Students' self-handicapping strategies in a mathematics course

Estratégias autoprejudiciais dos estudantes em um curso de Matemática

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Abstract

Self-handicapping strategies can be defined as individuals' behaviors or statements, which happen before an important task is performed and work as an excuse to justify a likely poor performance. The use of these strategies can harm the academic performance of students at all levels. The current article presents a case study about the use of self-handicapping strategies carried out with twenty undergraduate Mathematics students from a Brazilian public university. Data collection was based on the application of a Likert-type scale and on a focus group conducted with students. Scale data were analyzed through descriptive statistics, whereas group discussions were subjected to qualitative analysis. Results have shown that most students do not significantly engage in self-handicapping behaviors. Difficulties to manage time and to prepare for academic activities, such as tests, were the reasons most often presented as justification for such an engagement. Data have also pointed out the need of rethinking the role played by teachers and by the atmosphere they promote in the classroom as factors that can contribute to the use, or not, of these strategies by students. Future research may help improving knowledge on these matters.

Keywords: Self-handicapping strategies. Teacher's Training. Mathematics Education.

Resumo

Estratégias autoprejudiciais podem ser definidas como comportamentos ou declarações de uma pessoa, que ocorrem antes da realização de uma tarefa considerada importante e que servem como desculpa para justificar um possível mau desempenho. O uso dessas estratégias pode prejudicar o rendimento acadêmico de estudantes de todos os níveis. Neste artigo, apresentamos um estudo de caso sobre o uso de estratégias autoprejudiciais realizado com vinte estudantes do curso de Matemática de uma universidade pública brasileira. A coleta de dados foi realizada por meio da aplicação de uma escala do tipo Likert e de um grupo focal com os estudantes. Os dados da escala foram analisados pela estatística descritiva. Já as discussões no grupo foram examinadas qualitativamente. Os resultados revelaram que os estudantes, em sua maioria, engajam-se pouco em comportamentos autoprejudiciais. Dificuldades com o gerenciamento do tempo e com a preparação para as atividades acadêmicas, incluindo as provas, foram os motivos mais frequentemente apresentados como justificativas para tal engajamento. Os dados apontam, também, para a necessidade de se repensar o papel do professor e do clima que promove em sala de aula como fatores que podem contribuir para o uso, ou não, dessas estratégias por parte dos estudantes. Pesquisas futuras poderão se aprofundar nessas questões.

Keywords: Estratégias autoprejudiciais. Formação de Professores. Educação Matemática.

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1 Introduction

Human behavior has always been analyzed by the Psychology field under different perspectives. The Social Cognitive Theory considers human beings as agents of their behavior. According to Bandura (2008), being an agent means being able to make things happen intentionally. The agency ability gives individuals flexibility and enables them to play an active role in their development and adaptation processes. In other words, human agency allows individuals to be self-regulated.

Self-regulation can be investigated in different domains (ZIMMERMAN; SCHUNK, 2011; SCHUNK; GREENE, 2018). One of them – which is the object of interest in the present paper – lies on the academic domain and, within it, on the self-regulated learning. Self-regulated students monitor, control, and reflect on their own learning process, and it makes them more autonomous and capable of planning, setting clear goals, employing cognitive and metacognitive strategies, and activating their motivational and self-efficacy beliefs to favor their learning process (ZIMMERMAN; SCHUNK, 2011; PANADERO, 2017; BORUCHOVITCH, 2014; VEIGA SIMÃO, 2004; FRISON. BORUCHOVITH, 2020).

Fostering self-regulated learning in students is an essential role played by school and by teachers, mainly in a society that – on a daily basis – imposes challenges that become increasingly complex throughout the students' development process and need to be overcome. If, on the one hand, individuals strive to overcome these challenges by adopting self-regulated learning strategies capable of leading them to success, on the other hand, some individuals give up in advance when they face difficulties and give excuses to previously justify their likely failure in order to protect their social image, by adopting what the literature calls self-handicapping strategies (BERGLAS; JONES, 1978; MIDGLEY; ARUNKUMAR; URDAN, 1996; GANDA; BORUCHOVITCH, 201; MIRANDA; BORUCHOVITCH; GANDA, 2017; MIRANDA; ALMEIDA, 2020).

Scientific interest in investigating self-handicapping strategies is not a recent phenomenon. Berglas and Jones (1978, p. 406) have defined these strategies as "any action or choice of performance setting that enhances the opportunity to externalize (or excuse) failure and to internalize (reasonably accept credit for) success" – they can be behavioral or verbal. Arkin and Baumgardner (1985) referred to behavioral strategies through the expression *acquired impediments*. On the other hand, Leary and Shepperd (1986) have called them *behavioral self-handicapping*. Examples of this strategy type comprise lack of sleep, drug use and alcohol intake, picking debilitating performance circumstances, strategic effort reduction,

investing little effort, or no effort at all, before or during tasks. Verbal strategies – described in the literature as claimed self-handicapping (LEONDARI; GONIDA, 2007) or self-reported handicapping (LEARY; SHEPPERD, 1986) – "involve declaring one, or more, real or fictitious impediments before a presentation, for example, to previously justify one's likely failure or to make one's success more rewarding for its self-image" (COUDEVYLLE *et al.*, 2020, p. 1). Social anxiety, anxiety before tests, and physical and psychological symptoms, such as alleged health issues, are examples of this self-handicapping strategy type (LEONDARI; GONIDA, 2007).

According to Hirt, Deppe and Gordon (1991), self-reported handicapping strategies are lesser harmful than the behavioral ones, since they do not necessarily diminish one's chances of success in a given task. Thus, if individuals only declare to be anxious before a test, for example, it works as justification for their poor performance, although it does not reduce their chances of success. On the other hand, behaviors such as alcohol intake before a task function as justification for one's poor performance, but they also decrease individuals' chances of achieving a successful performance.

Despite this typology, according to Sameer Babu and Selvamari (2018), most scholars agree that self-handicapping strategies are featured by the behavior of creating obstacles to successful performance in tasks considered important by individuals. It is so because, since the obstacle is potentially harmful to one's good performance, it is used as an excuse for one's likely failure.

Individuals who often adopt self-handicapping strategies have similar profiles. They care about what people think about them based on their performance (GANDA; BORUCHOVITCH, 2016; URDAN; MIDGLEY, 2001; BERGLAS; JONES, 1978) and use these strategies as self-protection mechanism, since successful individuals are the ones acknowledged by society (COVINGTON, 2000; ŞAHIN; ÇOBAN, 2020, COUDELYLLE *et al.*, 2020). Procrastination is another feature presented by self-handicappers (GANDA; BORUCHOVITCH, 2015), since they always postpone their tasks as a defensive strategy to be safe from bad criticism. This behavior is doubly favorable for those who adopt it. If they fail in tests, for example, they can say that it happened because they postponed their studies up to the last minute. Conversely, if they succeed, despite having procrastinated, they will be considered quite skilled in the eyes of others. After all, despite their last-minute study, they succeeded. Engaging in several activities at the same time to justify poor performance can also be typical of self-handicappers (COVINGTON, 2000).

Low self-esteem and weak self-efficacy beliefs are also common features of individuals

who adopt self-handicapping strategies (ZIMMERMAN, 2000; PRAPAVESSIS; GROVE, 1998; CHEN; SUNG; WANG, 2017; YAVUZER, 2015). However, by adopting these strategies, students can be negatively affected in different aspects, such as their self-esteem and self-efficacy beliefs. This behavior generates a vicious cycle. Low self-esteem leads to the adoption of self-handicapping strategies, which, in their turn and on a reverse path, contribute to harm individuals' self-esteem and self-efficacy beliefs (ZUCKERMAN; KIEFFER; KNEE, 1998; MIRANDA; BORUCHOVITCH; GANDA, 2017; ZIMMERMAN, 2000; SCHUNK; ZIMMERMAN, 2008).

2 Self-handicapping strategies and Mathematics

Mathematics has been historically considered a complex school subject mastered by few students, who are taken as the most intelligent individuals in the classroom. Thus, it is feared by many and generates feelings such as aversion and anxiety (TORISU; FERREIRA, 2009; MENDES; CARMO, 2014; SOUZA, 2006). This social representation of Mathematics is shared by several students and triggers stress levels that make them act in certain ways (VALONI DE JESUS, 2020). One of them lies on adopting self-handicapping strategies, which have undesirable outcomes in individuals' cognitive, motivational, affective, and social aspects. Thus, understanding the use of these strategies in Mathematics is a rather fruitful research field for Psychology and Mathematical Education. However, the literature in the field has few studies focused on approaching this topic, both in Brazil and abroad. Thus, considerations about research involving the use of self-handicapping strategies in Mathematics will be herein presented.

Affectivity can be understood from several perspectives: attitudes and values, moral and ethical behavior, personal and social development, motivation, interest, tenderness, interrelation, empathy, subjectivity formation, feelings, and emotions (RIBEIRO, 2010). In addition, it is considered essential to create a favorable learning atmosphere (RIBEIRO, 2010; ECCIUS-WELLMANN; IBARRA-GONZALEZ, 2020), not only in math classrooms. However, difficulties faced by students in Mathematics, as well as the poor relationship they establish with this subject, appear to emphasize the important role played by affectivity in environments where it is taught. In fact, studies conducted by Dorman, Adams, and Ferguson (2001), Turner *et al.* (2002), Turner *et al.* (2003), Dorman and Ferguson (2004), Şahin and Çoban (2020) have shown that affectivity should be considered at the time to explain the higher or lower use of self-handicapping strategies in math classrooms. Most specifically, they

acknowledged teachers as the ones whose discourses, practices, and motivational support contribute to decrease the incidence of these strategies. They also showed that students who do not adopt these strategies tend to have better performance.

Brownlow, Rogers and Jacobi (2000) have investigated the association between sex and the use of self-handicapping strategies in Mathematics. Results have shown that male participants were more likely to adopt self-handicapping strategies and tended to blame external agents for their poor performances. Although Yu and McLellan (2019) did not investigate these strategies in the Mathematics field, they found results similar to the ones reported in previous study conducted with English students – i.e., boys most often adopted self-handicapping strategies to preserve their image in the academic and social spheres. On the other hand, studies conducted by Dorman and Ferguson (2004) with Canadian students, as well as by Leondari and Gonida (2007), with Greek students did not find significant differences in the use of self-handicapping strategies in Mathematics between sexes. Although the research conducted in Turkey by Yavuzer (2015) was focused on a subject other than Mathematics, results have shown higher trend to use self-handicapping strategies among women.

On the one hand, the inconsistency observed in results among several studies about sex and use of self-handicapping strategies points towards the need of further investigating this subject to help better understanding it, given the relevance of sex and its important psychoeducational implications. On the other hand, this inconsistency can be likely explained through the theory by Midgley, Arunkumar and Urdan (2001), according to whom, the use of self-handicapping strategies is more associated with personal differences among students – such as their general motivations, attitudes towards learning, self-beliefs, and the environment they are inserted in – than with sex. With regard to the previously mentioned studies, it is possible that differences observed between sexes are associated with the fact that the analyzed samples derived from different countries. This factor presupposes a wide variety of cultures, values, and beliefs, as well as different ways of valuing the role played by men and women in society, an issue that certainly affects the way people act.

Another interesting finding about the use of self-handicapping strategies by Mathematics students is associated with the self-concept construct. According to Mesa (2012), participants presenting positive self-concept were interested in developing skills, believed in their ability to deal with challenging tasks within the Mathematics scope, and avoided using self-handicapping strategies. Efklides and Vlachopoulos (2012) have shown positive correlation between self-concept in Mathematics and mathematical skills. The aforementioned study has also shown that students who acknowledged their difficulties in Mathematics tended

to adopt self-handicapping strategies more often.

In addition to self-concept, self-efficacy beliefs can also play decisive role in the adoption of self-handicapping strategies. Self-efficacy beliefs refer to individuals' judgments about their ability to carry out tasks in a specific domain (BZUNECK, 2001; PAJARES, 1996; BANDURA, 1997). These beliefs are lesser generic than self-concept. The study by Steinhauer *et al.* (1993) – who used two mathematical tests, among data collection instruments – has shown that students who believed in their mathematical skills took the tests and did not use self-handicapping strategies, although they chose to answer the easiest questions. According to the aforementioned authors, this factor suggests that they knew they were lesser able than they had reported. On the other hand, students who underestimated their math skills have used self-handicapping strategies to avoid being judged by others.

As self-efficacy beliefs refer to specific tasks, it is possible that the option that some students made to answer the easiest questions is associated with their weak self-efficacy beliefs about their ability to answer the most complex questions (BANDURA, 1997; BZUNECK, 2001). In a way, choosing easier questions to ensure success can be understood as self-protection of one's image. Studies focused on investigating the association between self-efficacy beliefs and use of self-handicapping strategies in Mathematics can lead to new and interesting results to help improving academic research on this topic.

Moreover, participants in the majority of the studies analyzed were basic education students, and it evidenced the scarcity of investigations about the use of self-handicapping strategies among Higher Education students, mostly among Mathematics students. Some studies associated with the use of self-handicapping strategies among Higher Education students were carried out in Brazil, (GANDA; BORUCHOVITCH, 2015; GANDA; BORUCHOVITCH, 2016; VARGAS *et al.*, 2018), but none of them focused on exclusively examining students enrolled in Mathematics Licentiate and Bachelor Degree courses.

It is essential to investigate the use of self-handicapping strategies in the Mathematics context, since studies have shown high failure and/or dropout index in disciplines associated with Mathematics, such as calculus, analytical geometry, linear algebra, among others, in Brazilian Higher Education courses belonging to the Exact Sciences field. Most specifically, the calculus discipline is feared by many due to its complexity and to the large number of failures (ALVARENGA; DORR; VIEIRA, 2016; ZARPELON; RESENDE; REIS, 2017), which create a myth around it. This issue is not different among students enrolled in Mathematics Licentiate and Bachelor Degree courses. There are many failures in disciplines such as calculus and analytical geometry. Students often fail, more than once, in the same

discipline, a fact that leads to discouragement and, finally, to students' withdrawal from the course (ROSA; SANTOS; MENDES, 2019; PINTO; MOREIRA, 2018).

These results arouse significant concern, give rise to discussions and invite us to reflect on issues such as: Do Mathematics students with low academic performance use self-handicapping strategies? If so, what would be the most adopted strategies? Accordingly, the current study presents the results of a postodoctoral research that aimed at answering these questions by investigating Mathematics Licentiate and Bachelor Degree students from a Brazilian public university.
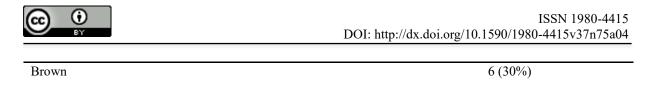
3 Methodology

The present study can be considered as a case study. The whole classroom is taken as a unit of study (VENTURA, 2007). Although our results cannot be generalized, they certainly promote reflection on a problem that affects many students around the world and can both encourage further investigations and shed light on how to help students overcome this problem.

3.1 Students involved in the present study

The sample was composed of twenty students from a night course of Licentiate and Bachelor's in Mathematics of a public university in Minas Gerais, Brazil. Table 1 presents the demographic information of the participants.

Table 1 – Demographic data of the students

Gender	N
Female	9 (45%)
Male	11 (55%)
Age range	N
19 to 23 years	14 (70%)
24 to 44 years	6 (30%)
Type of school attended in high school	N
Attended only public school	15 (75%)
Attended only private school	2 (10%)
Attended both public and private school	3 (15%)
Ethinicity	N
White	12 (60%)

Brown	6 (30%)
Other	2 (10%)

Source: authors

3.2 Data collection instruments

A Likert-type scale comprising nineteen items associated with the use of self-handicapping strategies in the academic context was used for data collection purposes. Responses were distributed into four options, which ranged from 1 (it has nothing to do with me) to 4 (it describes me really well). The total score may range from 19 to 76 points. The higher the score, the more frequent the use of self-handicapping strategies by students in the academic context.

3.3 Data collection procedures and conditions

It is worth emphasizing that the present study is part of a larger research, which was approved by the Ethics Committee of a public university under CAAE number 81094017.0.0000.8142. Data collection was carried out in April and June 2021– when classroom lessons in most institutions were still suspended due to the Covid-19 pandemic – in a Google Meet Virtual Room, a platform that allows synchronous remote meetings with good sound and image quality.

On the day that had been previously scheduled for data collection purposes, students received a link to access the room created in Google Meet and receive the necessary instructions to complete the self-handicapping strategies' scale, one of the scales is available at Autorregular platform, created to host the larger research the present study is part of (BORUCHOVITCH *et al*., 2019). Data collection was carried out by the first author of the present study and a graduate student previously trained to do so. Firstly, students were informed about the research aim, as well as that their responses were confidential, and that collected data would only be used for the study. Students who agreed to participate in the study were asked to sign the informed consent form before completing the scale and providing demographic data. Few issues that emerged during data and scale filling process were all solved. Data collection lasted approximately 20 minutes; the virtual room was closed after the collection procedure was over.

After students' responses to the self-handicapping strategies' scale were analyzed, students who had mostly selected options 3 and 4 were invited to participate in a focal group

meeting, aimed at deepening the information about the use of self-handicapping strategies by these students (DALL'AGNOL; TRENCH, 1999; TRAD, 2009). The focal group meeting was also held in a Google Meet room and lasted approximately 1h 10min.

3.4 Data analysis

Quantitative data associated with responses to the self-handicapping strategies' scale were subjected to descriptive statistics, whereas data collected in the focal group were examined by qualitative analysis. Discussions held in the focus group about the use of self-handicapping strategies shed light into the reasons why some students of the present study chose to use some strategies rather than others. Students' speeches were fully recorded, based on two procedures, namely: notes taken by the first author and audio-recordings.

4 Results and Discussion

4.1 Responses to the scale

The analysis applied to students' responses to the self-handicapping strategies' scale has shown quite interesting results. For example, some self-handicapping strategies were virtually not adopted by the investigated group. Among them, four strategies were associated with classroom behaviors that, based on the analyzed data, are rarely, or virtually not, adopted by most students. The rate of responses to each of the four items in the scale is presented next in Table 2.

Table 2 - Percentage of self-handicapping strategies less employed by students in the classroom

Item in the scale	It has nothing to do with me	It has little to do with me	It describes me well	It describes me really well
(8) Some students postpone some important tasks until the deadline set by the professor. If they get a bad grade, they say the assignment was done in the last minute.	95%	5%	0%	0%
(19) Some students read entertainment magazines during class. If they fail, they say it was because they did not understand the subject.	95%	5%	0%	0%
(4) Some students often leave the classroom. If they get low score in the test, they say it was because they have lost important content.	90%	10%	0%	0%
(3) Some students play with their cell phones during class. If they do not get good results, they say it was because they did not understand the teacher's explanation.	80%	15%	5%	0%

Source: authors

It is worth mentioning that the self-handicapping strategies' scale does not have any item, other than these four, to measure other self-handicapping behaviors specifically observed in the classroom. Thus, these results appear to evidence that virtually all investigated students (80% to 95%) did not report to adopt self-handicapping behaviors in the classroom environment, such as talking to their classmates, reading magazines, playing with their cell phones, or even often leaving the classroom, which can hinder their focus on the teacher's explanations. They seem to control their attention and concentration in the classroom environment. This feature is quite important for the self-regulated learning process (VEIGA SIMÃO; FRISON, 2013; BORUCHOVITCH, 2014; ZIMMERMAN, 2000; GANDA; BORUCHOVITCH, 2016), mainly for future teachers, who will play key role in creating situations to foster the self-regulated learning of their future students. Accordingly, Boruchovitch (2014) has emphasized the importance and need of investigating and understanding how future teachers deal with and manage their own learning in teacher education programs. Moreover, two other items of the scale were also considered as little representative of students' behavior (Table 3).

Table 3 - Percentage of self-handicapping strategies less employed by students outside the classroom

Item in the scale	It has nothing to do with me	It has little to do with me	It describes me well	It describes me really well
(12) Some students report that they need to stay with their friends and/or boy/girlfriend. If they fail, they say they did not have time to invest in their studies.	80%	15%	0%	5%
(14) Some students study the wrong content for the test. If they do not perform well, they say that was the reason.	80%	20%	0%	0%

Source: authors

Item 12 appears to be associated with lack of time management. Individuals can meet their friends and boyfriend/girlfriend without hindering their studies. However, they must manage their time in order to save an ideal period-of-time for each activity, without overlapping them. Item 14 indicates inadequate preparation for academic activities. Only three (15%) of the twenty students appeared to be partly represented by item 12, whereas four (20%) of the twenty students were partly represented by item 14. The response option *it has little to do with me* suggests that they admit this behavior, although it is not very recurrent. Only one of the twenty students was well represented by the statement in item 12, which means that this participant often gives priority to their friends and boyfriend/girlfriend to the detriment of their studies.

With respect to the third scale response option *it describes me well*, nine (45%) of the

respondents used this option to evaluate of their behaviors described by some items on the scale. Of the total number of items, four (4) were more often selected (Table 4).

Table 4 – Self-handicapping strategies mentioned by students as describing them well

Item in the scale	It describes me well
(15) Some students postpone some important tasks until the deadline set by the professor. If they get a bad grade, they say the assignment was done in the last minute.	15%
(16) Some students do not organize their time very well, so they need to stay awake for several nights in a row to do an important assignment. If they get a bad grade, they say they were too sleepy.	25%
(17) Some students are focused on non-essential details of an important activity and do not dedicate time to its content. If the grade is not what they expected, they say they had no time to do a good assignment.	15%
(18) Some students do not dedicate enough time to an important assignment. If the result is not good, they say they were not engaged.	20%

Source: authors

Table 4 shows that three of the twenty students (15%) in the group tend to postpone important tasks until the deadline set and, if they do not do well, they justify their poor performance by saying that they left it to the last minute (item 15). Another four students (20%) do not reserve enough time to carry out an important activity. Thus, the justification for a poor performance in the task is related with short time dedicated to their studies (item 18). The tendency of postponing tasks is called academic procrastination in the literature (GRECCO, 1984) and is a hallmark of people who adopt self-handicapping strategies (GANDA; BORUCHOVITCH, 2015; COVINGTON, 2000). The little time reserved for studies, mentioned in item 18 of the scale, is, according to Akça (2012), a characteristic of students who procrastinate.

Moreover, Table 4 shows that 15% of the students surveyed tend to dedicate most of the time to complete a task to its unimportant details, rather than to the whole task content and, if the result is not good, they say that the time was not enough to do a good job (item 17). A total of five students (25%) do not manage their time and must stay up nights in a row to complete a task requested by the teacher. If the result is not satisfactory, tiredness and sleep are to blame (item 16). It can be noted that in all these cases, self-handicapping strategies mentioned by participants are related to poor time management for study.

It is worth mentioning that the answer option *this describes me well* was selected 26 times and, of that total, in 22 times this option was the answer for a group of only five students. This suggests that they adopt self-handicapping strategies more often than the other surveyed

students. Let us call these five students S1, S2, S3, S4, and S5. We will revisit their behavior further in this paper.

The fourth answer option: *describes me very well* was selected only seven times. Its highest frequency was 10% (two out of twenty), for item 6 of the scale: *Some students intentionally engage in too many activities. If they don't do well on the course, they say they were too busy with other things*.

It is worth mentioning some important findings about students S1, S2, S3, S4, and S5. S1 selected option 3 (*describes me well*) for four items of the scale and option 4 (*describes me very well*) also for four items. S2, S3, and S5 selected option 3 out of three items and did not select option 4. On the other hand, S4 selected option 3 out of nine items and did not check option 4. If we consider that when selecting options 3 and four students admit that their behavior is well represented by the item on the scale, 2 students in the sample stood out for adopting self-disadvantage strategies, namely: S1, who adopts seven of the nineteen strategies; and S4, which adopts nine of them. As it can be seen, participants' selection of response options 3 and 4 was associated with time management, with emphasis on procrastination, most of the time.

Of these five students, three (60%) were men and two (40%) were women. Since the total number of students comprised eleven men (55%) and nine women (45%), the difference in the adoption of self-handicapping strategies between sexes seems to be not significant in this group. This result is congruent with those reported by Dorman and Ferguson (2004) and Leondari and Gonida (2007), who did not find significant differences in the use of self-handicapping strategies in Mathematics between genders. However, it differs from the results of a study carried out by Brownlow, Rogers, and Jacobi (2000), which revealed that males were more likely to adopt self-handicapping strategies with a tendency to blame external agents for poor performance than females. Gender differences in the use of self- handicapping strategies need to be explored by further research since they can have important educational implications.
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4.2 Focal Group

To better understand the reasons why S1, S2, S3, S4, and S5 report using self-handicapping strategies, they were invited to a focus group.

Before reflecting on and discussing with students about the reasons leading them to use self-handicapping strategies, they were asked about the reasons for not adopting some of them. Table 2, described previously in this paper, presents four self-handicapping strategies almost never adopted by students, all related to classroom behaviors.

When students were questioned about their answers, they were unanimous in saying that they avoid behaviors such as leaving the room, playing with their cell phone, talking to classmates, reading magazines, in respect to their teacher. Some responses made it quite clear:

> S5: In respect to the teacher, because it is very annoying, when someone is explaining something, and people are playing with their cell phone, talking [...].
> S1: It is directly linked to the fact that we must respect the person standing in front of us, doing their work. [...] even if it is the most boring subject, the least I must do is respect that person. (Responses from some students during the focal group - 2021).

Some authors have concluded that affective factors can contribute to the use or not of self-handicapping strategies in the classroom (DORMAN; ADAMS; FERGUSON, 2001; TURNER *et al.*, 2002; TURNER *et al.*, 2003; DORMAN; FERGUSON, 2004). According to Ribeiro (2010), respect is an important value and part of an ethical behavior which can be considered as also related to affectivity. Therefore, feeling respect for the teacher in the present study may have assumed the role of an affective factor that had contributed to the non-adoption of self-handicapping strategies.

Student S3 considers that feeling respect for the teacher makes it difficult for him to adopt self-handicapping strategies, such as leaving the classroom, reading magazines, and using the cell phone. However, this student, unlike most of his peers, works full time and has a child to care for. In fact, the only time he has for learning is during class. If he does not pay attention to the teacher's explanations, he will not have another chance to learn. This is interesting data because it shows that a sense of responsibility can prevent the use of some self-handicapping strategies (MINUTTI; SANTOS; FERRAZ, 2021).

However, although S1, S2, S3, S4, and S5 do not adopt self-handicapping strategies in the classroom, they indeed use them in other contexts which are mostly associated with time management and preparation for activities. Students' speeches enable us to understand why they adopt certain strategies. The following responses were obtained from students who were questioned, for example, about the reasons leading them to study only on the eve of the test day, or to leave activities to the last minute:

> S4: Too much content. (Response during the focal group, 2021)
> S1: I often have a hard time managing my schedules, even in face-to-face lessons, but now it got worse due to the pandemic. This question hit me like a bullet in the chest. [...] Sometimes it is not lack of time. One believes it's lack of time. [...] procrastination is something that handicaps me a lot. (Response during the focal group, 2021).
> S2: I found out that I did not manage the time in the remote learning. Before, in my mind, I did not really have time. In the remote learning, I'm at home full time. So, there is enough time. (Responses from some students during the focal group, 2021).

The overload of activities (*too much content*), in association with the complexity of

disciplines in the mathematics course, can compromise the organization of time by several students and lead them to use self-handicapping strategies. Masola and Allevato (2016) have pointed out the need of implementing a didactic update in the process of teaching these mathematical disciplines in Higher Education institutions. Procrastination (word used by S1 to translate their behavior towards activities) is also used in the literature as one of the features presented by students who adopt self-handicapping strategies (GANDA; BORUCHOVITCH, 2016; MIDGLEY; ARUNKUMAR; URDAN, 1996). It is worth mentioning that the content of item 15 of the scale, showed previously in Table 3, deals with procrastination and well represented the behavior of four of the five students. S1 and S5 have highlighted the Covid-19 pandemic time – which forced institutions to implement remote teaching – as something that enhanced their time organization difficulties or contributed to their perception that, although they have time, they procrastinate.

With regard to anxiety, S4 and S5 have said they feel anxious before tests they did not prepare themselves for. According to S5:

> S5: There were times when I could not take the test. I did not prepare for it and when the time came to take the test, my head started to throb. [...] I have anxiety and I get very agitated before any test. It ends up handicapping me. [...] I get anxious thinking about my score. If I don't do well, I'll have to take the final test
> (S5 student response during focal group, 2021).

Although the future is not something that S5 can know, she cognitively represents it in the present as something bad (to get a low score) and this is the cause of her anxiety before the tests. S5 admits occasions when she did not prepare for the test, but she blames anxiety for her likely poor performance. Leondari and Gonida (2007) have classified anxiety claim before tests as claimed self-handicapping (COUDEVYLLE et al., 2020) or self-reported handicapping (LEARY; SHEPPERD, 1986).

An important point to be discussed, raised by S5's response, lies on the value given by students to the test scores. It seems to reflect the highest value given by society to the most successful individuals (COVINGTON, 2000; ŞAHIN; ÇOBAN, 2020, COUDELYLLE et al., 2020). The anticipation of a probably low score generates anxiety, which is used to justify one's likely poor performance. Excessive valuation of scores in tests is something that needs to be debated in academic research, since scores have been used as the only parameter to classify individuals as successful or unsuccessful students. Thus, in the case of S5, low score can represent the undesirable label of unsuccessful student, which is something that she does not want for herself. Self-handicappers care about the judgment of others due to their performance (GANDA; BORUCHOVITCH, 2016; URDAN; MIDGLEY, 2001; BERGLAS; JONES, 1978)

and it may be the reason why they use self-handicapping strategies as a self-protection mechanism.

This discussion leads to new questions: To what extent can the evaluation based on scores contribute to the adoption of self-handicapping strategies by students? Based on a broader perspective, to what extent does the teachers' pedagogical practice collaborate to this behavior? Several studies have emphasized teachers as the ones whose discourses, practices, and motivational support contribute to higher or lower adoption of self-handicapping strategies by students (DORMAN; ADAMS; FERGUSON, 2001; TURNER *et al.*, 2002; TURNER *et al.*, 2003; ŞAHIN; ÇOBAN, 2020). If one considers these results and S5's response, which shows the importance given by several students to scores, it is necessary to think about how teachers can reverse this scenario by adopting different ways of evaluating their students, without relying only on tests.

One of the self-handicapping strategies selected by these five students as representative of their behavior is associated with the poor organization of time to prepare activities or to study to take tests, a fact that forces them to stay up all night. Tiredness after a long night of studies, oftentimes fruitless, turns out to be the justification for students' poor performance. Scholars such as Berglas and Jones (1978) and Leary and Shepperd (1986) had already considered this type of behavior as typical of self-handicappers.

In fact, the focal group meeting has encouraged the debate among students and enabled deepening the discussion about the use of the self-handicapping strategies. Students listened to the opinions of others and had the opportunity to better consolidate their initial opinion, as expected by using this technique (DALL'AGNOL; TRENCH, 1999; TRAD, 2009).

5 Final considerations

The aim of the present study was to investigate the self-handicapping strategies adopted by undergraduate Mathematics students from a Brazilian public university. Results were encouraging and revealed that, overall, the investigated students do not always resort to these strategies.

The five students who have mostly felt represented by the statements in the self-handicapping strategies' scale - and, therefore, were the ones who mostly selected response options 3 and 4 – have pointed out that the strategies adopted by them were associated with the management of time to prepare for activities, such as tests.

Lack of time organization generates some issues in the academic life of these students,

and it makes them to adopt self-handicapping strategies. Examples of these issues comprise last-minute studies leading to loss of nights of sleep, procrastination, anxiety before the tests, among others. However, some responses have generated discomfort in this regard and need to be addressed in future research, mainly in studies focused on investigating the role played by Higher Education professors.

Excessive number of activities to be accomplished was one of the justifications for students' poor time management. Another justification for students' anxiety before tests was associated with their fear of having a poor performance (low score). Despite the alleged good training in undergraduate courses, these responses can function as warning about structural issues in these courses and in the training of university professors. Is it true that students get overwhelmed with many activities? Do teachers give too much importance to tests to the detriment of other training aspects, which ends up triggering the students' fear of failure?

It is also recommended conducting further studies focused on identifying self-handicapping strategies adopted by undergraduate Mathematics students by using larger and more representative samples, as well as studies including variables such as self-concept, self-efficacy, and academic performance, among others. Future investigations on this theme should be based on the combination of quantitative and qualitative research procedures to help better understanding of the complexity involved in the process of adopting self-handicapping strategies. Assumingly, results of research based on these purposes can reverberate and lead to changes in the discipline matrix and in the way teachers and students perceive their education and skills. These results can also be used to guide interventive actions aimed at strengthening students' self-regulatory processes to enable better time management and control of their emotions.

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