# The Nexus Between Metacognition and Procrastination

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## ARTICLE DETAILS

### ABSTRACT

This research examined the effects of metacognition on procrastination and also investigated how metacognition plays an integral role in the development of procrastination. The study also examines the moderating roles of metacognition and gender on procrastination. The sample was selected by using two-way cluster sampling, i.e., 254 students (74 males and 180 females) from the Islamia University of Bahawalpur. Participants were given the Tuckman Procrastination Scale (Tuckman, 1991) and the Metacognition Questionnaire-30 (MCQ-30) (Wells & Cartwright Hatton, 2004). Results indicated that metacognition both have a negative correlation with procrastination. In sum, the present findings provide adequate understanding of the relationship between some positive and negative impacts of metacognition on procrastination. The implications of the findings are discussed, and recommendations are taken into consideration for future research.

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## 1. Introduction

The present study focuses on connecting a few of the learning behaviors like procrastination among students, particularly at the university level. The emphasis has been placed on some self-regulation factors, such as metacognition and procrastination, that influence university students' performance. Furthermore, much research has shown that most students exhibit procrastination in their regular study schedules as well. (Day, Mensink, & O'Sullivan, 2000; Onwuegbuzie, 2000). It is understood amongst university pupils that they practice bunking lessons, have little academic enactment (Fritzsche, Rapp, & Hickson, 2003), unpunctuality, and delay in work. The term "academic procrastination" is often used to represent suspensions in academic activities. Procrastination can be intentional, habitual, or incidental, but in all these forms it can disturb learning and academic achievement. However, according to different researchers (Schmitt, 2008; Morelli, 2008; Letham, 2004), procrastination can be classified into various types (realistic, unrealistic, and spiritual...
procrastination; chore, dream, and behavioral, decisional, and metacognitive procrastination). However, procrastination of every type makes students lazy, irresponsible, stagnant, and careless. Although procrastination influences sufferers badly, there is still a scarcity of research regarding its treatments (Pychyl & Flett, 2012). Procrastination has primarily been discovered from the standpoint of probable predictors and mediators, such as personality features, chore features, and socio-cultural perspective (Steel, 2007).

Metacognition (cognition about cognition) was first used by John Flavell in 1970s (Flavell, 1979).

Knowledge and regulation of cognition: An indication of all metacognitive theories is that awareness and guidelines of cognition are mutually correlated (e.g., Flavell, 1979). Nevertheless, this is incorrect when metacognitive acquaintance is improper, since erroneous information about knowledge processes inhibits modifications in this understanding (Wijaya, 2019). In the study, the context of metacognition and its connection to the task avoidance behavior of students has been presented. Decisions on the strategy to be used imply that a task-adapted strategy is being used. Strategies can vary accordingly to the task and the stages of it. Students involved in metacognitive activities decide which is the most helpful strategy to be used preferably (Olausen & Braten, 1999). According to Haller, Child, and Walberg (1988), there are three different sets of cognitive activities that influence metacognition while reading. (i) Awareness causes the recognition of information and the response to flaws in contexts; (ii) Monitoring includes goal setting, self-questioning, précising, and making connections between old and new information; and (iii) In the final regulation that controls and compensates for faulty data. In conclusion, it has been noted that different students use different ways to cope with their academic problems, and one of the most common strategies is procrastination (Fernie, Kopar, Fisher, & Spada, 2018). In order to explore how metacognition mediates between both aspects, the correlation between these phenomena needs to be debated more.

Metacognition and procrastination: There is little research which shows the relationship between metacognitive knowledge, regulation, and procrastination. In one of the studies by Motie, Heidari, and Sadeghi (2012), the role of self-regulated behaviors and learning (metacognitive regulation, extrinsic/intrinsic goal-orientation) was assessed as predictors of procrastination. Moreover, gender differences were also evaluated. The study was supported by the self-regulation theory proposed by Hashemipour, Keramati, Kavousian, & Arabzadeh, (2021). In the conclusion of the study, it was revealed that there is an inverse correlation between all the variables regarding self-regulation and academic procrastination. However, there was no significant difference in gender found in the study, but one of the statistical tests on gender differences concluded that females use more self-regulatory strategies, e.g., metacognitive regulation, rehearsal, than males. Another subsequent study revealed that students who practice more procrastination in performing their assignments may use fewer metacognitive and self-regulatory strategies. Hence, the study found a negative correlation between variables (Xue, Wang, Li, Gao, & Si, 2021). Cosentino, McCarroll, and Michaelian (2022) have also supported the same point of view, i.e., those students who use metacognitive strategies are less prone to procrastination.

Furthermore, another study was carried out in order to assess the possible predictors of procrastination, specifically metacognitive beliefs. The results of the study concluded that the components of metacognitive beliefs, i.e., self-consciousness, danger, uncontrollability, and cognitive confidence, could easily predict procrastination. Furthermore, a self-regulatory model is also essential
to predict procrastination (Hailikari, Katajavuori, & Asikainen, 2021). In another study conducted by Abbasi and Dargahi (2014), there was a prediction of academic achievement with the relationship of metacognitive belief and motivation and some procrastination in it. This study, like previous studies, tends to reveal a positive relationship between metacognitive beliefs, self-regulation, and educational attainment, while revealing a negative relationship between procrastination and academic motivation. Study was conducted on students in Iran using random sampling in order to evaluate the relationship between metacognitive philosophies and procrastination. Results of the study showed that elements of metacognition, i.e., control of thoughts, positive beliefs about apprehension, and cognitive confidence were positively linked with procrastination, while uncontrollability, self-consciousness, and self-regulation were negatively correlated with procrastination (Zhou, Lam, & Zhang, 2022). Hence, concluding the literature, it has been proved that there is a strong relationship between metacognitive beliefs and procrastination. With the support of self-regulation theory and different studies, it is feasible to prove that metacognitive beliefs can reduce the level of procrastination and this phenomenon of self-regulation.

2. Theoretical Framework

The theory of cognitive beliefs highlights the part of philosophies and negative assertiveness in procrastination, but cannot enlighten how operational such thoughts, views, and beliefs are for the intellectual progression of procrastination, although meta-cognitive tactics of adjournment and procrastination can be clarified in this way very well. Metacognitive theories are philosophies and beliefs that a person consumes about his or her own thoughts (Spada, Hiou, & NikGevil, 2006).

3. Rationale of the Study

After going through different research, it is obvious that procrastination has been increasing in Pakistan and the effect of some variables (e.g., metacognition) has also been taken under consideration. The results of the current study help teachers and students to understand these phenomena that are integral to being assessed by investigating the basic forms of behavior. Furthermore, it will help teachers to make their students involved in self-regulating activities and to make them reduce their level of procrastination.

4. Hypotheses

On the basis of literature review and existing researches, the following hypotheses created for this study.

1. There is a significant relationship between metacognition and procrastination among university students.
2. Metacognition is a significant predictor of procrastination.

5. Method

5.1 Participant

The study included a total of 254 participants, i.e., 74 males and 180 females from the Islamia University of Bahawalpur (IUB). Their age range, gender, socioeconomic status, program, GPA, etc were calculated.

**Inclusion criteria:** Enrolled students of an academic session in any of the Discipline and Programs in the IUB.

**Exclusion criteria:** Individuals having any kind of physical and psychological illness were
excluded from the study.

Table 1: Frequency Distribution of Respondents (n=254) According to their Gender, Age, Socioeconomic Status, Marital Status and Residence

| Respondent's Characteristics | n (254) | % |
|-----------------------------|---------|---|
| Gender                      |         |   |
| Male                        | 74      | 29.1 |
| Female                      | 180     | 70.9 |
| Age                         |         |   |
| 15-25                       | 240     | 94.5 |
| 26-30                       | 12      | 4.7 |
| 31-35                       | 2       | .8 |
| 36-40                       | 0       | 0   |
| Socioeconomic Status        |         |   |
| Low                         | 4       | 1.6 |
| Middle                      | 237     | 93.3 |
| High                        | 13      | 5.1 |
| Marital Status              |         |   |
| Married                     | 12      | 32.0 |
| Unmarried                   | 242     | 42.0 |
| Residence                   |         |   |
| Urban                       | 181     | 71.3 |
| Rural                       | 73      | 28.7 |

Table 2: Frequency Distribution of Respondents (n=254) According to their Education

| Respondent's Characteristics | N(254) | % |
|-----------------------------|--------|---|
| Program                     |        |   |
| BS(Hons)                    | 99     | 39.0 |
| M.A/ M. Sc                  | 132    | 52.0 |
| M. Phil                     | 19     | 7.5 |
| Ph. D                       | 4      | 1.6 |
| Department                  |        |   |
| Science                     | 99     | 39.0 |
| Arts                        | 155    | 61.0 |
| GPA (%)                     |        |   |
| 1-1.9                       | 6      | 2.4 |
| 2-2.9                       | 57     | 22.4 |
| 3-3.9                       | 157    | 61.8 |
| 4                           | 34     | 13.4 |
| Cluster (Departments)       |        |   |
| Cluster 1 (Pharmacy)        | 56     | 22.0 |
| Cluster 2 (Urdu and Iqbaliat)| 49    | 19.2 |
| Cluster 3 (Islamic Studies) | 50     | 19.6 |
| Cluster 4 (Mathematics)     | 43     | 16.9 |
| Cluster 5 (Art and Design)  | 56     | 22.0 |
5.2 Sampling Procedure

In the present study participants were randomly selected using two-staged sampling procedure. Following steps were employed to proceed:

**Step 1: Selection of departments from different faculties of IUB**

Five departments were selected randomly out of different faculties, e.g., education, arts, science, pharmacy, university of engineering, arts and design, etc., by using SPSS version 21. Selected departments were Islamic Studies (N = 109), Urdu and Iqbaliat (N = 161), University of Arts and Design (N = 230), Mathematics (N = 181), and Pharmacy (N = 820).

**Step 2: Selection of students from each sampled department**

The number of students from each department was decided on the basis of their population proportion. Furthermore, the proper ratio was calculated according to the population of departments. Each student was selected randomly from each program, e.g., BS, M.Sc./M.A., M.Phil, using the particular list of enrolled students.

Only willing participants were asked to fill in the required questionnaires which were comprised of:

1. Tuckman Procrastination Scale (Tuckman, 1991).
2. The Metacognition Questionnaire- 30 (MCQ-30) (Wells & Cartwright Hatton, 2004).

5.3 Sample size, Power and Precision

Gay (1996) recommended using A-priori analysis for multiple regression to calculate sample size. The required sample was 254 according to the total population of IUB. The ratio was established in order to select participants randomly and to get more reliable and valid results.

5.4 Measures and Covariates

**Operational definitions.** Operational definitions are:

*Procrastination*: Lost in thoughts, delayed activities or even put them off and worriers postpone external reality testing. The tendency to put off or completely avoid an activity under one's control is called procrastination (Tuckman, 1991).

*Metacognition*: It includes all attitudes and beliefs held about cognition and refer to collection of knowledge, and strategies, processes that appraise, control cognition and monitor (Wells, 2004).

5.5 Instruments.

1. Informed Consent
2. Demographic Variables Sheet.
3. Tuckman Procrastination Scale (Tuckman, 1991).
4. The Metacognition Questionnaire- 30 (MCQ-30) (Wells & Cartwright Hatton, 2004).

**Informed consent:** An informed consent form will be developed to take information from the participants. They will be assured that their information will be kept confidential. After completion, feedback will be provided.

**Demographics:** The participant's age, gender, marital status, socioeconomic status, education level, residence, etc. were included in the demographic sheet.
Tuckman Procrastination Scale: Procrastination was assessed using the Tuckman Procrastination Scale. This scale consists of 35 items with a Cronbach alpha reliability coefficient of 90 (Tuckman, 1991). For the purpose of this study, a summarized version of 16 items was used.

The Metacognition Questionnaire-30 (MCQ-30): The scale was established by Wells & Cartwright (2004). It is a self-reported measure with five subscales and 30 items. This scale helps to assess a person’s metacognitive beliefs, thoughts, monitoring skills, and judgments. It consists of five facets or subscales, including a total of 30 items. Responses to each item on the MCQ-30 are on a 4-point Likert scale. Each item is rated on a four-point Likert scale ranging from 1 (disagree) to 4 (strongly agree). The scale was established by Wells & Cartwright (2004). It is a self-reported measure with five subscales and 30 items. This scale helps to assess a person’s metacognitive beliefs, thoughts, monitoring skills, and judgments. It consists of five facets or subscales, including a total of 30 items. Responses to each item on the MCQ-30 are on a 4-point Likert scale. Each item is rated on a four-point Likert scale ranging from 1 (disagree) to 4 (strongly agree).

6. Research Design
The study was quantitative, with cross-sectional survey research design. The Urdu version of the Tuckman Procrastination Scale, and Metacognition Questionnaire-30 was administered after taking informed consent. Proper instructions were given to the participants. First of all, the participants were requested to fill in the Demographic Form which concentrated on information like subject’s gender, age, marital status, socioeconomic status, education level, residence etc. Then, they were asked to fill in the Tuckman Procrastination Scale, and Metacognition Questionnaire-30 Urdu version. Descriptive statistics and reliability coefficient were computed by using Statistical Package for Social Sciences (SPSS; V-21).

7. Ethical Consideration
This study has been shielded from any potential harm to the individuals and societies who were candidates for this study. Assured that their information would be kept confidential and the consent information was filled out by them for that purpose. They were debriefed about the instrument use and the purpose of the research.

8. Results
Table 3: Descriptive Statistics and Correlation among key Variables (n = 254)

|                    | Procrastination | Metacognition |
|--------------------|-----------------|---------------|
| Procrastination    | ---             |               |
| Metacognition      | -.054*          | ---           |

* Correlation is significant at the 0.05 level (2-tailed).

This Table shows that Procrastination has significant negative relationship with Metacognition (r=-.054)

9. Discussion
The current study investigated how metacognition affects the level of procrastination among university students. Similarly, much research indicates a link between metacognition and procrastination, which could be assessed by using metacognitive beliefs, the need to control worry, a lack of cognitive ability, and consciousness as a moderating variable of procrastination behavior.
In table 3, the reliability coefficients of the Tuckman procrastination scale and metacognition questionnaire were represented. The alpha values of the scales used to measure procrastination (.820) and metacognition (.828) are quite acceptable for the research purpose.

10. Relationship of Procrastination and Metacognition

Metacognition basically influences the level of procrastination. Results of the correlation table indicate that metacognition is negatively and significantly correlated with procrastination. The findings are also corroborated by many other researchers (Diseth, 2003; Chamorro-Premuzic & Furnham, 2008; Hosseini & Khayyer, 2009). According to a study, metacognition had a positive, strong, and significant relationship with procrastination (Fernie, Spada, & Macarantonio, 2009; Marcantonio, Hious, & Nikcevic, 2006). Wijaya (2019) discovered that fully organized and self-regulated students are stereotypically high self-startners who intend to use various strategies, including metacognition, implying that these students are less prone to procrastination. In some other research (Cartwright-Hatton & Wells, 1997; Ferrari, Johnson, & McCown, 1995), metacognitive beliefs have been considered as a strong predictor for procrastination, which may lead to social, psychological, and educational complications for students. Moreover, some direct and inverse relationships have been found between procrastination and metacognition.

11. Suggestions for Future Research

Future researches should consider:
1. More psychometric measures should be used to assess more specific relationship
2. Other cities other than Bahawalpur should be taken into consideration.
3. Longitudinal research design will better predict the relationship of personality traits and procrastination.
4. Take into account a larger sample size to establish more sound results.
5. Practical ways should be addressed in future researches to reduce procrastination.

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