Universal and Specific Services for University Students with Specific Learning Disabilities: The Relation to Study Approach, Academic Achievement, and Satisfaction

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In recent years, an increasing number of students with specific learning disabilities (SLDs) have enrolled in universities. The present exploratory study examined the frequency of use and appreciation of universal (open to every student) and specific services (offered to students with SLDs) and their relation to age, academic achievement, satisfaction, self-efficacy, and use of self-regulated learning (SRL) strategies. Participants were 147 Italian university students with SLD diagnoses (42 males; mean age: 22.49, $SD = 3.29$). Results showed that, overall, the frequency of use and appreciation of specific services were positively related to academic satisfaction, self-efficacy, and SRL strategies. Furthermore, frequency of use of compensatory tools and dispensatory measures was positively associated with academic achievement. These findings suggest that universities play an important role in supporting students with SLDs during their academic years by providing them with useful services and accommodations.

Specific learning disabilities (SLDs) include a group of disorders involving difficulties in school learning, such as reading, writing, and mathematics (American Psychiatric Association [APA], 2022). SLD symptoms and consequences persist throughout the lifetime (Hatcher et al., 2002; Swanson & Hsieh, 2009). Students with SLDs encounter several obstacles and are at increased risk of failure both in K–12 and higher education. In addition, they usually encounter more emotional-motivational difficulties than their peers without disabilities and tend to be more anxious about their academic performance (Mugnaini et al., 2009). For example, they demonstrate lower levels of study self-efficacy (i.e., the perception of being able to approach study successfully; Lackaye & Margalit, 2006; Tabassam & Grainger, 2002) and fixed mindsets (i.e., the belief that their intelligence cannot be improved; Baird et al., 2009). They are also prone to use inappropriate learning strategies (Baird et al., 2009; Hen & Goroshit, 2014).

Casali et al. (2023) examined study-related aspects, including self-efficacy and resilience (i.e., the tendency to stay

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motivated despite difficulties or failures while studying) in university students with and without SLDs. Their findings showed that students with SLDs reported lower perceived self-efficacy and lower study resilience than their peers without SLDs. Among study-related factors, self-regulated learning (SRL) strategies (i.e., cognitive and metacognitive strategies used to control learning processes; Zimmerman, 2000) appear to be positively related to academic achievement (Mega et al., 2014; Richardson et al., 2012), with the use of certain types of SRL strategies differing between students with and without SLDs. For example, Kirby et al. (2008) found that university students with dyslexia reported significantly greater use of study aids (i.e., use of support and resources while studying) and time management strategies (e.g., scheduling) than their peers without dyslexia, but they were less capable in terms of selecting main ideas (i.e., the ability to identify important information in a text) and test-taking strategies (i.e., strategies used while preparing for or taking an exam). The authors concluded that while students with dyslexia may have found some useful strategies to compensate for their difficulties, they still had significant impairments in other areas.

Various studies have examined the obstacles university students with SLDs face; among these, taking notes, writing essays, organizing study activities, reading and writing during exams, and staying focused were the most commonly reported (Kreider et al., 2019; Mortimore & Crozier, 2006; Serry et al., 2018). A review of 15 studies showed that four types of strategies are most often identified in literature to overcome these difficulties (Pino & Mortari, 2014): specific study skills (e.g., using visual techniques such as conceptual maps); compensatory strategies (e.g., receiving copies of notes and slides from professors or recording lectures); support from family members, friends, and fellow students; and metacognitive and meta-affective skills (e.g., time planning, reducing distractions

THE ROLE OF UNIVERSITY SERVICES

Despite difficulties related to studying, an increasing number of students with SLDs have enrolled in higher education courses in recent decades in various countries (Longobardi et al., 2019; Stampoltzis & Polychronopoulou, 2008; Zeng et al., 2018), possibly related to the enactment of policies safeguarding the rights of students with SLDs to receive specific support during their academic years (e.g., accommodations and tutorship services). For instance, in Italy (where the present research was conducted), students with SLDs are protected by a specific law (Legge 8 ottobre 2010, n. 170 [Law October 8, 2010, n. 170]), which grants them access to two types of accommodations (i.e., compensatory tools and dispensatory measures) at every educational level, from primary school to university. *Compensatory tools* are defined as tools that replace or support the impaired ability (e.g., speech synthesis, writing programs, calculators). *Dispensatory measures*, in turn, consist of specific aids that support students during demanding and challenging tasks, especially during exams, such as extra time, extra breaks, and the option to take an oral instead of a written exam. The main goal of this legislation is to enable students with SLDs to follow their inclinations and achieve their study goals.

In several countries, universities set up specialized learning disability services with the specific goal of welcoming students with SLDs and helping them during their academic years. Such services usually provide students with certain accommodations but may also offer other specific support programs (e.g., face-to-face individual or group tutorship, counseling, psychological support). However, even though the importance of supporting students with SLDs during the university years has been widely recognized, research on the role of accommodations and other services offered by universities is lacking (Pino & Mortari, 2014; Zeng et al., 2018).

Several studies have explored which accommodations and support services students with SLDs use and need the most, and what other resources they ask for (MacCullagh et al., 2017; Mortimore & Crozier, 2006; Olofsson et al., 2012; Sumner et al., 2021). Students with SLDs usually require accommodations for their examinations, most commonly extra time during written exams, along with the possibility of dividing an exam into two halves, a separate room, use of computers, having someone to read the questions out loud for them, and oral in place of written exams (Mortimore & Crozier, 2006; Olofsson et al., 2012; Sumner et al., 2021).

Comparing the access to various types of specialist support (i.e., individual and group study-related support, access to equipment/software, and counseling/emotional support) in a sample of students with dyslexia, developmental coordination disorder, or both, Sumner et al. (2021) noted that the most frequently used specialized forms of support were technology-related (e.g., funded laptop, speech synthesis, mind-mapping software, recording devices), while few students accessed one-on-one or group study-related support.

While the above studies focused on the frequency of use of services and accommodations, Tops et al. (2022) recently explored the perception of the effectiveness of accommodations (i.e., to what extent an accommodation was perceived to be useful in overcoming learning difficulties) in a group of students with dyslexia. The authors considered several types of accommodations provided to help students follow lessons (e.g., permission to audio-record classes, use of computer or compensation software during classes), study (e.g., peer mentors, extended deadlines for assignments), and take exams (e.g., extended examination duration, alternative exam format). Students who regularly applied for accommodations reported higher levels of effectiveness, whereas students who did not use these resources reported lower levels of expected effectiveness. According to the authors, students who had not utilized accommodations might have underestimated their effectiveness, which might explain why some students decide not to apply for accommodations at university.

In addition to perceived effectiveness, the real impact of services and accommodations on achievements for students with SLDs is important; few studies have addressed this topic. In general, students with SLDs who use university support services have better academic performance compared to students who do not (Chevalier et al., 2017; Zeng et al., 2018). Furthermore, in their review, Zeng et al. (2018) noticed that comprehensive programs (i.e., programs

aimed at promoting students' academic skills and self-determination) were associated with higher graduation rates (especially when the support was consistent during the academic years); enhanced self-awareness of disability, self-efficacy, and internal locus of control; and reduced anxiety. The authors also underlined the importance of developing individualized and student-centered approaches, even if these require university services staff to have more professional knowledge about specific learning disabilities.

Beyond support services and accommodations, university services for students with SLDs play a role in facilitating the relationship between students and professors, especially regarding access to compensatory tools and dispensatory measures. This entails that services must balance the specific demands of every student with the need to guarantee a fair assessment (Riddell & Weedon, 2006). Some professors may not respond adequately to notification of an SLD diagnosis or they may display misconceptions, prejudices, or even skepticism about the diagnosis (Pino & Mortari, 2014). Consequently, students might give accommodations up, and in some cases, they may even refrain from disclosing their condition (Mamboleo et al., 2020; Mortimore & Crozier, 2006; Serry et al., 2018).

To conclude, the current literature supports the idea that university services can be a key resource to promote success and achievements for students with SLDs. However, research is lacking on the relation between university services and other important dimensions of students' academic experiences, including academic achievement, satisfaction, and related factors such as perceived self-efficacy and SRL strategies. Furthermore, research has focused mostly on university services specific to students with SLDs, neglecting the role of universal services (i.e., services provided to the entire student community, such as libraries or study rooms) in supporting achievement and satisfaction. Finally, most of the existing research in this area is qualitative, with information on shared protocols to systematically evaluate the use and efficacy of university services lacking.

THE PRESENT STUDY

Aims and Hypotheses

The main aim of the present study was to explore the relation between use of university services and academic outcomes, such as academic achievement, satisfaction, self-efficacy, and SRL strategies, in the Italian context. Specifically, we analyzed the association between self-reported use of universal (those open to every student; e.g., libraries, study rooms, psychological help services) and specific services (offered to students with SLDs; e.g., compensatory tools and dispensatory measures) and students' age, academic achievement, and satisfaction. Furthermore, we explored the relation between use and appreciation of these resources and academic self-efficacy and SRL strategies.

Based on the previous literature (Chevalier et al., 2017; Zeng et al., 2018) showing that specific services for students with SLDs were positively associated with academic achievement, we hypothesized a positive relation between the frequency of use of universal services and academic achievement. Furthermore, since support services are designed to help students overcome study-related difficulties, we hypothesized that the frequency of use of such services and perception of their relevance might be positively associated with academic satisfaction. Finally, we examined the relation between use of services, SRL strategies, and academic self-efficacy. Even if no evidence is available, our hypothesis is that using university services helps students develop functional motivational beliefs and strategies.

The present study was part of a larger study (see Casali et al., 2023) of the role of several intraindividual study-related factors with respect to academic achievement, life, and academic satisfaction in students with and without SLDs.

METHODS

Participants

A total of 730 individuals accessed the link to an online data collection; of those, 318 provided informed consent and completed all measurements, thus, constituting the final sample. This sample encompassed both students with and without SLDs (Casali et al., 2023). However, since the present study focused solely on students with SLDs, the following section provides specific details concerning this subgroup only.

A total of 147 students (42 males and 105 females, with a mean age of 22.49; $SD = 3.29$) with self-reported SLD diagnoses took part in the study. Of them, 69 students reported two or more learning disabilities, 40 students self-reported a diagnosis of dyslexia, 14 students indicated dyscalculia, 9 students indicated a learning disorder with impairment in written expression, and 15 students did not specify their diagnosis. On average, the students had received the diagnosis when they were 13 years old ($SD = 5.33$; range $= 3-30$).

In the Italian educational system, the first level of higher education is the bachelor's degree (*Laurea Triennale*). It typically lasts three years. Students can enroll in a bachelor's program after obtaining a secondary school diploma. To enroll in a master's program (*Laurea Magistrale*), students must hold a bachelor's degree. A master's degree usually lasts two years. Finally, some fields, such as medicine, dentistry, and law, follow a single-cycle degree program (*Laurea a ciclo unico*), which combines bachelor's and master's levels. Single-cycle degrees typically last from 5–6 years. In the current study, 110 students (74.83%) were enrolled in bachelor's programs, 25 (17.01%) in master's programs, and 12 (8.16%) in a single cycle.

The Cattell Test—Scale 3A (Cattell, 1940) was used to measure cognitive functioning. It involves four types of timed problems (Series, Classifications, Matrices, Conditions) for a total of 50 items (total time: 12 m 30 s). One point is attributed to correct answers and zero in the case of wrong or missing answers. A total score was calculated by

TABLE 1
Descriptive Statistics of the Sample

	M (SD)
Age	22.5 (3.28)
Grades[1]	24.79 (2.82)
Credits earned per year	28.83 (13.75)
Cattell Test	21.67 (6.09)
Academic satisfaction	17.55 (4.12)
Academic self-efficacy	17.27 (3.11)
SRL strategies	70.09 (8.81)

[1] In Italy, grades range from 18 to 30.

summing all the correct answers. The internal consistency is adequate ($\alpha = .74$, Cattell, 1940; $\alpha = .81$, current sample).

The score obtained by the participants of the present study was compared with those of a group with no SLDs ($N = 171$; Casali et al., 2023) by computing the z score: the performance of the SLD group was in line with those data ($z = -0.27$). A comprehensive comparison between the group with SLDs and the group without SLDs falls outside the scope of the present study; however, further details may be found in Casali et al. (2023).

The statistic descriptions of demographic information are reported in Table 1.

Materials

University Resources and Services Measures

Two questionnaires were created for the study, considering resources and services usually provided by all Italian universities (see Appendix).

The questionnaire on the use of universal services consists of eight items (see Table 2) was designed to examine the frequency of use of general resources offered by the university to all student with or without SLDs (e.g., "I've turned to my university's orientation and tutoring services"). Single-item scores were considered, and the sum of responses was calculated.

The questionnaire on the use of specific services consists of six items (see Table 3), designed to examine the frequency of use and appreciation of resources specifically offered by learning disabilities services to students disclosing their diagnoses and asking for support (e.g., "I've regularly turned to my university's learning disabilities services"). Again, single-item scores were considered, and the sum of responses was calculated.

Responses to both questionnaires were given on a 5-point Likert-type scale from 1 (*never/not at all like me*) to 5 (*always/very much like me*). The option "NA—Not applicable" was also included, in case a service was not available at the participant's university, or when the student was not aware of the availability of the service. For the data analysis, NA answers were considered 0.

We assessed the readability of the two questionnaires through the Gulpease Index, using the software READ-IT (Dell'Orletta et al., 2011; Lucisano & Piemontese, 1988).

The Gulpease Index is a way to measure the readability level of a text in the Italian language (Lucisano & Piemontese, 1988). It considers sentence and word length to yield a score that indicates how readable the text is. A higher score means the text is easier to understand. A Gulpease Index higher than 40 indicates an acceptable level of readability for students with secondary school diplomas, which corresponds to our sample. The Gulpease Index for the questionnaire on the use of universal services was 54, indicating a good level of readability. Similarly, the Gulpease Index for the questionnaire on the use of specific services was 50.7, also suggesting good readability.

Both questionnaires were developed by a team of experts with extensive experience in research and clinical practice. Although different universities might provide different services, the collaboration among experts from different Italian regions has ensured that the questionnaires are suitable for students from different universities, as they encompass the typical services offered by Italian educational institutions.

Students' Academic Achievement

Students' academic achievement was considered in terms of self-reported grades and credits earned per year. The credits reported were divided by course year to obtain the average number of credits earned per year, making students attending different course years more comparable. According to the Italian university systems, grades range from a minimum of 18 to a maximum of 30.

Study-Related Aspects

Three questionnaires were administered to measure this area.

The Academic Self-Efficacy Questionnaire (ASQ; De Beni et al., 2014) consists of five items measuring the belief that one can succeed in one's studies (e.g., "How do you rate your study skills?"). The scale proved reliable ($\alpha = .80$, normative sample, De Beni et al., 2014; $\alpha = .76$, present sample). Regarding the convergent validity, the questionnaire has shown small to moderate correlations with other study-related factors, such as learning goals, self-regulated learning, and study resilience (Casali et al., 2022).

The Academic Satisfaction Questionnaire (adapted from the Multidimensional Students' Life Satisfaction Scale—Short Form—School subscale; Huebner et al., 2012; Italian version by Zappulla et al., 2013) consists of five items evaluating satisfaction with university life (e.g., "I enjoy being at the university"). The internal consistency is good ($\alpha = .81$, sample of original Italian version, Zappulla et al., 2013; $\alpha = .87$, current sample with version adapted). Concerning the convergent validity of the questionnaire, the school subscale in the Italian version has shown small to moderate positive relations to self-acceptance and relations with peers, and negative relations to depression, internalizing problems, and externalizing problems (Zappulla et al., 2013).

The Self-Regulated Learning Questionnaire—Short Form (SRLQ; adapted from De Beni et al., 2014) involves 20 items assessing five SRL strategies (four items each: or-

TABLE 2

Correlations between Universal Services (Single-Item and Total Score), Academic Achievement (Grades, Credits Earned, Credits Earned per Year) and Study-Related Aspects (Academic Satisfaction, Academic Self-Efficacy, SRL Strategies)

	M (SD)	Age	Grades	Credits Earned per Year	Academic Satisfaction	Academic Self-Efficacy	SRL Strategies
Library	1.72 (1.22)	.23**	.14	.12	.18*	.16*	.16
Online databases	2.03 (1.3)	.25**	.15	.09	.1	−.05	.05
Study rooms	2.17 (1.46)	.20*	.06	.12	.09	.04	.03
Tutorship services	1.71 (1.25)	.14	.08	−.17*	−.01	−.15	−.12
Psychological help services	0.96 (.93)	.22**	.07	.10	.00	.06	−.07
University apps	3.87 (1.36)	−.06	−.04	.12	.23**	.23**	.17*
Cafeteria	1.33 (1.41)	.09	.09	.05	.01	0	−.06
Sports services	0.87 (.90)	.21*	.12	.07	−.08	−.06	−.15
Total	14.66 (5.02)	.30***	.16	.13	.14	.06	.02

*p < .05; **p < .01; ***p < .001.

TABLE 3

Correlations between Specific Services (Single-Item and Total Score), Academic Achievement (Grades, Credits Earned, Credits Earned per Year) and Study-Related Aspects (Academic Satisfaction, Academic Self-Efficacy, SRL Strategies)

	M (SD)	Age	Grades	Credits Earned per Year	Academic Satisfaction	Academic Self-Efficacy	SRL Strategies
Knowledge of SLD resources	2.75 (1.03)	.13	.07	.01	.27**	.20*	.28***
Regular use of SLD services	2.38 (1.24)	.14	.06	.14	.11	.04	.12
Perceived usefulness of the SLD resources	2.76 (1.41)	−.09	−.02	−.17*	.16	.02	.13
Usefulness of SLD services to deal with professors	2.53 (1.22)	−.04	.01	−.07	.21*	.17*	.26**
Use of dispensatory measures	2.89 (1.44)	.05	.17*	−.07	.04	0	.09
Use of compensatory tools	2.99 (1.50)	.03	.20*	−.01	0	.08	.08
Total	16.40 (5.58)	.04	.13	−.05	.17*	.11	.22**

*p < .05; **p < .01; ***p < .001.

ganization elaboration, self-evaluation, preparing for exams, and metacognition; e.g., "When an exam goes wrong, I try to understand the reasons why I failed"). Seven items are reversed to calculate the overall score. The internal consistency is satisfactory ($\alpha = .76$, normative sample, De Beni et al., 2014; $\alpha = .74$, current sample). Regarding the convergent validity, the questionnaire has shown small to moderate associations with various study-related factors, including academic self-efficacy, learning goals, and study resilience, as reported by Casali et al. (2022).

Responses to the three questionnaires were given on a 5-point Likert-type scale from 1 (*never/not at all like me*) to 5 (*always/very much like me*). The Gulpease Index for the ASQ, Academic Satisfaction Questionnaire, and SRLQ was 66, 63.1, and 62.2, respectively, indicating a high level of readability.

Procedure

All measures were implemented in Qualtrics as part of a larger research project (Casali et al., 2023), which included not only the sample of students with SLDs considered in this article but also a control group of students without SLDs. All students underwent the same procedure and completed the same questionnaires, except for the questionnaire on the use of specific services, which was exclusively administered to students with SLDs. Along with the questionnaires and the Cattell Test–Scale 3A presented in this study, additional questionnaires were administered to all students. It took an average of 35 minutes to complete the complete questionnaire battery.

Participants were recruited through university services at four Italian universities (University of Turin, University of Padova, University of Trieste, and University of Calabria) and through snowball procedure (i.e., social media, personal contacts). Staff from university services contacted participants individually via email or in person, providing them with a link to complete the questionnaires. Participants were briefed on the general goals of the research project, which aimed to explore individual and contextual factors that promote well-being and academic achievement within the university setting.

All participants took part in the study on a voluntary basis and provided informed consent before completing the measures. The questionnaires on the use of universal and specific services were completed first, while the other measures were presented in random order. All participants had the option to take breaks during the completion of the questionnaires to reduce the impact of excessive fatigue.

RESULTS

RStudio (RStudio Team, 2020) was used to run all analyses. Correlational analyses in terms of Pearson's *r* were conducted to examine the relations between use of universal/specific services and age, achievements (in terms of average grades and credits earned per year), academic satisfaction, self-efficacy, and implementation of SRL strategies.

Universal Services

Regarding universal services, the results showed positive significant correlations between the use of university apps and academic satisfaction ($r = .23$, $p < .001$), academic self-efficacy ($r = .23$, $p < .001$), and SRL strategies ($r = .17$, $p < .05$; see Table 2). The use of libraries correlated with academic satisfaction ($r = .18$, $p < .05$) and academic self-efficacy ($r = .26$, $p < .05$). The use of tutorship services correlated negatively with credits earned per year ($r = -.17$, $p < .05$). Finally, total use of universal services correlated positively with age ($r = .30$, $p < .001$).

Specific Services for Students with SLDs

With regard to specific services, positive significant correlations were found between knowledge about the SLD resources offered by universities and academic satisfaction ($r = .27$, $p < .01$), academic self-efficacy ($r = .20$, $p < .05$), and use of SRL strategies ($r = .28$, $p < .001$; see Table 3). The perceived usefulness of specific services to deal successfully with professors showed a similar pattern of significant positive correlations (academic satisfaction: $r = .21$, $p < .05$; academic self-efficacy: $r = .17$, $p < .05$; SRL strategies: $r = .26$, $p < .01$). Furthermore, use of dispensatory measures and compensatory tools shared a significant positive correlation with the mean of grades obtained by the participants (dispensatory measures: $r = .17$, $p < .05$; compensatory tools: $r = .20$, $p < .05$). However, a significant negative correlation was found between the perceived usefulness of the SLD resources and average credits earned per year ($r = -.17$, $p < .05$). Furthermore, total use and appreciation of specific services correlated positively with self-efficacy ($r = .17$, $p < .05$) and SRL strategies ($r = .22$, $p < .01$). Finally, perceived usefulness of specific services showed a significantly positive correlation with frequency of use of specific services ($r = .67$, $p < .001$), compensatory tools ($r = .28$, $p < .001$), and dispensatory measures ($r = .17$, $p < .05$).

DISCUSSION

The present study explored the relations between the use of universal and specific university support services and important academic outcomes, such as achievement, satisfaction, self-efficacy, and use of SRL strategies. Interesting results emerged regarding both kinds of services.

Universal Services

As a preliminary step, the frequency of use of universal services was analyzed to identify which services were the most used. Students reported a high use of university apps, study rooms, and online databases, while psychological help services, sport services, and cafeterias were the least used. This is in line with the expectation that online services (i.e., apps and online databases) would be highly popular among students due to their wide availability. Concerning other services, the research was carried out during the COVID-19 pandemic (January to May 2021), and the restrictions enacted to limit access to university buildings (e.g., libraries, sport services, cafeterias) might have influenced students' answers.

Focusing on the main aim of the present research—examining the relation between use of services and student outcomes—use of university apps was positively related with academic satisfaction, self-efficacy, and SRL strategies. Although our results are correlational, some possible explanations can be advanced. In our questionnaire, students were asked to rate how frequently they used apps to check course timetables or lesson and exam changes. However, apps' functionalities may vary by university. No evidence has been found in the previous literature regarding the role of university apps in students' outcomes, but we can speculate that use of university apps may be related to students' organizational skills (which are part of SRL strategies) because they could support students in planning their study schedules (De Beni et al., 2014). Further research is required to better explain this relation, as well as the relation to academic satisfaction and self-efficacy.

Furthermore, the frequency of library use appeared to be positively related to academic satisfaction and self-efficacy. While these relations have never been specifically explored, previous research has found that students with SLDs usually look for a quiet place to study to avoid distractions (Pino & Mortari, 2014). Moreover, university libraries usually offer specific services (e.g., help with bibliographical research), which may represent an important source of support for students with SLDs (Sumner et al., 2021). Therefore, students with SLDs might appreciate the possibility of using libraries, leading to increased levels of academic satisfaction. Additional services provided by libraries might support these students in their academic activities and help them overcome challenges, strengthening their perceived academic self-efficacy. Because our questionnaire did not investigate deeply why and how students use libraries, more research is required to better understand these relations.

Interesting, the results showed that the frequency of use of most services (i.e., library, online databases, study rooms, psychological help services, and sport services), as well as overall frequency of use of universal services, seemed to be significantly positively related to students' age. That is, older students appeared more likely to exploit the various types of resources offered by the university compared to their younger colleagues. These findings merit further examination, but in the meantime, we can speculate that older students may be more aware of which services are offered and, therefore, use them more. Another possible

interpretation of these findings, considering the period during which the questionnaires were completed, is that younger students might not have had a chance to make the most of university services due to COVID-19 pandemic restrictions (e.g., libraries and study rooms were closed).

Finally, a significant negative relation between use of tutorship services and credits earned per year was also found. This may stem from the fact that many students with SLDs apply for tutorship services only after facing failures or difficulties (e.g., if they do not achieve the number of credits required for their course year). Many of them prefer not to disclose their SLD diagnoses in the first place and decide to ask for help and accommodations only when they encounter important obstacles (Pino & Mortari, 2014).

Specific Services for Students with SLDs

The Specific Services Questionnaire was developed to assess both frequency of use and appreciation of services provided to students with SLDs. Frequency of use of specific services was lower than frequency of use of compensatory tools and dispensatory measures. This is in line with previous studies showing that accommodations (especially technology-related support) are used more frequently than individual or group study-related support (Sumner et al., 2021).

Regarding the first aim of our research, we found that grades appeared to be positively correlated with the use of dispensatory measures and compensatory tools. Although this relation has never been studied with quantitative methods, previous qualitative research has underlined that students consider these accommodations crucial to achieve success at university (Mortimore & Crozier, 2006; Olofsson et al., 2012; Pino & Mortari, 2014). However, the number of credits earned per year appeared negatively associated with the perceived usefulness of the specific resources (i.e., the lower the number of credits earned, the higher the perception that accommodations are useful). This result may appear counterintuitive. However, it can be hypothesized that students who struggle more with studying (i.e., those who have earned fewer credits) appreciate the services offered by the university more (probably because they use them more frequently) and consider them important resources for success.

Regarding academic satisfaction, students who were more aware of the resources offered by learning disabilities services were more satisfied with their academic life than peers who were not. As found in previous studies, students are often unaware of the resources they can draw upon (Mortimore & Crozier, 2006; Serry et al., 2018). It is possible that knowing which services are available in case of difficulties might increase students' overall satisfaction with their university. Moreover, frequency of use of specific services and accommodations appeared to be positively related to perceived usefulness of these services and resources. This finding is in line with previous literature showing that students who use services and accommodations more frequently tend to perceive these services as being more useful (Tops et al., 2022). Furthermore, academic satisfaction was positively related to the perception of the usefulness of specific services when dealing with professors, confirming the important roles these services play as mediators between students and professors (Pino & Mortari, 2014).

Knowledge about the specific resources and perceived usefulness of SLD services as mediating tools in relationships with professors were also positively correlated with academic self-efficacy and SRL strategies. Such learning strategies include the ability to autonomously organize studying activities and prepare for exams (De Beni et al., 2014). Knowing in advance the format of an exam (e.g., oral or written) and which accommodations will be available might be crucial, as such knowledge will influence a student's preparation strategy. For this reason, we speculate that students with higher levels of SRL strategies may be more informed about the resources provided by a university. Furthermore, it is possible that students who are more knowledgeable about available resources and consider them useful for dealing successfully with professors might perceive themselves as proficient students, thus explaining the positive relation between these two aspects and academic self-efficacy.

Finally, our results show that students who report higher levels of overall use and appreciation of specific services are more satisfied with their university and have higher levels of SRL strategies. Different interpretations are possible. For example, students who turn to specific services more frequently may be supported in overcoming their difficulties and finding better strategies to study, explaining the improved levels of SRL strategies. Alternatively, students with better SRL strategies are more inclined to value the support services and accommodations offered by universities.

Limitations and Implications for Research and Practice

This research has some limitations. First, we used self-report measures to collect data on students' achievement and frequency of use of universal and specific services. Future studies may gather objective information by directly involving university services (DuPaul et al., 2021; Troiano et al., 2010) to overcome a central limit of the self-report measure—reference bias): What one participant considers rare, another may consider as happening often (Duckworth & Yeager, 2015). Furthermore, questionnaires could be developed in collaboration with university staff to ensure that the services investigated are indeed provided by the university (different universities might provide different services). Reference bias also applies to questionnaires that measure study-related factors. And as for other self-report measures, items aimed at detecting the tendency to provide a positive self-representation (i.e., socially desirable responding) would be beneficial appropriate (Paunonen & LeBel, 2012).

A second shortcoming of the present study is that type and severity of SLD were not considered, yet students with different challenges may require different accommodations. Another major limit of research on university students with SLDs is that their use of services and accommodations is influenced by the students' willingness to self-disclose (Mamboleo et al., 2020). In Italy, as in other countries, it

is up to the student to provide the diagnosis of learning disabilities to university services. The present study investigated only students with SLDs who had decided to apply to specific university services, so the conclusions cannot be extended to students who decided not to declare their SLDs to the university.

It is also important to acknowledge that the research was conducted during the COVID-19 pandemic, which potentially had an impact on students' use of university services. For instance, libraries and study rooms were closed to the public. Therefore, it would be valuable to replicate this study to ascertain the generalizability of our findings to different time periods.

Additionally, it is important to note that the results of our study are correlational and that, therefore, we cannot establish causal relationships between the variables that were explored. Finally, the effect sizes of most of the findings are small, and because many correlations were examined, results showing p values $< .05$ should be considered with caution.

A longitudinal study design could be an optimal approach to following a group of students with SLDs over time, allowing a precise idea of which obstacles are more common and which tools and resources are mainly required to overcome such difficulties. This method could also better differentiate students with SLDs who regularly turn to university services from those who do not take advantage of these resources in terms of achievement, satisfaction, and academic self-efficacy. Furthermore, a mixed-method study including interviews and/or focus groups with students and university staff could provide deeper information about the needs and resources of university students with SLDs.

This line of research has an essential practical implication—its findings will allow universities to better understand which services should be enhanced, thus improving the general quality of the support provided to students. By obtaining a comprehensive understanding of the services that effectively support students with SLDs, universities can strategically restructure their support systems. For instance, they can allocate additional resources to enhance the services that have proven to be beneficial and impactful for students with SLDs.

Moreover, universities could actively promote and highlight the benefits of these services. It is crucial to address any hesitations or reluctance that students with SLDs may have in accessing these resources (Mamboleo et al., 2020). By providing clear information and fostering a supportive environment, universities can encourage students to take full advantage of the support services available to them.

Ultimately, the goal is to promote academic success as well as to enhance the overall well-being and satisfaction of students throughout their educational journey, enabling all students, regardless of their learning differences, to thrive and reach their full potential within the academic setting.

CONCLUSION

Our study was a first attempt to examine whether university services are meaningful to students with SLDs and to what extent they sustain students' achievements and satisfaction. Even though more research is necessary to more fully understand these relations, some interesting information was uncovered. Overall, our findings support the idea that the use of university services is positively associated with academic satisfaction, self-efficacy, and SRL strategies. Furthermore, the use of dispensatory measures and compensatory tools was positively related to academic achievement. This finding underpins the idea that students with SLDs should be granted accommodations to support them during lessons and examinations. University services' main goal should be helping these students realize their full potential during their academic studies. Therefore, it is relevant that universities formally evaluate their support services to understand which resources and accommodations are truly useful for students with SLDs and what could be done to improve their services.

Conflict of interest statement

The authors have no potential conflicts of interest to report.

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APPENDIX

Universal Services Questionnaire

Think about your university and, in particular, the services offered to students. Please indicate to what extent the following sentences describe your experience, following this scale:

1 = *Very rarely*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *Often*;

5 = *Very often*

1. I use my university's library services.
2. I use databases offered by my university (e.g., online books and journals).
3. I attend study rooms.
4. I've turned to my university's orientation and tutoring services.
5. I've turned to my university's psychological assistance services.
6. I use apps delivered by my university to be updated on lesson and exam calendars.
7. I go to my university's canteens.
8. I use my university's structures and sport services.

Specific Services Questionnaire

Think about your university and, in particular, the services offered to the students with SLDs. Please indicate to what extent the following sentences describe your experience, following this scale:

1 = *Totally disagree/Totally false*;
2 = *Strongly disagree/Strongly false*;
3 = *Agree/True*;
4 = *Strongly agree/Strongly true*;
5 = *Totally agree/Totally true*

1. I have a clear picture of the university resources granted to students with SLDs.
2. I've regularly turned to my university's learning disabilities services.
3. I find the resources granted by my university (possibility of one-on-one meetings, study tutors, electronic books, etc.) useful.
4. I think that university services are useful mediation tools when dealing with professors.
5. I use dispensatory measures during lessons and/or exams.
6. I use compensatory tools during lessons and/or exams.

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