

Students' Academic Stress and Its Relationship with Prospective Memory Ability and Strategies

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Abstract. Enhanced memory retention is a crucial skill for students during their academic pursuits. Their capacity to recall future tasks is vital in effectively managing their schedules, workloads, and deadlines. However, academic stress can impair prospective memory functioning, which is responsible for remembering to perform future planned actions. This study examined the relationship between academic stress and students' prospective memory ability and strategies. Three hundred eighty-seven (387) college students completed a self-report questionnaire to assess the correlation of studied variables. Using a descriptive-correlational analysis, the data gathered from respondents were analyzed. Furthermore, insights and experiences were collected from a focus group discussion comprising fifteen (15) participants to complement the quantitative results using a manifest content analysis. Results revealed that academic stress significantly correlates with prospective memory ability and the strategies employed. It suggests that students who experience academic stress grapple with lapses in remembering planned actions they need to perform in the future, leading to repercussions ranging from minor to significant. In contrast, their strategies help them effectively avoid forgetting tasks. Consequently, they develop specific external aids like notes, alarms, calendar reminders, and internal strategies such as mental task organization and rehearsal. These findings offer valuable insights into managing academic stress and its impact on memory retention. Thus, it underscores the need for proactive measures to enhance memory recall, addressing students' challenges.

Keywords: Cognitive; Academic stress; Undergraduate; Prospective memory; Memory strategies.

1.0 Introduction

Stress is a condition that involves tension and worries as a response to challenging or abnormal situations (World Health Organization, 2023). These situations affect a diverse range of individuals regardless of their sex, age group, socioeconomic status, and family background (Kitzrow, 2009). Unfortunately, recent evidence suggests that college students were categorized as one of the vulnerable groups more prone to acquiring stress (Marthoenis et al., 2018; Pascoe et al., 2020). The COVID-19 pandemic has further exacerbated this issue, with studies showing a significant increase in stress levels among students due to the sudden shift to online learning, social isolation, and uncertainty about the future. In the Philippines, a recent survey conducted in 2019 by Social Weathering System (SWS) confirmed that 24% of young adults within the age bracket of 18-24 years old have reported experiencing stress during the year 2019, with significantly higher results on high-stress levels from respondents residing in

Metro Manila. This data took a toll after the COVID-19 pandemic, with around 68% of individuals belonging to the Generation Z demographic affected by the onset of the pandemic, resulting in heightened stress levels (Banzuelo, 2022).

For college students, academic work is one of the significant stressors influencing their increased stress levels (Bate et al., 2019). These stressors encompass their experiences of workloads, academic exhaustion, negative self-perceptions, difficulty coping with course-related issues, professors' poor content knowledge, and pedagogical competence (Yikealo et al., 2018). Students experience academic stress due to pressure from others and themselves within the academic context, which affects their psychological health (Misra & Castillo, 2004; Neseliler et al., 2017). As students are expected to fulfill their responsibilities, face expectations inside and outside the four-walled classrooms, and find balance through them, their likelihood of acquiring academic stress escalates (Ali et al., 2019). New research suggests that Filipino college students experience academic stress for several reasons. These include academic difficulty (i.e., having to handle multiple tasks and responsibilities at once, not being able to manage time well, and working alone) (Dy et al., 2015), as well as subject-, teacher-, and peer-related stressors like having to deal with strict teachers (Reddy et al., 2018), meeting deadlines, and uncooperative classmates (Austria-Cruz, 2019). Unfortunately, these heightened academic pressures that lead to stress are often associated with severe physical and psychological concerns. Researchers investigating stress among students found that academically stressed students were more likely to experience decreased satisfaction with life (Civitci, 2015), diminished quality of life (Berdida & Grande, 2023), and develop other serious psychological problems such as depression, anxiety, and sleep deprivation (Wang et al., 2022). Furthermore, academic stress harms executive functioning, particularly memory, as observed in previous studies (Hj Ramli et al., 2018; Koch, 2018).

One of stress's most significant adverse effects is its impact on memory. Stress-induced memory impairment can significantly hinder students' academic pursuits (Garland, 2020). Studies have shown that heightened stress directly influences the selection of memory systems for encoding and retrieving information, making it difficult for individuals to recall essential information crucial for their academic endeavors (Vogel & Schwabe, 2016). Prospective memory, a type of memory that is vital and frequently employed by students, is particularly affected by stress. Prospective memory, often called 'PM,' involves the brain's activity in which an individual plans future tasks and recalls these intentions, when necessary, based on present cues (Einstein, 2014). For students, PM tasks include meeting deadlines, exam preparations, and remembering class schedules or meetings. These tasks are fundamental for daily routines, essential for maintaining an individual's life functioning, and positively impacting overall well-being (Burgess et al., 2001). However, memory failures, especially in prospective memory (PM), are prevalent among students. Experimental studies by Niedźwieńska et al. (2020) emphasize that PM failures are more common and severe than other memory lapses for this demographic, leading to noticeable consequences.

Furthermore, a study by Piefke and Glienke (2017) notes that various stressors impact one's ability to employ prospective memory. Similarly, Ihle et al. (2012) highlight that everyday stress perception among younger adults negatively influences PM use. Chen et al. (2019) also found that heightened stress in college students led to poorer performance in PM tasks based on their field experiment. However, conflicting findings from Stewart and McFarland (2020) suggest that chronic and acute stress might not consistently impact prospective memory, indicating other influential factors, such as the duration and severity of stress. They also found that stress might be a positive indicator of PM activity, which, in essence, is helpful for retrieving information about plans.

To mitigate these stress-related prospective memory issues, students often employ strategies that aim to enhance prospective memory, known as 'prospective memory strategies.' These internal and external strategies show promise in improving memory function. However, the use and effectiveness of these strategies can be influenced by the level of stress a student is experiencing. For instance, high stress levels may impair a student's ability to effectively use these strategies, while lower stress levels may enhance their effectiveness. External strategies involving environmental support for memory cues include list-making, setting alarms, or placing reminders in prominent locations (Rummel et al., 2019). Conversely, internal strategies include mental imagery, repetition, and mnemonic devices (Harris, 1980). While older adults tend to rely more on external strategies, Bouazzaoui et al. (2010) discovered that increased use of internal strategies correlates positively with executive functioning and adaptable intelligence. Interestingly, smartphone usage as part of external strategies has shown promise in enhancing prospective memory-related tasks (Pillado et al., 2020).

Prospective memory is crucial for young adults to achieve their future intentions and fulfill their obligations.

However, a strain on memory ability can cause significant challenges. This study highlights the importance of memory in students' academic and personal lives, as they often use it to cope with the pressures of their obligations. The correlation between stress and prospective memory is highlighted among students based on previous studies, but there is a blurred line between the types of stress contributing to memory failures. This study aims to clarify the discrepancies in the relationship between stress and prospective memory (Stewart & McFarland, 2020), focusing on academic stress among students. It provides an in-depth understanding of how academic stress may correlate to memory function, particularly PM ability, and the strategies used to prevent forgetfulness. Specifically, this study determines the directionality of the relationship between academic stress and prospective memory ability, as well as the strategies students use. It is hypothesized that perception of academic stress will negatively correlate with prospective memory ability (Alternative Hypothesis 1) and strategies (Alternative Hypothesis 2). Finally, using the focus group responses, this study elaborated on their experiences with PM failures and their healthy and unhealthy coping strategies.

2.0 Methodology

2.1 Research Design

This study explored the relationship between academic stress and prospective memory ability and strategies. To achieve this, a non-experimental descriptive-correlational design was utilized. This design is well-suited for examining and describing relationships between variables without manipulating them (Aliaga & Gunderson, 2002) and was chosen to provide a comprehensive understanding of the relationship between variables in this study. To support the quantitative findings, qualitative manifest content analysis was employed to enhance comprehension of the gathered results. This analysis specifically focuses on observable and apparent elements, emphasizing the 'content' of the findings. These insights, derived from participant interviews or focus groups, were subsequently coded and categorized (Bengtsson, 2016).

2.2 Participants and Sampling Technique

A non-random, purposive sampling technique was used to find respondents. Three hundred eighty-seven (387) college students who are 18–24 years of age, currently enrolled in the academic year 2022–2023, studying at schools within Metro Manila SUCs and HEIs, have not experienced any brain injury or trauma, and are not clinically diagnosed with any cognitive impairments or mental conditions, participated in the study. Nine (9) females, five (5) males, and one student whose sex was not revealed were subjected to a focus group discussion. The participants came from varied courses and year levels. They were grouped into two groups, with eight students classified as having low and seven as having high academic stress.

2.3 Research Instrument

The students' perceived academic stress was assessed using the Perceived Academic Stress (PAS) Scale (Bedewy & Gabriel, 2015), an 18-item survey questionnaire designed to measure students' perceived academic stress from three sources: workloads and examinations, academic expectations, and academic self-perception. This scale, which uses a 5-point Likert-type scale, was chosen for its ability to capture recent perceptions and experiences about academic stress accurately. The PAS scale's overall internal consistency after pilot testing was deemed good ($\alpha = 0.83$), and the subscales exhibited alpha levels interpreted as tolerable and suitable for use in the study, further reinforcing the thoroughness of our research process.

The study used the Metacognitive Prospective Memory Inventory-short version (MPMI-s) (Rummel et al., 2019b) to assess students' prospective memory ability and strategies. The PMA scale has 5-point Likert-type questions, with higher scores indicating more vital memory ability, while lower scores suggest poorer memory ability. The PMS-internal scale measures how frequently people use internal memory techniques to recall tasks, while the PMS-external scale measures how often people rely on external strategies. Cronbach's internal consistency score demonstrated consistent reliability as a good scale for assessing PM ability and strategies in the context of the respondents: PMA ($\alpha = 0.70$), PMSi ($\alpha = 0.86$), and PMSe ($\alpha = 0.81$).

Finally, to substantiate the results of the scales. A researcher-made questionnaire was used as a tool for a separate focus group discussion. Seven questions were aimed at expounding the participants' thoughts, experiences, feelings, and strategies to cope with academic stress and prospective memory failures. Sample questions for both groups were "How do you define academic stress?", "What were your thoughts about having a high or low academic stress perception?" and "What specific ways do you remember the tasks you need to accomplish in the future to avoid forgetting them?"

2.4 Data Gathering Procedure

To collect quantitative data, a survey questionnaire was administered via Google Forms. Promotional material containing the form's link and QR code was disseminated across social media platforms like Facebook to attract a diverse pool of respondents, ensuring the inclusivity and representativeness of our data. To incentivize survey participation, a P300 cash raffle was offered to selected students who completed the survey. For the focus group, descriptive analysis was used to determine the average perceived academic stress among the 387 respondents. Sixteen potential participants meeting the criteria for focus group discussions (individuals with high and low perceived academic stress scores) were contacted via Gmail. However, only 15 agreed to participate. The focus group discussions were conducted using separate Google meetings for high- and low-academic-stress groups. The researchers sought and obtained participants' consent to record the sessions for transcription, which was unanimously granted.

2.5 Data Analysis Procedure

To test the hypotheses of this study, which are (1) that there is a significant negative relationship between perceived academic stress and prospective memory ability and (2) that perceived academic stress has a significant negative correlation with PM strategies, the researchers used Pearson's *r*. For the FGD responses, the researchers adapted manifest content analysis to code each of their answers and then categorized all similar constructs to formulate a general theme. In performing content analysis, the researchers adhered to Bengtsson's framework (2016). These steps were divided into five: (1) decontextualization, (2) recontextualization, (3) categorization, and finally, (4) compilation of the results and starting the write-up. Hence, the results of these analyses and the literature review were merged and incorporated to formulate critical findings.

2.6 Ethical Considerations

The study was conducted in strict adherence to established ethical standards and procedures. Ethical practices were consistently observed and followed, with all processes closely monitored and supervised by a senior, well-published researcher in the field of psychology, who is also a registered psychologist. All participants, for both the survey and interview components, were provided with and signed an informed consent form, clearly outlining their voluntary approval to partake in the study. Throughout the research process, all collected information was treated with the utmost confidentiality and respect, safeguarding participant anonymity and privacy.

3.0 Results and Discussion

3.1 Correlation Analysis of Perceived Academic Stress, Prospective Memory Ability, and Strategies

The Pearson correlation analysis shows a significant negative correlation between perceived academic stress and prospective memory ability ($r = -.217$; $p < .001$). These findings indicate a negative correlation between students' ability to remember future planned tasks and their perceived academic stress. Furthermore, perceived academic stress significantly correlates with internal ($r = -.150$; $p = 0.003$) and external ($r = .142$; $p = .005$) strategies.

Table 1. Correlation Matrix

Variables		PM Ability	PM Strategy - Internal	PM Strategy - External
PM Ability	Pearson's <i>r</i>			
	df			
	p-value			
PM Strategy - Internal	Pearson's <i>r</i>	.243***		
	df	385		
	p-value	<.001		
PM Strategy - External	Pearson's <i>r</i>	.169***	.579***	
	df	385	385	
	p-value	<.001	<.001	
Perceived Academic Stress	Pearson's <i>r</i>	-.217***	-.150**	-.142**
	df	385	385	385
	p-value	<.001	.003	.005

Correlation is significant at the .003 and .005 levels; *Correlation is significant at the .001 level (one-tailed)

The results of the current study indicate that prospective memory (PM) is likely to decline in the presence of academic stress. This inverse relationship aligns with the findings of Chen et al. (2019), who observed reduced PM performance in college students experiencing high stress during laboratory tasks. More specifically, their

neuroimaging data showed that increased stress was associated with decreased functional connectivity in hippocampal subregions, suggesting that stress impairs the brain regions critical for encoding and retrieving future intentions.

The present study supports these findings by demonstrating similar behavioral outcomes in a naturalistic academic setting, thus extending Chen et al.'s results beyond the laboratory environment. While Chen et al. focused on acute stress measured at the time of testing, our results suggest that sustained academic stress may also contribute to diminished PM performance over time. This provides further evidence that chronic stress exposure may have cumulative effects on memory systems, particularly those reliant on hippocampal function. Therefore, the current findings not only confirm prior work but also highlight the ecological validity of the stress-PM relationship in real-world academic contexts.

Similarly, Rimmele et al. (2022) concluded that stress significantly influences memory tasks that require substantial executive functioning capabilities. They found that individuals with higher levels of perceived stress performed worse on memory tasks that demand substantial executive resources, such as attention shifting and goal maintenance. These findings suggest that stress impairs the executive control processes required for forming, maintaining, and executing intentions—functions central to prospective memory.

This study builds upon these insights by situating the stress-memory relationship within the academic context, where students often juggle multiple deadlines and competing demands. This academic multitasking inherently engages executive functioning, thus making PM particularly vulnerable to stress-related cognitive disruptions. By examining this phenomenon in a real-world setting, our findings not only reinforce the aforementioned study's conclusions but also underscore the practical implications of academic stress on students' ability to remember future tasks—an essential skill for academic success.

Another noteworthy result of this study is a link between perceived academic stress and prospective memory strategies that exhibited a statistically significant negative relationship, and alternative hypothesis 2 was also accepted. This suggests that the utilization of prospective memory (PM) strategies by students explains the decrease in academic stress. These findings encompass the responses of the individuals in the focus group, which is further discussed below, considering both those experiencing low levels of academic stress and those experiencing high levels of academic stress.

3.2 Focus Group Discussion of Low-Stress and High-Stress Participants

To substantiate the study's results, a content analysis was undertaken to explore how students are affected by academic stress and how this influences their prospective memory ability and PM strategies. Table 2 presents the demographics of the participants.

Table 2. *Demographic Profile of FGD Participants*

Assigned Code	Age	Sex	Academic Stress Level
C1-F-23	23	Female	Low
C2-F-20	20	Female	Low
C3-F-21	21	Female	Low
C4-F-22	22	Female	Low
C5-F-22	22	Female	Low
C6-F-20	20	Female	Low
C7-F-21	21	Female	Low
C8-F-24	24	Female	Low
C9-P-21	21	Prefer not to say	High
C10-M-20	20	Male	High
C11-M-21	21	Male	High
C12-M-21	21	Male	High
C13-M-21	21	Male	High
C14-F-21	21	Female	High
C15-M-21	21	Male	High

Thoughts and Experiences of Having High and Low Academic Stress

Both groups shared their experiences of academic stress. In particular, the low academic stress participants have provided valuable insights into their strategies for maintaining a balanced approach to their tasks and preventing overwhelming stress. They often prefer an optimistic outlook when facing challenging academic conditions.

Task Regulation. Stress remains a factor for the low-stress group, but effective time management plays a crucial role in stress reduction. Students who are good at managing their time well and allocating it to tasks find that adherence to a set schedule significantly helps them maintain low academic stress.

"I tried to manage my time well because time is the enemy here. The tasks are a lot, but you can accomplish everything if you manage your time well." [C1-F-23]

"Some factors vary and explain why I have low academic stress. Maybe it is time management and the feeling that I need to do an activity. It is still there; that is why I overcame it." [C5-F-22]

Stress Reduction. A solid support system is key to reducing academic stress for low-academic-stress groups. This underlines the value of social connections in academic life. In addition to relieving stress and recovering from lower academic pressure, low-academic-stress participants prioritize relaxation and self-care while employing improved time management practices.

"And of course, if you have established a good support system, for example, from your friends and family, it also lessens the stress you sometimes encounter." [C3-F-21]

"I think my response is taking time to rest, self-care, and telling myself that I can return to having low academic stress." [C7-F-21]

Conversely, individuals with high perceived academic stress are engaged in identifying the causes of their stress and acknowledging the adverse consequences it imposes on their well-being. Based on the responses, they were thinking about being bombarded with tasks, the pressures they face from different factors, and so on. Hence, this explains their high academic stress levels.

Academic Self-perceptions. For high academic stress groups, stress arises from many sources. These include pressures to perform well in tasks and academic requirements that are influenced by their peer and parental career pressures.

"It seems like it was only in college that I had high academic stress. Since high school, I have not put pressure on myself. But then, when I went to college, the mindset changed that I needed to comply, or I needed to keep up with others" [C12-M-21]

"I tend to be pressured a lot, and the pressure is because it does not come only now. Nevertheless, it has been recurring since I was just a child. It seems like I have many expectations because, you know. It is like being a teacher's son, so you must perform better." [C10-M-20]

Workloads. High academic stress is caused by the weight of having multiple responsibilities that are still unsettled.

"The burden on my mind is that I have so many things to do, but I have not started them all yet. So, for me, this is also another factor in my academic stress." [C15-M-21]

Negative Outcomes. High academic stress causes them to feel exhausted and harms their overall well-being.

"As a person with a high academic stress, if the 'high' one is removed, it seems normal to have stress, but because it is exhausting sometimes or often, it is detrimental for students... I also observe that the decline of my mental and physical health is obvious, and I think it is not okay if it is not regulated. Instead of performing, my academic performance was impacted even more." [C15-M-21]

The focus group findings reveal that students with low academic stress manage it through effective time management and strong social support systems. This aligns with Fu et al. (2025), who found that students with strong time management skills exhibit better academic engagement due to greater self-control and fewer distractions. Similarly, Acoba (2024) emphasized that social support improves psychological well-being, which is affected by the impact of stress, which our participants echoed through their emphasis on rest, self-care, and peer support.

In contrast, high-stress participants reported feeling overwhelmed by expectations and workloads, leading to emotional and physical exhaustion. These accounts reflect Pascoe et al.'s (2020) findings that high academic stress negatively affects students' mental and physical health. Our qualitative insights add depth to these studies by illustrating how these stressors are experienced and interpreted by students in their own words.

Prospective Memory Failures Experiences

Both the groups with low and high perceptions of academic stress have seen instances of prospective memory failures. The experiences can be classified into two distinct groups, namely minor and significant tasks. Individuals in the low academic stress perception group frequently overlook or disregard work, categorized as minor when prioritizing larger tasks. Whenever they fail to remember essential tasks, it is primarily attributed to their overall experiences of academic stress, simultaneous activities, and the inability to keep track of their predetermined timetable.

Minor Tasks. According to students from low academic stress groups, prioritizing major tasks can lead to forgetting minor ones, leaving them behind. This is because they know the consequences of forgetting major tasks, hence forgetting such non-impactful activities.

"For me, there is nothing much because I set the alarm or I jot down notes whenever I need to, or there is an important task, so there is no major, but there are minor instances like I forgot to attend the class so that I will be late" [C8-F-24]

Major Task. For some students from low academic stress groups, experiencing exhaustion due to alleviated academic stress led to completely forgetting the supposed tasks. In addition, due to concurrent academic assignments, they forgot important tasks like reviewing for examinations, announcing information in the class, and submitting a paper required for the course subject.

"...with so much academic stress, I forgot about it, and I fell asleep, and I did not pass, so it was like 100 points, and it was huge, and the LMS was closed at that time, and it was restricted." [C2-F-20]

"...we did not pass it yet, so we can edit if there is anything else that needs to be edited or something, and then there was an event on Wednesday, so when Thursday came, we forgot to pass it, and it is an important activity because it is part of our midterm exam." [C6-F-20]

Interestingly, those in the high academic stress perception group have significantly experienced forgetting essential tasks or failing to recall their future intentions that are considered necessary. Like the low academic stress perception group, the following concerns relate to their prospective memory (PM) failures due to their general experience with stress, concurrent workloads, and losing track of time.

The high academic stress group says that having high academic stress negatively impacts memory, affecting their ability to recall essential tasks and manage responsibilities effectively. Furthermore, most of the functions were forgotten or left behind due to the overwhelming number of activities given at the same time. Sometimes, they went off track from scheduled significant tasks, further increasing stress.

"I think that academic stress contributes to what? Contributes to my ability to remember things. Especially the things that are important to me. So, that is it. It is like there was a... It is like my memory is declining, or it gets weaker when there is more stress." [C14-F-21]

"...you are bombarded with many activities, and that is the stress, or you do not know what to prioritize, what will you choose first? It is like that: there are activities that you have prioritized, but at the same time, you forget or leave behind important activities." [C10-M-20]

The findings of content analysis can further substantiate these claims based on hypothesis 1. Participants in low and high academic stress perception groups have experienced minor to major prospective memory failures due to general academic stress and different academic stressors. In the low academic stress group, participants experience concurrent workloads and simultaneous upcoming examinations, which can be overwhelming, making it challenging to prioritize significant tasks. As a result, they forget and neglect minor tasks due to this bombardment, leading to increased academic stress.

Furthermore, the researchers noticed an interesting finding from the focus group participants. Those under high academic stress have been observed to experience significant memory problems, such as failing to recall passing a final paper, forgetting to edit a video until the deadline, missing classes due to not recalling the schedule, and more. According to the participants, these forgetting issues were attributed to concurrent tasks, losing track of time, exhaustion, and overall academic stress. However, it is also crucial to note that, although significantly related, there was a relatively weak correlation between the two variables. The possibility is that, as studied by other researchers, other associated factors are attributable to prospective memory failures that are present among students during data gathering. These include the intake of substances and alcohol (Elliott et al., 2021; Heffernan et al., 2019; Kyriacou et al., 2021; Levent & Davelaar, 2022), viral infections (Avci et al., 2018), and anxiety (Bowman et al., 2019; Da Silva Coelho et al., 2023). Academic stress is one type of stress, meaning there could be other stress factors like family-related stress, personal stress, and work-related stress that act as confounding variables.

Prospective Memory Strategies

Participants in both groups utilize strategies to avoid the negative consequences of PM failures. Participants with low academic stress frequently rely on external cues to remember tasks, such as writing notes, receiving notifications from calendars and alarms, and relying on the physical presence of cues. According to them, these are the best approaches for remembering tasks and staying on track to help them remember their schedules.

External Strategies. For low academic stress groups, conventional writing modalities such as notebooks, adhesive notes, and smartphone applications for task management facilitate enhanced retention. In addition, using a calendar or alarm alert reinforces one's memory of tasks.

"For me, what I do specifically to remember my tasks is to set an alarm on my phone and then set a time to monitor what I am doing. Then I have something on the calendar, and then on the calendar, I will create a deadline for a specific task, like even in the review, I am doing something." [C5-F-20]

According to low academic stress groups, another way of remembering future tasks is to put physical notes or reminders in prominent locations so people can see and be reminded of the tasks they need to do.

"I have a mini whiteboard in my room that I also take notes on. So that if I ever forget the notes I wrote on my phone, at least I can still see them, and it is still visible to me, and I can read them because it is close to my dresser, so I can read them and see them." [C8-F-24]

On the contrary, participants with high academic stress employed internal and external strategies.

Internal Strategies. Regarding the internal strategies of the high academic stress group, some mentioned that constantly thinking about the tasks helps recall those tasks. Another participant stated that organizing the tasks in their mind is an excellent way to remember them. However, when asked if they would continue employing these strategies, they said that although it is helpful in some ways, constantly thinking about future tasks while doing an ongoing task increased their worry and made them lose focus on the ongoing tasks they are doing.

"I am consciously thinking of the buried tasks while I am working on the current tasks that I have. It is not helpful since it contributes to my unwillingness to be productive." [C11-M-21]

"I organize them in my mind, then I am the one responsible if I check it against the checklist in my mind" [C15-M-21]

External Strategies. As a result, they opted to use external strategies, such as those with low academic stress perception, to remember the tasks. They added that it is also helpful when someone reminds them of their tasks.

"What I do is I make notes on my phone. Then, after that, I have a list of tasks and their deadlines." [C9-P-21]

"So, I also have an alarm. This online group discussion, I put it on my Google calendar, there is an alarm so I can remember it... the moment I make one, and I resort to this way, it becomes helpful for me in accomplishing my tasks." [C10-M-20]

"The first way is to write the things to do on the improvised whiteboard posted here on my wall. So, I wrote everything that needed to be done there. There are also specific dates when they should be finished... Are these strategies helpful? For me, yes. Because when I do that, I do not forget anything." [C13-M-21]

"To remind myself, what I did was I commanded my friend. So, I always share the tasks and ask, "Hey, can you remind me that we have an assignment? Chat it with me." [C15-M-21]

Based on their assertions, the specific strategies (internal and external) they used to facilitate task retrieval are efficacious in prompting timely cues, reminders, and notifications, considering the circumstances in which they find themselves.

As explored by the researchers, in terms of prospective memory strategies, both internal and external strategies were highly employed by students. This explains why these students can avoid forgetting their required tasks, as these strategies provide cues for remembering such tasks. Since students utilize internal strategy, the researchers infer that these students may have a positive relationship with higher-order cognitive skills such as executive functioning and adaptive intelligence (Bouazzaoui et al., 2010). For example, during the FGD, some students who experienced higher academic stress mentioned that they highly organized their tasks mentally to avoid forgetting them. They affirmed that this approach is helpful for them. Hence, their use of internal strategies adheres to Harris's (1980) description of properly using prospective memory internal strategies. These strategies include employing mental pictures or the loci process, repeating details to remind oneself, and using mnemonic devices like forming symbols or building a tale in which the work must be recalled. However, it is also important to note that some students who use their internal strategies like doing mind rehearsal or organizations might experience memory load where their planned tasks in the future affect the ongoing activities they are doing currently, hence impairing their attention and causing further impact to their academic stress (Khan et al., 2008; Kliegel et al., 2001, 2004; Marsh & Hicks, 1998).

On the other hand, students also employed external strategies extensively, and according to their responses in the FGD, both high- and low-academic-stress groups mentioned that using external cues was helpful and practical for them. They utilize tools such as writing on their note application, setting alarms and calendar reminders on their smartphones, and receiving reminders from their friends or classmates. Hence, these findings are consistent with the current report on using smartphones to mitigate prospective memory failures among adults. Integrating task reminders via smartphone applications can reduce the cognitive demands associated with prospective memory, including "encoding, storage/consolidation, spontaneous retrieval, and monitoring/vigilance" (Benge & Scullin, 2022; Scullin et al., 2022).

4.0 Conclusion

This study aimed to confirm previous claims about the correlation between stress and prospective memory ability, specifically examining academic stress among students. In conclusion, academic stress was correlated with a decrease in students' prospective memory ability and strategies, and vice versa, leading to difficulties in remembering planned tasks. To address these prospective memory concerns, students devised various strategies. Externally, they often relied on tools such as notepads, calendars, smartphone applications, and alarms to organize tasks. Internally, many high-stress students attempted to reorganize their tasks mentally, but this often interfered with ongoing activities, increasing stress. Additionally, this research identifies essential roles of guidance counselors and educators. Such frameworks can help students deal with academic pressure without causing memory lapses. They should work towards the establishment of supportive learning environments through the evaluation of workload allocation and the identification of the students who might be at higher risk of academic stress and cognitive overload. Future research is encouraged to extend these results by investigating interventions specifically addressing academic stress and potential memory enhancement. Longitudinal designs may investigate interactions among these variables across time, and experimental research may evaluate the effectiveness of particular coping strategies or counseling interventions. Future research may further extend to

varied educational levels or working populations to determine generalizability.

5.0 Contribution of Authors

Mike Stephen Licup: conceptualization, proposal writing, data gathering, analysis, original draft writing.
Princess Dea Galez: review and editing, formatting.
Antonio Jose Maliwat: review and editing, formatting.
Roenn Kyle Mangilit: review and editing, formatting.
Teresita Rungduin: supervision, validation.

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9.0 References

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