.1	11.1	55.6
	Concern of failure	2	4.3	22.2	77.8
	Location of university	1	2.1	11.1	88.9
	Need employment	1	2.1	11.1	100.0
	Job secured	1	2.1	11.1	100.0
	Total	9	19.1	100.0	
Missing		38	80.9		
Total		47	100.0		

For the students with dyslexia, the most interesting subjects appeared to be the geo-historical/literary areas (31.9%) and the technical–vocational areas (25.5%), while 46.8% of these students reported difficulties in mathematics, as the greatest proportion compared to the other subjects, where the proportions were considerably lower. Likewise, the same trend was seen in the results for the students without dyslexia, with minimal differences seen.

To study the dimensionality of the questionnaire used, an exploratory factorial analysis was carried out using analysis of the main components. Principal axis factoring was carried out using *direct oblimin* rotation. The number of factors was determined through Velicer's minimum average partial tests (Velicer, 1976; Velicer, Eaton, & Fava, 2000) and the scree test and factors with eigenvalues >1. An iterative process was used in which the items with relatively low primary loading (<.30) or cross-loading of .30 (no secondary loading above .30) were removed. The original minimum average partial test (Velicer, 1976), the revised minimum average partial test (Velicer et al., 2000), and the scree test suggested four factors (called dimensions) that explained 56.26% of the total variance of the whole. The first dimension of “Subjects of interest” showed 25.36% variance (eigenvalue = 1.58) and consisted of two items; the second dimension of “Difficulty experienced with school subjects” showed 21.10% variance (eigenvalue = 1.40) and consisted of two items; the third dimension of “Reasons behind the choices regarding university

Subdivision of students with dyslexia by fields of study



**FIGURE 3** Subdivision of the students with dyslexia by field of study (according to the school attended) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

studies” showed 5.2% variance (eigenvalue = 1.04) and consisted of three items; finally, the fourth dimension of “Decisions regarding university studies” showed 4.6% variance (eigenvalue = 1.03) and consisted of three items. The Cronbach alpha coefficient for the extracted factors was 0.70.

### 4.3 | Dyslexia-specific interview data

The data that emerged from the structured family interviews with the parents of the students with dyslexia showed the following:

- Overall, at 20.9%, the greatest proportion of these students had been diagnosed as dyslexic at 7 to 10 years, with 9.9% diagnosed at 11 to 14 years, as also for diagnosis at 15 to 18 years. Out of the 47 potential structured family interviews, only 43 are included here, as four of the families did not respond. Therefore, of the 43 where there were also questionnaires completed by the students with dyslexia, 19 (20.9%) were diagnosed at 7 to 10 years, 9 (9.9%) at 11 to 14 years and 9 (9.9%) at 15 to 18 years; six of the families (6.6%) had not completed the section reserved only for the students with dyslexia.
- No co-occurring disorders were seen for 22% of the students with dyslexia. Among the 18.7% that had associated disorders, the most recurring ones were: 7.7% with attention deficit disorder, 5.5% with anxiety, 3.3% with mood swings and 1.1% for both dyspraxia and oppositional defiant disorder. Six of these families (6.6%) did not complete this question.
- The interventions to support the students with dyslexia once their diagnosis had been confirmed included speech therapy and after-school activities, both at 12.1%, while 9.9% of the families also indicated psycho-pedagogical training, 4.4% indicated other types of interventions without specifying any in particular, and 2.2% claimed that their children had not had any interventional support. Six of the families (6.6%) out of the 43 did not answer this question. The results obtained through the questionnaires indicated only the type of interventions made available to support the students; therefore, they did not provide information regarding the time, quality and duration of these interventions.

## 5 | DISCUSSION

Although the socio-demographic variables between the two student groups did not show any significant effects and did not appear to correlate with the post-diploma choices of the students, it is useful to consider the trends linked to the differences concerning the *Gender* and *Age* variables. Regarding *Gender*, the greater proportion of the male students in the group with dyslexia (61.7%) confirms the findings of studies that have reported a prevalence of males with dyslexia (Arnett et al., 2017; Quinn, 2018). For the second variable of *Age*, from the comparisons of the proportions of the 20-year-old students with dyslexia (10.6%) and without dyslexia (2.1%), it can be deduced that during the school careers of students with dyslexia, there had been more “failures” (i.e., the need to repeat a school year) compared to the students without dyslexia. This is in line with studies that have indicated the risk of low academic achievements and lack of success at school for students with dyslexia (Biasi et al., 2018; Carvalhais & Silva, 2007; Ghione, 2005; Gibson & Kendall, 2010; Guaraldi, Pedroni, & Moretti Fantera, 2012). Also, with regard to the subdivision of the students with dyslexia into the different fields of study, as previously indicated, nearly half of them (44.7%) attended a technical school, whereas the minority attended lyceums (8.6%). Due to the study design, there is no representative comparison here with the students without dyslexia.

In the Italian school system, “high schools” comprise both the *media* (middle; lower secondary) and *superiore* (upper secondary) schools that have durations of 3 years (11–13 years) and 5 years (14–19 years), respectively. The *superiore* schools are also organized into lyceums (classics, sciences), technical institutes and vocational institutes. As also reported in other studies (Guaraldi, 2018; Ingesson, 2007), the choice of technical and vocational schools over lyceums for students with dyslexia appears to be due to the belief that students with dyslexia can achieve more in technical and practical studies, rather than theoretical ones. Their learning difficulties and evidence of school failures, along with possible advice given by parents and secondary school teachers, might lead to students with dyslexia being more likely to undertake studies that can be considered either easier or more achievable. Further, their attendance at more technical schools might be felt to more easily help in the finding of a job. However, such choices might not coincide with the real interests and aspirations of these students. Indeed, the finding of a job has particular relevance in the choice of high schools, as future work opportunities are one of the important factors that interests and motivates most student choices. According to the Unioncamere and Anpal Report (, 2019), between 2019 and 2023, the technical professions will be those that offer the greatest job opportunities. Therefore, by proposing specific guidelines, technical and professional institutes can provide graduates with improved employment prospects. University studies are instead considered as the natural continuation of the lyceums (especially the classical and scientific schools), as while they do not offer any specific vocational preparation, the lyceums can guarantee a level of preparation and a method of study that are adequate to face any course of university studies.

The results from the third section of the questionnaires that concerned the post-diploma choices of the students with dyslexia showed clearly that the majority of these students (68.1%) had either decided that they would not go to university or were still uncertain about it. As reported previously, this might be because of their difficulties and their relatively negative school experiences, such that these students might think that they are not able to pursue university studies, and therefore they might decide not to further their education (Ghione, 2005; Guaraldi et al., 2012; Ingesson, 2007). Additionally, these observations appear to be confirmed by the findings concerning the motives behind the decisions of the students with dyslexia who did not intend to continue their education and those who were still uncertain. Indeed, among the different options proposed, the main ones indicated by students with dyslexia were (with the same percentage of 19.1%) “University studies considered too difficult and concern of failure” and “Scarce inclination or interest in further studies.”

These motivations indicated by these students with dyslexia would therefore appear to implicate that some psychological and emotive factors are often linked to dyslexia. This eventual implication would be in line with many studies already mentioned, which have widely indicated the risk of secondary emotive and psychological disorders for students with dyslexia, seen in particular as greater anxiety and low self-esteem, and the crucial impact these can have (Carawan

et al., 2016; Chiappedi & Baschenis, 2016; Ghisi et al., 2016; Gibson & Kendall, 2010; Haft et al., 2019; Mugnaini et al., 2009; Nelson et al., 2015; Nelson & Harwood, 2011; Novita, 2016; Riddick et al., 1999). Additionally, other studies have shown a higher level of “fear of failure” in students with dyslexia compared to controls (Tops, Glatz, Premchand, Callens, & Brysbaert, 2019), and a low level of self-esteem (Ingesson, 2007). Ingesson (2007) also reported that most students with dyslexia choose vocational routes at high school, and decide not to pursue university studies. These last data, in particular, are in line with the present study, where nearly half of the students with dyslexia (44.7%) attended technical and vocational schools, and the majority (68.1%) had decided not to go to university or were still undecided, with one of the most indicated reason by the students with dyslexia as “the concern of failure.”

The possible implications of the involvement of psychological and emotive factors in the formative decisions of students with dyslexia could also take on major relevance compared to the data for students without dyslexia. Indeed, there were significant differences between the groups with and without dyslexia. First, based on the results of the analysis, there were significant differences in the choice of whether or not to pursue university studies. The proportion of the students without dyslexia who had chosen to pursue university studies (55.3%) was nearly double that of the students with dyslexia (31.9%). Secondly, significant differences appeared between the two groups also concerning the motives that determined their choices. Indeed, the reasons that were perceived as responsible for preventing students with dyslexia from furthering their education were “University studies considered too difficult and concern of failure” and “Scarce inclination or interest in further studies.” Students without dyslexia reported the same reasons, but with lower frequencies. On the contrary, most of the students without dyslexia indicated “Need to secure employment as soon as possible,” as their main reason for not continuing university studies, which was instead the reason that was taken into consideration least by the students with dyslexia. As clearly emerged from the data gathered, the reasons that determined the choices regarding university studies provided by the two groups turned out to be diametrically opposed.

From this, it can be hypothesized that the students without dyslexia would not have the same daily negative scholastic and emotionally painful experiences as those that can be tied to learning difficulties. They would thus be exposed to lower levels of risk of emotive and psychological disorders compared to the students with dyslexia, as some studies have indeed suggested (Ghisi et al., 2016; Michaels & Lewandowski, 1990; Riddick et al., 1999). The motivations for their choices also did not appear to be correlated with emotional or negative scholastic experiences; indeed, the reasons for not continuing to university for the students without dyslexia were mainly objective and practical, whereas the students with dyslexia, the reasons were more subjective or personal.

The findings from the family interviews concerning the age of diagnosis, co-morbidities and interventions to support the students with dyslexia demonstrated that the majority of the students here had been diagnosed between 7 and 10 years. This might indicate that there is more information and updating available for teachers concerning dyslexia, probably due to Italian Law N. 170 (2010): “New rules on specific learning difficulties within the school environment.” This law requires schools to take on a role of greater responsibility and attention towards pupils with learning difficulties, to carry out early diagnosis, and to promptly implement interventions and strategies that are identified in the student Personal Didactic Plan, and thus to better contribute to “reducing the relational and emotional discomforts of the students with SLD and favour their scholastic success” (Law N. 170/2010).

With regard to co-morbidities with dyslexia, as observed here, the most frequent ones were attention deficit disorder (7.7%) and anxiety disorder (5.5%). These data agree with Coskun, Akkin Gurbuz, Ceri, and Dogangun (2018), who indicated that attention deficit disorder and anxiety disorder are the most frequent disorders associated with dyslexia.

Finally, the family interviews reported that the most implemented interventions to support these students with dyslexia after their diagnosis were speech therapy and after-school activities, with both at 12%. This outcome might be due both to the possible correlation between dyslexia and language disorders (Cornoldi et al., 2014; Stella et al., 2018) and the need for adequate support concerning after-school activities, which parents often fail to provide for their children.

## 6 | CONCLUSIONS

The data gathered and outcomes obtained here allow us to answer the main initial questions we asked and to conclude that the aims of this study have been achieved. The findings indeed show both to what extent the students with dyslexia decide to continue university studies and the reasons that the students themselves personally recognized as decisive for their choices. In particular, the results indicate that most students with dyslexia in this study were either undecided or had already decided not to attend university and that this number was significantly greater than for the students without dyslexia who made the same decisions. In addition, the main reasons indicated by the two groups of students for their choices were diametrically opposed.

These data appear to implicate some psychological and emotional factors (in particular: anxiety, low self-esteem and motivation) in the main reasons indicated by these students with dyslexia who had decided not to continue with their studies (i.e., the concern of failure, scarce inclination or interest). Therefore, future research is needed to investigate the implications of these factors, from which it might emerge that there is the need to design specific interventions to support students with dyslexia throughout their studies, and especially during the crucial stages of the decision-making processes, as for those considered in the present study. Moreover, these outcomes might pave the way for further research to answer the other initial questions: to investigate the factors that facilitate or hinder the continuation of university studies for students with dyslexia, and to spot any common traits in the students with dyslexia who pursue university studies.

With regard to the influence of some of the variables discussed above in terms of the educational choices of these students, and with particular reference to the present study, it is important to consider that most of the students with dyslexia who had decided not to pursue university studies or who had not decided whether or not to enrol in a university degree programme (total, 68.1%), had been diagnosed at an early age (7–10 years). Furthermore, they did not show any co-morbidities and had been provided with support (e.g., speech therapy and after-school activities), although, as previously highlighted, no information about the time, duration and modalities of these interventions was available. These results cause us to reflect upon the roles that such factors might have here, and lead us to hypothesize that despite their relevance, these factors alone are not sufficient to ensure the academic achievements of these students and their inclusion in further education. This would therefore suggest the need to also consider other factors, such as their relationships with their parents and teachers, as highlighted in some previous studies (Furrer & Skinner, 2003; O'Connor & McCartney, 2007).

Finally, for identification of potential common traits for students with dyslexia, a recent study that involved 40 workers with SLD, ex-graduate students, and in some cases, students who had dropped out, revealed that “Many students with SLD who sign up to university are students coming from lyceums, supported by their families, equipped with compensatory instruments and having a specific learning difficulty of a mild or moderate type. In universities, indeed, there are no students with SLD of particular gravity” (Guaraldi, 2018). The data arising from the present study further support these considerations, given that we found the same traits in the majority of students with dyslexia who had decided to pursue university studies.

In conclusion, the implications of some psychological and emotional aspects in the educational choices of students with dyslexia that are suggested by this study should be explored in future studies. The roles of these aspects would appear to be particularly relevant in determining the personal and social “fate” of students with dyslexia. Therefore, to promote formative success and social inclusion processes for students with dyslexia, the adoption of a holistic approach that recognizes the complexity of the various facets of dyslexia would appear to be necessary, as well as the need to implement integrated interventions, effective strategies and fruitful relationships between the educational figures involved, to adequately support students with dyslexia through their school, emotional and social challenges.

## 7 | LIMITATIONS

Although this study presents original and innovative features, both in terms of the topic considered and the direct and personal student contact for the recognition of the reasons responsible for their choices regarding future university studies, the following limitations should be considered.

The main limitation is the sample size, as there were only 47 students with dyslexia in the 12 (of 19) high schools in Messina that participated here. Therefore, our findings cannot be generalized to the whole student population with dyslexia in Italy, for two main reasons. The first is that the size of our sample is modest, although the proportion of students with dyslexia (10.7%) was significant when compared to the total number of students involved in the project (440). The second reason is the homogeneity of the ethnic and geographic variables, given that most of the students were Italian (from Messina itself), and the schools that participated were all located in Messina, even if they were distributed in areas that have socio-cultural characteristics that are relatively different from each other. It would therefore be interesting to consider and compare similar data from other Italian cities in future studies, to generalize these results more widely.

Another important limitation concerns some psychological-emotional aspects that appear to be implicated in the reasons indicated by the students with dyslexia who had decided not to go to university (in particular: self-esteem, anxiety and motivation). These were not specifically considered and measured in the present study, along with the correlation of these factors with academic achievement, which would appear to be strongly related, as has been indicated in some previous studies (Nevill & Rhodes, 2004; Pollak, 2005; Van Ameringen et al., 2003). Therefore, future research is needed to both further generalize the results obtained here, and to objectively investigate the implication of emotional and psychological factors in the educational choices of these students with dyslexia, along with measures of their school performance.

## ACKNOWLEDGMENTS

The authors would like to acknowledge all of the people who believed in this project. First of all, we acknowledge Pietro Navarra, the previous Rector of the University of Messina (academic years, 2017/2018) for his understanding of the training value of the project, and for his help in arranging for its realization. This project was funded by the Orientation and Placement Centre (COP) of the University of Messina, and by the Italian Dyslexia Association (Messina section). We acknowledge both Dario Caroniti, the previous COP President (academic years, 2017/2018), and Grazia Restuccia, previous President of the Italian Dyslexia Association (Messina section; 2017/2018), for their organizational support, their technical contributions and their supervision. Furthermore, we would like to acknowledge the important contributions provided by Domenica Maria Fotia, previous Head of the Orientation Operative Unit of COP (academic years, 2017/2018), who followed all of the phases of the project with her ongoing assistance and technical advice, and by Stefania Sambataro, previous Vice-Head of the Orientation Operative Unit of COP (academic years, 2017/2018), for her contributions towards the delicate task of communication with the secondary high schools that participated, as well as for spreading the information concerning this project. We would also like to acknowledge Pasquale Morgante, President of the Bonino Pulejo Foundation of Messina and Sergio Messina, previous President of the Italian Dyslexia Association (2017/2018), for their interest in this study and for the Patronage they granted to the project. Finally, we would like to thank the Headteachers of the 12 high schools in Messina who by agreeing to participate made this project possible, along with all of the teachers who contributed to its success through their commitment.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## ORCID

Antonella Donato  <https://orcid.org/0000-0003-1950-3153>

Eva María Olmedo Moreno  <https://orcid.org/0000-0003-0558-1513>

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**How to cite this article:** Donato, A., Muscolo, M., Arias Romero, M., Capri, T., Calarese, T., & Olmedo Moreno, E. M. (2021). Students with dyslexia between school and university: Post-diploma choices and the reasons that determine them. An Italian study. *Dyslexia*, 1–18. <https://doi.org/10.1002/dys.1692>