

# Role of Academic Procrastination on Metacognition of Senior Secondary School Students of Central Kashmir

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## ABSTRACT

Procrastination is a universal phenomenon that affects most people in a variety of contexts. Academic procrastination is so common that it calls for systematic study that first identifies risk factors for academic procrastination and then looks at potential solutions, such as metacognition, to lessen it. Metacognition is comprised of metacognitive control and metacognitive knowledge. Metacognitive control refers to the capacity to govern and to regulate one's cognitive processes while metacognitive knowledge refers to the awareness of one's own cognitive processes [1] have found that Metacognition is crucial in understanding and forecasting procrastination. This study aims to find the effect of academic procrastination and its dimensions on metacognition of senior secondary school students. For the study a sample of 383 individual subjects were taken. The sample was further divided into 180 males and 203 females. Academic Procrastination scale by [2] and Metacognitive Awareness Inventory Scale by [3] were utilized for this study. The findings demonstrate that academic procrastination and its aspects significantly impact adolescents' metacognition.

**Keywords:** Academic Procrastination, Behavior, Education, Ideal Time, Activities, School, Kashmir, Metacognitive Control, Optimal Time, Procedural Knowledge

## Introduction

The concept of procrastination that we use today is different from what the term originally meant. Procrastination in ancient Rome was an intentional delay in military planning [2]. Procrastination is the practice of delaying things that you view as essential or important in favour of anything else, usually something less urgent or significant. After that, individuals usually come up with justifications. According to [3] "procrastination" is the act of completing a task after the optimal time has passed, where the term "optimal time" refers to the most suitable time to complete a task. Procrastination is embodied in this definition. Delaying a task until a later time is known as procrastination [4].

Procrastination is of different types. But the most significant type of procrastination in the educational field is academic procrastination. Academic procrastination is the term for procrastination that occurs in educational environments. It involves knowing that one needs to finish an academic task or activity, like writing a term paper, preparing for an exam, finishing a school project, or finishing the weekly reading assignments, but not having the drive to finish it in the allotted time [5-6]. Academic Procrastination is described as an irrational delay in the academic activity owing to the contradiction between purpose and action, which leads to bad repercussions for the procrastinator. Academic Procrastination is a behavior that is delayed, responsibilities that are related to education and an externally determined ideal time, such as test dates or due dates for term papers or activities. Various elements are responsible for Academic procrastination. Some of them are time management, perfectionism, metacognition, internet usage, lack of motivation etc.

[7] identified three types of diversionary activities that might cause procrastination: mental, action, and emotional. Procrastinators use mental diversion to convince themselves that they can finish a task more effectively if they put it on hold or that they need to get something else done first. Procrastinators use action diversions to postpone necessary tasks by starting with lower priority ones. For example, they might read a magazine instead of drafting a report. Procrastinators engaged in emotional diversion to attempt and relieve tension by engaging in 'feel good' activities, such as waiting for inspiration [8]. Procrastination has no correlation with IQ [9]. Research suggests that procrastinators may even do higher academically [10].

Procrastination, like perfectionism and self-consciousness, may be a trait, according to Wolters (2003). It can also be a state experienced in a specific context, such as fear of failure or task aversiveness. Some students put things off or procrastinate for time-related reasons, such as having fun before starting their study. Some students put things off because they are unsure of how to begin. Various students procrastinate in order to avoid tasks because they are stressed. Aside from job avoidance, some procrastinators are unable to begin their work and would always wish to start it afterwards [11].

The process of "thinking about thinking" and understanding "what we know" and "what we don't know" is known as metacognition. It refers to the higher order cognitive processes that go into learning, like setting learning objectives, using pertinent knowledge and methods to solve problems, assessing performance, and standardizing the learning level. According to Winn and Snyder (1996), it consists of two primary processes that take place simultaneously: assessing one's progress as one learns and adjusting one's methods if one feels that one is not performing well.

"Metacognition refers to understanding of knowledge, an understanding that can be represented in either successful application or clear explication of the knowledge in question," [12]. This definition emphasises the critical viewpoint of metacognition as awareness of one's own interpretation of knowledge. Other scholars have agreed that metacognition is a type of executive control that involves monitoring and self-regulation. Metacognition is now believed to involve awareness of one's persistent cognitive qualities as well as the ability to monitor and influence present actions.

Metacognitive awareness, or metacognition, is the awareness of one's own learning style, knowledge of the content, where one is in the learning process, and what has been done and what still needs to be done. The second is metacognitive evaluation, which deals with assessments of one's thinking abilities and limitations in relation to certain situations or as personal characteristics. Thirdly, metacognitive regulation occurs when individuals alter their thought patterns. [13]. Metacognition refers to "one's knowledge and views about one's own cognitive processes, as well as one's consequent attempts to manage those cognitive processes to maximise learning and memory [14]. Therefore, the ability to evaluate one's own knowledge and comprehension of a subject and use that evaluation to predict one's performance on a task is known as metacognition. This is the process by which the student takes charge of their education and thinks about how they would think in a particular circumstance.

One crucial factor influencing senior secondary school learners is metacognition. "The individual's own awareness and consideration of one's cognitive processes and strategies" is what [15] defined as metacognition. Three components of learning self-control skills are described by [16]. Declarative knowledge is the capacity to explain specific ways of thinking. Procedural knowledge is the ability to apply the chosen tactics. Conditional knowledge is the understanding of when to apply it. "Taking conscious control of learning, planning and selecting strategies, monitoring the progress of learning, correcting errors, analyzing the effectiveness of learning strategies, and changing learning behavior and strategies when necessary" are examples of metacognitive skills, according to [17].

Today's adolescents suffer greatly from academic procrastination, which has a detrimental impact on our youth's present and future. Adolescence is a very important time in a person's growth and development. Children at this age have a variety of behavioral, emotional, and mental health issues that are costly and distressing for both the children and their families. A child's social, academic, and emotional development is seriously disrupted by these issues, which also have an impact on the individual, family, school, community, and society at large. Academic procrastination is one of the main issues that result from these adolescent changes. It has been revealed by various researchers that there is a significant effect of academic procrastination on metacognition. The researchers such as [19] have revealed that several metacognition characteristics had various relationships with procrastination. Specifically, there was no significant correlation found between metacognition (of any kind) and active procrastination, although there was a significant effect of metacognitive belief and metacognitive regulation or control on passive procrastination. Similarly, [20] have found a significant effect of metacognitive beliefs on academic procrastination or vice versa. They revealed that metacognitive beliefs predicted the academic procrastination and vice versa. [21-23]

have also found that metacognition have a significant effect on academic procrastination of university students of Lahore district.

### Objectives of the study

1. To study the levels of metacognition and procrastination of senior secondary school students.
2. To study the effect of academic procrastination on different levels of metacognition of Senior Secondary School students.

### Hypothesis of the Study

**Ho2.** There will be no significant effect of Academic Procrastination on different levels of metacognition of senior secondary school students.

**Ha2.** There will be significant effect of Academic Procrastination on different levels of metacognition of senior secondary school students.

### Methodology

In the present study, 383 students studying in government senior secondary schools of Central Kashmir were taken as sample. Stratified random technique was used. 3 districts are there in central Kashmir namely Budgam, Srinagar and Ganderbal. Two Senior Secondary schools were selected from each District of Central Kashmir. Among the selected senior secondary schools from each district one was girls' senior secondary school and the other was boys' senior secondary school. The sample is distributed into two categories of male and female. Academic Procrastination scale constructed and standardized by Kalia and Yadav (2015) was used to measure academic procrastination of senior secondary school students and The metacognition of senior secondary school pupils was assessed using the Metacognitive Awareness Inventory, which was developed and standardized by Schraw and Dennison (1994). The academic procrastination scale has 25 items divided into 4 dimensions which are procrastination in homework, procrastination in preparation for examinations, procrastination in project work and procrastination in co-curricular activities. The split-half approach was used to calculate the academic procrastination scale's reliability co-efficient. The scale's good reliability is indicated by the test-retest coefficient of 0.843 and the Gutman Split half coefficient of 0.713. The metacognitive inventory has 52 items. The spearman brown coefficient value of the adapted MAI is 0.97. The reliability of the MAI was evaluated using the internal consistency technique. Split half reliability was tested for this purpose as well. This study employed the descriptive survey approach to determine the mean, standard deviation, t-test, and ANNOVA of the data under analysis.

### Results and Discussions

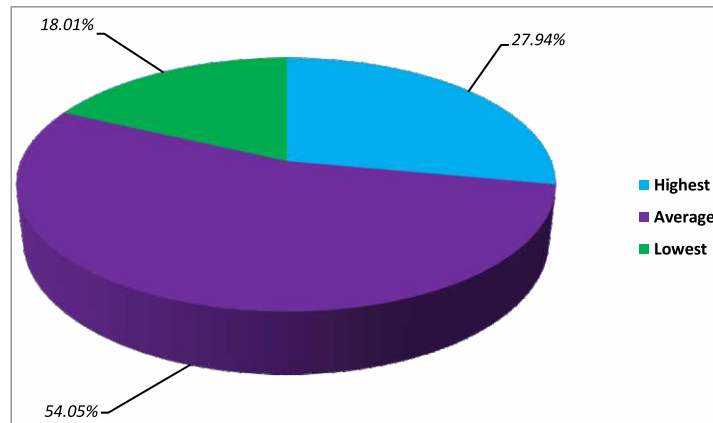
#### Levels of Academic Procrastination of Senior Secondary School Students

The researcher employed an academic procrastination scale to gather data from individuals in order to assess the degree of academic procrastination among senior secondary school students in central Kashmir. Based on the values provided in the manual's norms, the academic procrastination scale scores were computed and split into three groups: High academic procrastination group (HAPG), average academic procrastination (AAPG), and low academic procrastination (LAPG). The findings are displayed in Table 1.

**Table 1: Levels of Academic Procrastination of Senior Secondary School Students**

Variable	Levels	N	Percentage
Academic Procrastination	HAPG	107	27.94%
	AAPG	207	54.05%
	LAPG	69	18.01%
<b>Total</b>		<b>383</b>	<b>100%</b>

The results of the table revealed that 27.94% senior secondary school students have high level of academic procrastination, 54.05% senior secondary school students have average level of academic procrastination and 18.01% senior secondary school students have low level of academic procrastination. It indicates that the majority of senior secondary school students procrastinate academically at an average level. The above table's outcome is graphically displayed in figure 1.

**Figure 1: Levels of Academic Procrastination of Senior Secondary School Students Levels of Meta-cognition of Senior Secondary School students**

The researcher employed the Meta Cognitive Inventory to gather data from respondents in order to assess the degree of metacognition among senior secondary school pupils in central Kashmir. Based on the numbers provided in the manual's norms, the Meta Cognitive Inventory scores were computed and categorized into three groups: the low metacognitive group (LMCG), the average metacognitive group (AMCG), and the high metacognitive group (HMCG). The findings are displayed in Table 2.

**Table 3: Mean and SD of Academic Procrastination Scores of Senior Secondary School Students vis-a-vis Level of Metacognition**

Variable	Levels of MC	N	Mean of AP	SD of AP	Std. Error
Academic Procrastination	Highest	135	68.9185	11.47811	.98788
	Average	200	73.8400	11.53515	.81566
	Lowest	48	79.1667	7.50980	1.08395

**Table 4: Summary of ANOVA of academic Procrastination Scores of Senior Secondary school Students vis-a-vis Level of Metacognition**

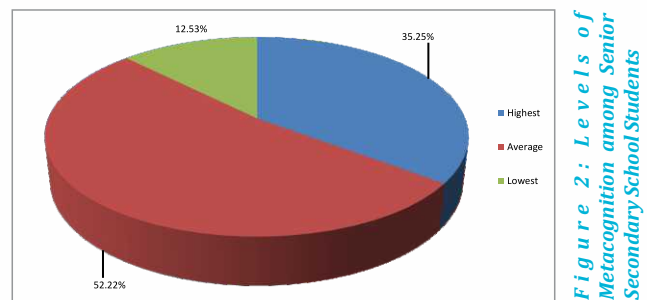
Groups	Sum of Squares	Df	Mean Squares	F-Value	Sig.
Between Groups	4195.587	2	2097.794	17.039	.000
Within Groups	46783.650	380	123.115		
Total	50979.238	382			

According to the findings, the mean squares and sum of squares for within groups were 123.115 and 46783.650, respectively, while the numbers for between groups were 2097.794 and 4195.587. It has been determined that the F-value of 17.039 is significant at the 0.05 level of significance. So, Academic procrastination has a considerable impact on senior secondary school students from various metacognition groups, according to the findings. In light of this, the study's first hypothesis, which claims that "there will be no significant effect of academic procrastination on different levels of metacognition of Senior Secondary school students," is rejected, while the second hypothesis, which claims that "there will be significant effect of academic procrastination on different levels of metacognition of Senior Secondary school students," is accepted. This can be graphically presented as follows.

**Table 2: Levels of Metacognition among Senior Secondary School Students**

Variable	Levels	N	Percentage
Meta-cognition	HMCG	135	35.25%
	AMCG	200	52.22%
	LMCG	48	12.53%
<b>Total</b>		<b>383</b>	<b>100%</b>

The results of the table 2 revealed that 35.25% senior secondary school students have high metacognition, 52.22% senior secondary school students have Average metacognition and 12.53% senior secondary school students have low metacognition. It indicates that the majority of senior secondary school students have average metacognition. The outcome of the aforementioned table is graphically displayed in figure 2.

**Figure 2: Levels of Metacognition among Senior Secondary School Students**

**The effect of academic procrastination on different levels of metacognition of Senior Secondary School students.**

The study's third objective was to examine how academic procrastination affected the various metacognition levels of Central Kashmiri senior secondary school students. The ANOVA test was used to compare the metacognition scores between different metacognition groups of Central Kashmiri senior secondary school students in order to achieve this goal. Tables 3 and 4 display the means, standard deviation, and summary of the ANOVA test.

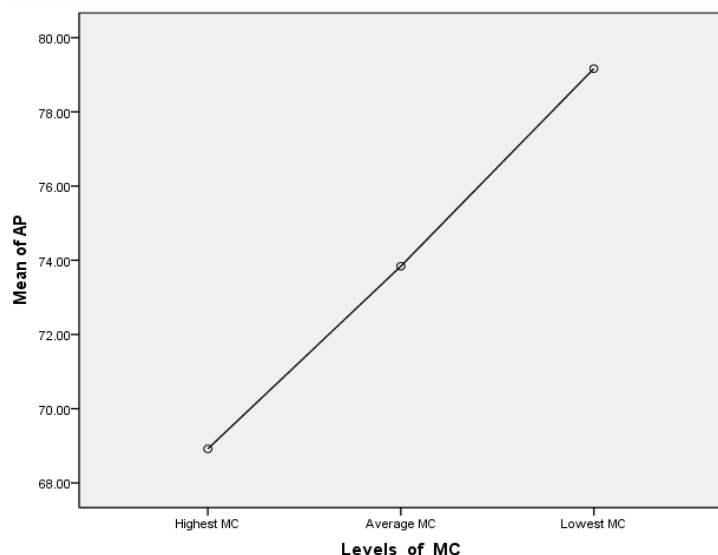


Figure 3: Effect of Academic Procrastination on Metacognition

Further, In order to determine the significant effect of the means of academic procrastination scores corresponding to different metacognition groups namely low metacognition group (LMCG), average metacognition group (AMCG), high metacognition group (HMCG), Tukeys post hoc analysis was implemented and results have been given in the table 5

Table 5: Tukeys post hoc analysis of academic procrastination with different groups of metacognition

Groups of metacognition	Mean Difference	Standard error	Sig.
LMCG-AMCG	5.326	1.783	0.000
LMCG-HMCG	10.248	1.864	0.000
AMCG-HMCG	4.921	1.235	0.000

From the above table 5 it was revealed that the mean difference of academic procrastination of LMCG and AMCG was found to be 5.326 with standard error 1.783 and level of significance value 0.000, this was below the significance level of 0.05. Consequently, it is significant at the 0.05 level. As a result, it suggests that the academic procrastination scores of AMCG and LMCG were significant.

Table 6: Summary of ANOVA of Homework dimension of academic Procrastination (Dimension 1) Scores of Senior Secondary Shool Students vis-a-vis Level of metacognition

Groups	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1200.155	2	600.078	15.862	.000
Within Groups	14375.620	380	37.831		
Total	15575.775	382			

The findings showed that the mean squares and sum of squares for within groups were 37.831 and 14375.620, respectively, whereas the mean squares and sum of squares for between groups were 600.078 and 1200.155, respectively. It has been determined that the F-value of 15.862 is significant at the 0.05 level of significance. It reveals that there is significant effect of homework dimension of academic procrastination (Dimension 1) of senior secondary school students belonging to different metacognition groups. There will be a significant effect of homework dimension of academic procrastination (dimension 1) on different levels of metacognition groups of Senior Secondary school students. This can be graphically presented as follows.

Furthermore, from the above table 5 it was revealed that the mean difference of academic procrastination of LMCG and HMCG was found to be 10.248 with standard error 1.864 and level of significance value 0.000, this was below the significance level of 0.05. Consequently, it is significant at the 0.05 level. Thus it indicates that the academic procrastination scores of LMCG and HMCG was found to be significant.

Further, from the above table 5 it was revealed that the mean difference of academic procrastination of AMCG and HMCG was found to be 4.921 with standard error 1.235 and level of significance value 0.000, this was below the significance level of 0.05. Consequently, it is significant at the 0.05 level. Thus it indicates that the academic procrastination scores of AMCG and HMCG was found to be significant.

Additionally, it was investigated how various dimensions of academic procrastination affected the metacognition levels of senior secondary school students. ANOVA and post hoc tests were used to examine the scores of several academic procrastination aspects among Central Kashmiri secondary school students in order to achieve these goals. The different dimensions of academic procrastination are as under:

1. Procrastination in homework (Dimension I)
2. Procrastination in preparation for examinations (Dimension II)
3. Procrastination in project work (Dimension III)
4. Procrastination in co-curricular activities (Dimension IV)

#### • The effect of Homework Dimension (Dimension I) of academic procrastination on different levels of metacognition of Senior Secondary School students

Additionally, we looked at how academic procrastination's homework dimension (Dimension 1) affected the various metacognition levels of Central Kashmiri senior secondary school students. To do this, the ANOVA test was used to compare the Dimension 1 results of various metacognition groups of Central Kashmiri senior secondary school students. Table 6 displays the means, standard deviation, and summary of the ANOVA test.

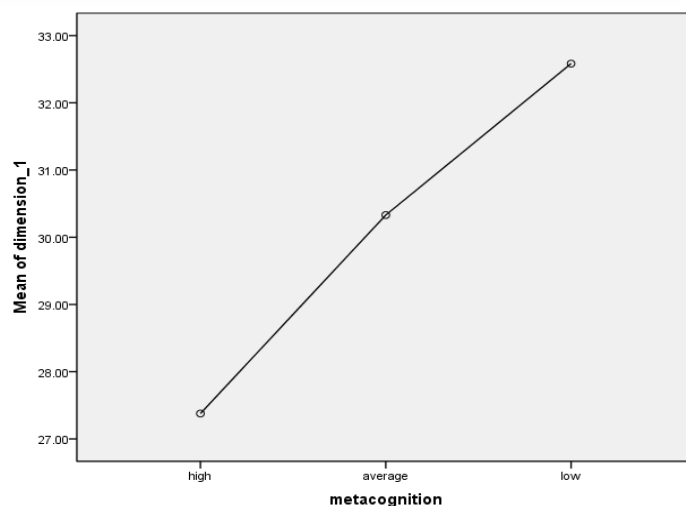


Figure 4: Effect of Dimension I on Different levels of metacognition



Furthermore, In order to find out the significant effect of the means of homework dimension (Dimension 1) of academic procrastination scores corresponding to different metacognition groups namely low metacognition group (LMCG), average metacognition group (AMCG), high metacognition group (HMCG), Tukeys post hoc analysis was done, and the findings are shown in table 7.

**Table 7: Tukeys post hoc analysis of homework dimension (Dimension 1) with different groups of metacognition**

Groups of metacognition	Mean Difference	Standard error	Sig.
LMCG-AMCG	2.253	0.988	0.060
LMCG-HMCG	5.205	1.033	0.000
AMCG-HMCG	2.952	0.685	0.000

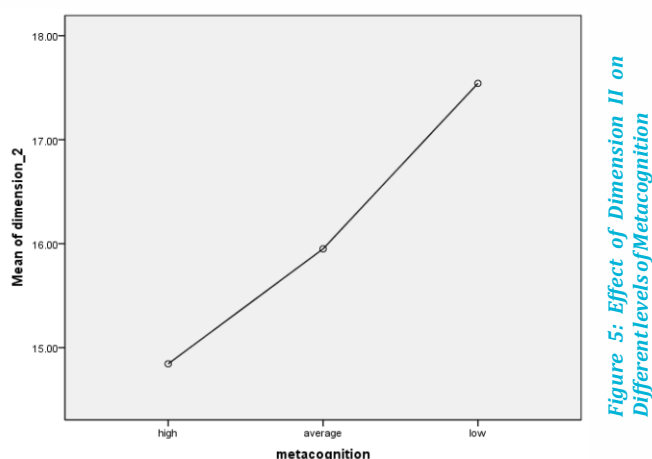
From the above table 7 it was revealed that the mean difference of homework dimension of academic procrastination (Dimension 1) of LMCG and AMCG was found to be 2.253 with standard error 0.988 and level of significance value 0.000, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the homework dimension of academic procrastination (Dimension1) scores of LMCG and AMCG was found to be significant.

Furthermore, from the above table 7 it was revealed that the mean difference of homework dimension of academic procrastination (Dimension 1) of LMCG and HMCG was found to be 5.205 with standard error 1.033 and level of significance value 0.000, this was less than the 0.05 level of significance.

**Table 8: Summary of ANOVA of Dimension II of academic procrastination i.e procrastination in preparation for examinations Scores of Senior Secondary School Students vis-a-vis Level of metacognition**

Groups	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	272.751	2	136.375	10.652	.000
Within Groups	4865.150	380	12.803		
Total	5137.901	382			

Table 8 shows that the values of sum of squares and mean squares between groups were 272.751 and 136.375, respectively, whereas the values of sum of squares and mean squares within groups were 4865.150 and 12.803, respectively. The F-value of 10.652 was determined to be significant at the 0.05 level of significance. It reveals that there is significant effect of Dimension II of academic procrastination i.e procrastination in preparation for examination of senior secondary school students belonging to different metacognition groups. There will be a significant effect of Dimension II of academic procrastination i.e procrastination in preparation for examination on different levels of metacognition groups of Senior Secondary school students. This can be graphically presented as follows.



As a result, it is statistically significant at the 0.05 level. Thus it indicates that the homework dimension of academic procrastination (Dimension1) scores of LMCG and HMCG was found to be significant.

Furthermore, from the above table 7 it was revealed that the mean difference of homework dimension of academic procrastination (Dimension 1) of AMCG and HMCG was found to be 2.952 with standard error 0.685 and level of significance value 0.000, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the homework dimension of academic procrastination (Dimension1) scores of AMCG and HMCG was found to be significant.

#### • The effect procrastination in preparation for examinations (Dimension II) of academic procrastination on different levels of metacognition of Senior Secondary School students.

Further, we studied the effect of Dimension II of academic procrastination i.e procrastination in preparation for examinations on various levels of metacognition among senior secondary school students in Central Kashmir. To accomplish this, the Dimension II scores of several metacognition groups of senior secondary school students from Central Kashmir were compared using the ANOVA test. Table 8 shows the mean, standard deviation, and summary of the ANOVA test.

Further, In order to find out the significant effect of the means of Dimension II of academic procrastination i.e procrastination in preparation for examination scores corresponding to different metacognition groups namely low metacognition group (LMCG), average metacognition group (AMCG), high metacognition group (HMCG), Tukeys post-hoc analysis was performed, and the findings are shown in table 9.

**Table 9: Tukeys post hoc analysis of Dimension II of academic procrastination i.e procrastination in preparation for examination with different groups of metacognition**

Groups of metacognition	Mean Difference	Standard error	Sig.
LMCG-AMCG	1.591	0.575	0.016
LMCG-HMCG	2.697	0.601	0.000
AMCG-HMCG	1.105	0.398	0.016

From the above table 9 it was revealed that the mean difference of Dimension II of academic procrastination i.e procrastination in preparation for examination of LMCG and AMCG was found to be 1.591 with standard error 0.575 and level of significance value 0.016, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension II of academic procrastination i.e procrastination in preparation for examination scores of LMCG and AMCG was found to be significant.

Furthermore, from the above table 9 it was revealed that the mean difference of Dimension II of academic procrastination i.e procrastination in preparation for examination of LMCG and HMCG was found to be 2.697 with standard error 0.601 and level of significance value 0.000, this was less than the 0.05 level of significance.

As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension II of academic procrastination i.e procrastination in preparation for examination scores of LMCG and HMCG was found to be significant.

Furthermore, from the above table 9 it was revealed that the mean difference of Dimension II of academic procrastination i.e procrastination in preparation for examination of AMCG and HMCG was found to be 1.105 with standard error 0.398 and level of significance value 0.016, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension II of academic procrastination i.e procrastination in preparation for examination scores of AMCG and HMCG was found to be significant.

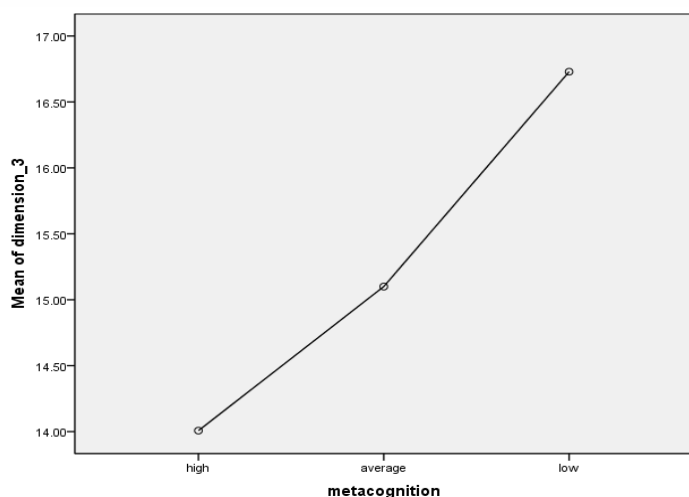
#### • The effect procrastination in project work (Dimension III) of academic procrastination on different levels of metacognition of Senior Secondary School students

Further, we studied the effect of Dimension III of academic procrastination i.e procrastination in project work on various levels of metacognition among senior secondary school students in Central Kashmir. To accomplish this, the Dimension II scores of several metacognition groups of senior secondary school students from Central Kashmir were compared using the ANOVA test. Table 10 shows the mean, standard deviation, and summary of the ANOVA test.

**Table 10: Summary of ANOVA of Dimension III of academic procrastination i.e procrastination in project work Scores of Senior Secondary School Students vis-a-vis Level of metacognition**

Groups	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	276.019	2	138.010	8.555	.000
Within Groups	6130.472	380	16.133		
Total	6406.491	382			

Table 10 shows that the values of sum of squares and mean squares between groups were 276.019 and 138.010, respectively, whereas the values of sum of squares and mean squares within groups were 6130.472 and 16.133, respectively. The F-value of 8.555 was determined to be significant at the 0.05 level of significance. It reveals that there is significant effect of Dimension III of academic procrastination i.e procrastination in project work of senior secondary school students belonging to different metacognition groups. There will be a significant effect of Dimension III of academic procrastination i.e procrastination in project work on different levels of metacognition groups of Senior Secondary school students. This can be graphically presented as follows.



**Figure 4.12: Effect of Dimension III on different levels of Metacognition**

Further, In order to find out the significant effect of the means of Dimension III of academic procrastination i.e procrastination in project work scores corresponding to different metacognition groups namely low metacognition group (LMCG), average metacognition group (AMCG), high metacognition group (HMCG), Tukey's post-hoc analysis was performed, and the findings are shown in table 11.

**Table 11 Tukeys post hoc analysis of Dimension III of academic procrastination i.e procrastination in project work with different groups of metacognition**

Groups of metacognition	Mean Difference	Standard error	Sig.
LMCG-AMCG	1.629	0.645	0.032
LMCG-HMCG	2.721	0.674	0.000
AMCG-HMCG	1.092	0.447	0.040

From the above table 11 it was revealed that the mean difference of Dimension III of academic procrastination i.e procrastination in project work of LMCG and AMCG was found to be 1.629 with standard error 0.645 and level of significance value 0.032, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension III of academic procrastination i.e procrastination in project work scores of LMCG and AMCG was found to be significant.

Furthermore, from the above table 11 it was revealed that the mean difference of Dimension III of academic procrastination i.e procrastination in project work of LMCG and HMCG was found to be 2.721 with standard error 0.674 and level of significance value 0.000, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension III of academic procrastination i.e procrastination in project work scores of LMCG and HMCG was found to be significant.

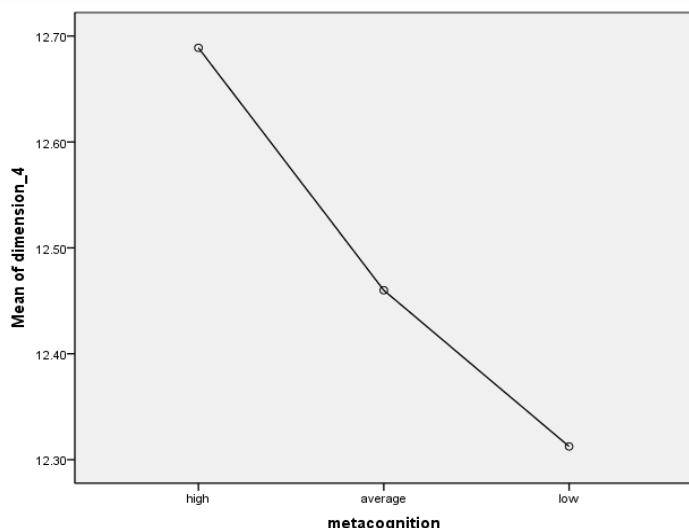
Furthermore, from the above table 11 it was revealed that the mean difference of Dimension III of academic procrastination i.e procrastination in project work of AMCG and HMCG was found to be 1.092 with standard error 0.447 and level of significance value 0.040, this was less than the 0.05 level of significance. As a result, it is statistically significant at the 0.05 level. Thus it indicates that the Dimension III of academic procrastination i.e procrastination in project work scores of AMCG and HMCG was found to be significant.

#### • The effect of procrastination in co-curricular activities (Dimension IV) of academic procrastination on different levels of metacognition of Senior Secondary School students

Further, we studied the effect of Dimension IV of academic procrastination i.e procrastination in co-curricular activities on various levels of metacognition among senior secondary school students in Central Kashmir. To accomplish this, the Dimension II scores of several metacognition groups of senior secondary school students from Central Kashmir were compared using the ANOVA test. Table 12 shows the mean, standard deviation, and summary of the ANOVA test.

**Table 12: Summary of ANOVA of Dimension IV of academic procrastination i.e procrastination in co-curricular activities Scores of Senior Secondary School Students vis-a-vis Level of metacognition**

Groups	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.636	2	3.318	.521	.594
Within Groups	2418.926	380	6.366		
Total	2425.561	382			



**Figure 4.13: Effect of Dimension IV on different levels of Metacognition**

Further, In order to find out the significant effect of the means of Dimension IV of academic procrastination i.e procrastination in co-curricular activities cores corresponding to different metacognition groups namely low metacognition group (LMCG), average metacognition group (AMCG), high metacognition group (HMCG), Tukey's post-hoc analysis was performed, and the findings are shown in table 13.

**Table 13: Tukeys post hoc analysis of Dimension IV of academic procrastination i.e procrastination in co-curricular activities with different groups of metacognition**

Groups of metacognition	Mean Difference	Standard error	Sig.
LMCG-AMCG	0.147	0.405	0.930
LMCG-HMCG	0.376	0.423	0.648
AMCG-HMCG	0.229	0.281	0.694

From the above table 13 it was revealed that the mean difference of Dimension IV of academic procrastination i.e procrastination in co-curricular activities of LMCG and AMCG was found to be 0.147 with standard error 0.405 and level of significance value 0.930, this was greater than the 0.05 level of significance. As a result, it is statistically insignificant at the 0.05 level. Thus it indicates that the Dimension IV of academic procrastination i.e procrastination in co-curricular activities scores of LMCG and AMCG was found to be insignificant.

Furthermore, from the above table 13 it was revealed that the mean difference of Dimension IV of academic procrastination i.e procrastination in co-curricular activities of LMCG and HMCG was found to be 0.376 with standard error 0.423 and level of significance value 0.648, this was greater than the 0.05 level of significance. As a result, it is statistically insignificant at the 0.05 level. Thus it indicates that the Dimension IV of academic procrastination i.e procrastination in co-curricular activities scores of LMCG and HMCG was found to be insignificant.

Furthermore, from the above table 13 it was revealed that the mean difference of Dimension IV of academic procrastination i.e procrastination in co-curricular activities of AMCG and HMCG was found to be 0.229 with standard error 0.281 and level of significance value 0.694, this was greater than the 0.05 level of significance. As a result, it is statistically insignificant at the 0.05 level. Thus it indicates that the Dimension IV of academic procrastination i.e procrastination in co-curricular activities scores of AMCG and HMCG was found to be insignificant.

## Findings

In this study it was found that 35.25% senior secondary school students have high level of metacognition, 52.22% senior

secondary school students have Average level of metacognition and 12.53% senior secondary school students have low level of metacognition. It implies that the majority of senior secondary school students have an average degree of metacognition.

Furthermore, from the study it was that 27.94% senior secondary school students have high level of academic procrastination, 54.05% senior secondary school students have average level of academic procrastination and 18.01% senior secondary school students have low level of academic procrastination. This implies that the majority of senior secondary school students exhibit ordinary levels of academic procrastination.

It was found in this study that there was a significant effect of academic procrastination of senior secondary school students belonging to different metacognition groups. Furthermore, from the study it was found that there was a significant effect of homework dimension of academic procrastination (Dimension 1) of senior secondary school students belonging to different metacognition groups. Furthermore, from the study it was found that there was a significant effect of Dimension II of academic procrastination i.e procrastination in preparation for examination of senior secondary school students belonging to different metacognition groups. The study further found that there was a significant effect of Dimension III of academic procrastination i.e procrastination in project work of senior secondary school students belonging to different metacognition groups. Furthermore, from the study it was found that there was no significant effect of Dimension IV of academic procrastination i.e procrastination in co-curricular activities of senior secondary school students belonging to different metacognition groups.

## Discussions

Academic procrastination was found to have a considerable influence on various metacognition groups. It was also found that dimension wise there was a significant effect of procrastination in homework (Dimension I), procrastination in preparation for examination (Dimension II) and procrastination in project work (Dimension III) on metacognition. Furthermore, it was revealed that there was not significant effect of procrastination of co-curricular activities (Dimension IV) on metacognition. The study of Mingming Zhou, Kelly Ka Lai Lam & Yajun Zhang (2022) have revealed that several metacognition characteristics had various relationships with procrastination. Specifically, there was no significant correlation found between metacognition (of any kind) and active procrastination, although there was a significant effect of metacognitive belief and metacognitive regulation or control on passive procrastination. This study was also supported by study of ozkan Cikrikci (2016) in which he revealed that metacognitive awareness is the determinant of academic procrastination. Ghazal Khalid, Saira Taj (2020) have found that metacognition have a significant effect on academic procrastination of university students of Lahore district. Yahya Safari and Nasrin (2022) have found a significant effect of metacognitive beliefs on academic procrastination or vice versa.

The probable reasons for such a finding might be Academic procrastination interferes with the self-regulatory and introspective processes necessary for learning properly or effectively. Metacognition is the knowledge and comprehension of one's own thought processes, which includes the capacity to plan, regulate, and evaluate one's own learning experience. Students that procrastinate frequently put off assignments and



neglect to participate in the required metacognitive tasks. Another reason for this finding might be that procrastination often results in a vicious cycle of worry, stress and anxiety, which worsens deficiencies to metacognition. Students who put off tasks may get more stressed because of approaching deadlines. This emotional reaction can impede metacognition by making it challenging for people to think properly, make reasonable or realistic goals, or evaluate their learning methods impartially and objectively. In conclusion, academic procrastination hinders metacognition by reducing the amount of time available for thoughtful learning, rising stress levels, and encouraging avoidance behaviors that obstruct the reflective processes necessary for good study habits. These might be reasons that academic procrastination has a significant effect on different groups of metacognition.

Furthermore, it was found that procrastination in co-curricular activities have an insignificant effect on metacognition. This might be due to the reason that unlike prolonged academic study, co-curricular activities frequently require more direct or immediate, hands-on experiences. Additionally, the emphasis on metacognition may be less prominent in these activities as they may promote other learning objectives including creativity, teamwork, and practical skills and abilities.

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### Conflict of Interests

The author declared no conflict of interests.

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