

A Study of Cognitive Biases and Decision-Making Skills of Students at University Level

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ABSTRACT

The purpose of study was exploring the Role of Cognitive Biases in Learning and its Impact on Student's Decision Making Skills and their Academic Achievement at University Level. The population comprised all undergraduate and M.Phil. students enrolled in various departments at the; 'University of Sargodha, main campus. Using a multistage random sampling technique, two faculties—Sciences and Social Sciences were selected randomly. From these faculties, six departments (Education, English, Physics, chemistry, psychology and pharmacy) were randomly chosen. Two instrument were used: for cognitive Bias. Questionnaire developed by (Mlrinalini ,n.d). Decision Making questionnaire was also adapted (Lizarraga ,2009). Instrument were validated through expert review and pilot testing. The study employed descriptive research and survey technique. Data were collected through google form and analyzed using SPSS version 22. Descriptive statistics (frequencies, mean, percentages, standard deviations) and inferential statistics T-test and ANOVA were applied. The findings highlighted that there is statistically significant difference in Cognitive Biases among students from different departments.

Keywords: Cognitive Biases, Learning, Decision-Making Skills, Academic Achievement, University Students, Higher Education, Multistage Random Sampling, Descriptive Research

INTRODUCTION

Cognitive biases refer to systematic variations from normal or rationality in judgment and tend to happen often as part of the brain in simplifying information processing. Such prejudices contribute considerably in the manner in which a person may look, understand, and act with information, most importantly in academic institutes. Cognitive biases in the university-level learning domain may misrepresent information, problem-solving strategies and assessment of decision, thus influencing the overall decision-making process as well as performance of the student in an academic context (Furnham & Boo, 2011).

There is constant student involvement in decisions made regarding academic activities, time planning, working in groups and learning strategies. Nevertheless, such decisions do not always depend on objective logic; more often than not, such decisions are made according to already existing beliefs, earlier experience and heuristics (mental shortcuts) (Kahneman, 2011). These heuristics may provide adequate judgments in a limited number of cases; however, as a result of such prompt judgments, overconfidence, confirmation bias, and anchoring may occur and impair the effective academic performance (Blumenthal-Barby & Krieger, 2015).

Educators and academic institutions that want to foster reflective thinking; effective decision-making and overall academic success in the minds of university students need to understand how cognitive biases contribute to the learning process. As the research focusing on such biases continues to expand, a budding body of research has attempted to determine the impact of such biases on learning behaviors and learning outcomes. An example of such errors can be seen as students might regard a difficult task in a certain way because of the biased perception of risk; framing effects can influence their learning objectives and the motivation itself (Plous, 1993). Nevertheless, studies that specifically track the intertwined impact of cognitive biases on learning behavior and decision making ability among students and academic performance at the college level are largely missing.

Consequently, the present research aims at tracing the presence of cognitive biases as a contributing factor to the learning process of the university students and examining the impact of the specifics of cognitive biases on the potential to make informed decisions and attain academic success. This research will lead to the potential usage of findings to develop instructional strategies and decision-support systems that have the potential of reducing the negative impact of cognitive biases in academics.

Cognitive biases refer to mental shortcuts or heuristics that tend to prompt an individual to form judgment and decisions that are typically un-rational. The biases may affect learning processes and also the outcomes that educationalists might have as far as the learning behaviors of the students are concerned. Within the last 20 years, cognitive biases have heavily come to be considered in the understanding of education experiences and decisions as studied by researchers (Plous, 2003).

REVIEW OF RELATED LITERATURE

Cognitive biases are systematic divergences of normative or rational judgment that occurs as subjects simplify complex information (usually through rapid, automatic heuristics). These prejudices determine the way people perceive, interpret and take actions on the information not only in ordinary life but also in academia (Tversky & Kahneman, 1974; Evans, 2008). Such biases can distort information processing, problem solving, and decision evaluation at the university level-- e.g., confirmation bias (preferring evidence consistent with one position), overconfidence and the Dunning-Kruger effect (incorrectly calibrated self-assessment), affect-driven decision-making, and metacognitive miscalibration of study judgments--all of which thus influence the decision-making and academic performances of students (Stanovich & West, 2000; Slovic et al., 2002; Koriat et al., 2002).

Altogether, the concept of cognitive bias may be defined in the following way: it is the case when the human thinking always produces representations that are being systematically missing with respect to a given dimension of objective reality (Haselton et al., 2015). By Das and Teng, they state that cognitive biases is an ever present cast of strategic decision making (1999, pp.757). Specifically, they subdivided the cognitive biases into the following four basic types: (1) the prior hypothesis which had a specifically target focus on limited options; (2) exposure of limited options; (3) insensitivity of probability of outcomes and (4) illusion of control. All things considered, previous literature held the position that cognitive biases can apply in making decisions related to strategy and plans (James and Barnes, 1984; Schwenk, 1986; Busenitz and Barney, 1997; and Hodgkinson et al., 1999; Deligonul et al., 2008). Moreover, entrepreneurs appear to be different regarding personal qualities like prejudices and apprehensions towards the environment (Shepherd and Williams, 2015). One can find some performance criteria that should be deployed to evaluate cognitive biases such as logical sufficiency, accuracy, as well as the processing speed (Haselton et al., 2015). In particular, we put our investment in the role of the cognitive biases that appears to be a hegemonic tendency within our framework of literature. Nevertheless, it is more significant that the cognitive biases may also be considered as practical measures to discover process improvement initiatives, as defined by Barbera-Marine et al. (2019) (p. 2890). Whereupon, the likelihood of experiencing, seizing and reconstructing

strategic choices will be partly determined by the likes of the illusion of control (Keh et al., 2002) and risk perception (Simon et al., 2000) etc.

The cognitive biases are of great importance in terms of education as well as decision-making. They are so potent that they affect the manner in which learning objectives are evaluated by the teachers, the manner in which new information is absorbed by the student and the manner in which people make academic, personal and professional choices. Such cognitive distortions may have the properties to enhance or impair the learning process including the choice to use study strategies, and the assessment of personal performance (Kahneman & Tversky, 1974; Evans, 2008).

It is thus imperative to be aware of and know cognitive biases. To teachers, the awareness about the way in which students build knowledge and the reasons as to why they would stumble on their way to critical thinking or fall into errors of reasoning, would offer an insightful experience (Stanovich & West, 2000; Toplak, West, & Stanovich, 2011). This self-awareness also comes with the potential to promote a degree of independence to the learners, bolster their metacognitive ability, and contribute to sounder decision making (Koriat, 2007; Kornell & Bjork, 2009). In addition, cognitive biases also provide researchers and psychologists with decent views with the aim of studying patterns of human motivation, action, and cognitive development (Nickerson, 1998; Furnham & Boo, 2011).

PSYCHOLOGICAL FRAMEWORKS

There exist numerous biases discussed in the psychological literature. Majority of the publications offer examples of biases and outline their phenomenology combined with the factors and conditions causing them. Because most of the biases are similar, they overlap a lot, and one of the biases often forms a specific incidence of another (more generic) one. As an example well-known tendencies and biases, namely Prejudice, Conservatism, Familiarity bias, Confirmation bias, Status quo bias, System justification, Normalcy bias, and Default effect share one common factor namely that we are more willing to accept the information that is correlated with, or confirms the current state of affairs. The absence of theory construction concerning the origin of the various biases necessitates a better integrating and constraining theme of the underlying processes of biases where the biases are grouped into groups based on their similarity and the underlying cause. It renders structure and relationship among the abundance of bias phenomena more visible and manageable, hence making possible methods and tools to deal with them. To that end we shall initially explain the new perspective regarding the origin of biases as seen through the psychological angle.

Capacity-based frameworks

Capacity-based frameworks (Heuristics & Biases perspectives) focuses on the fact that cognitive biases are caused by limited data and human limitation of information processing capacity (Broadbent, 1958, Evans, 2008, Kahneman, 1973, Kahneman, 2003, More wedge and Kahneman, 2010, Norman and Bobrow, 1 According to this perspective, the decision-makers will apply simple rules in complex, unfamiliar and uncertain time-pressured problems since they are only able to process a restricted portion of the support offered (“limited-” or “bounded rationality”: Gigerenzer and Selten, 2002, Kahneman, 1973, Norman and Bobrow, 1975, Simon, 1955). In majority of the cases, this can result in nevertheless, whether satisfactory results. Nonetheless, capacity constraints can still cause errors in decision as a person chooses easy or incorrect cues and disregards or fails to use the relevant information in an inappropriate manner (Evans, 2008, Kahneman, 2003, Kahneman and Klein, 2009).

Shortcomings of psychological frameworks

The above-mentioned psychological models are worthwhile on their own and generated numerous studies and evidence on the presence and subdivision of biases and knowledge of environmental circumstances and psychological processes influencing or mediating the emergence of them. They fail to provide an adequate answer, though, to the question of why biases are so ready and insistent even when there is no uncertainty or time pressure involved. Examples of the numerous perseveration biases that persist despite our (made) awareness of them and indeed despite the knowledge and opportunity we have to improve on them (e.g., Kahneman, 2011, Pronin et al., 2002, Risen, 2015) are Superstition and Confirmation bias and Bias blind spot and the Sunk-cost fallacy over others. The psychological and expertise-based frameworks too are yet to follow up by providing an adequate transdisciplinary account of the origin and underlying causes of biases that must be located at the root of their very specific, systematic and universal character. We do not have any clue as to what makes human beings default and revert to the same set of average peculiarities when they reason and judge a variety of conditions (e.g., Kahneman, 2011, Shafir and LeBoeuf, 2002).

Objectives of the study

Following were the objectives of the study:

- (1) To identify the level of cognitive biases in undergraduate students.
- (2) To find the level of decision making skills of undergraduate students
- (3) To examine the role of cognitive biases on student's decision making.
- (4) To evaluate the impact of cognitive biases on students' academic achievement.
- (5) To assess the impact of decision making skills on students' academic achievement.

Research Questions

Following were the research questions of the study:

- (1) What is the level of cognitive biases in BS and M.Phil. students at university of Sargodha? (2) What is the level of decision-making skills in BS and M.Phil. students at university of Sargodha?
- (2) What role do cognitive biases play in influencing students' decision-making skills?
- (3) What is the impact of cognitive biases on undergraduate students' academic achievement?
- (4) What is the impact of decision-making skills on undergraduate students' academic achievement?

METHODOLOGY

Research Design

This study employs a quantitative research design with a descriptive method and survey technique to look into the role of cognitive biases in learning and its impact on student's decision making skills and their academic achievement at university level. The quantitative approach is excellent for numerically measuring variables and assessing their correlations using statistical methods. Descriptive survey method allows the researcher to gather data in a systematic way. This design is particularly suitable in exploring the role of cognitive biases in learning and its impact on student's decision making skills and their academic achievement. It allows researchers to gather large, similar, and generalizable data to answer research questions appropriately.

Population

The population consisted of undergraduate and M.Phil. students enrolled in university of Sargodha. During this stage, students face more academic, cognitive and decision problems and require training of proper coping skills, emotional control and decision making.

Sample and sampling

Researcher used multistage random sampling. The total number of faculties in university of Sargodha were 7 Two were selected randomly sciences and social science. Sampling were selected from social science 28 % and from sciences were 57%.

Research Instrument

The instrument of Cognitive Biases was adapted from the work of (Mrinalini ,n.d). Cognitive Biases scale contains 6 main indicators. Decision Making Researcher adapted the questionnaire developed by (Lizarraga 2009). According to the context researcher modify some statements and adds up new statements. Similarly, in this study, a closed-ended question format was used to assess the role of cognitive biases of university students.

Data collection and Analysis

The researcher Collected data through online google form from the selected departments from the Faculty of Social Sciences and the Faculty of Natural Sciences at the University of Sargodha. Descriptive statistics such as mean scores, standard deviations, frequencies, and percentages were used to summarize the responses. t-tests and Analysis of Variance (ANOVA) were applied to determine significant differences between groups.

FINDING AND RESULTS

Table 1 views of BS and M.Phil. students about cognitive biases

| Sub-Variable | Indicators | SDA (f, %) | DA (f, %) | N (f, %) | A (f, %) | SA (f, %) | SD+D (f, %) | SA+A (f, %) | Mea n | SD |
|---------------------------------------------------------------------|----------------------|---------------|--------------|-------------|--------------|--------------|----------------|----------------|----------|------|
| Selection Bias (Limited Exposure to Information) | Anchoring Bias | 12 (4%) | 70 (23%) | 30 (10%) | 125 (41%) | 67 (22%) | 82 (27%) | 192 (63%) | 3.53 | 1.09 |
| | Confirmation Bias | 15 (5%) | 55 (18%) | 46 (15%) | 134 (44%) | 58 (19%) | 70 (23%) | 192 (63%) | 3.52 | 1.07 |
| | Availability Bias | 18 (6%) | 64 (21%) | 40 (13%) | 125 (41%) | 55 (18%) | 82 (27%) | 180 (59%) | 3.44 | 1.17 |
| | Recency Bias | 9 (3%) | 43 (14%) | 46 (15%) | 146 (48%) | 64 (21%) | 52 (17%) | 210 (69%) | 3.70 | 1.00 |

| | | | | | | | | | | |
|----------------------------------|----------------------------------|------------|-------------|-------------|--------------|-------------|--------------|--------------|------|------|
| | Survivorship Bias | 18 (6%) | 58 (19%) | 52 (17%) | 128 (42%) | 52 (17%) | 76 (25%) | 180 (59%) | 3.44 | 1.14 |
| Social Bias | Groupthink | 21 (7%) | 64 (21%) | 46 (15%) | 125 (41%) | 52 (17%) | 85 (28%) | 177 (58%) | 3.37 | 1.14 |
| | Halo Effect | 18 (6%) | 61 (20%) | 52 (17%) | 125 (41%) | 49 (16%) | 79 (26%) | 174 (57%) | 3.41 | 1.10 |
| Overconfidence Bias | Blind Spot Bias | 15 (5%) | 61 (20%) | 52 (17%) | 131 (43%) | 45 (15%) | 76 (25%) | 176 (58%) | 3.44 | 1.08 |
| Process Bias | Hindsight Bias | 9 (3%) | 36 (12%) | 49 (16%) | 155 (51%) | 55 (18%) | 45 (15%) | 210 (69%) | 3.70 | 0.97 |
| Cognitive Processing Bias | Difficulty Retaining Information | 15 (5%) | 49 (16%) | 46 (15%) | 140 (46%) | 55 (18%) | 64 (21%) | 195 (64%) | 3.58 | 1.08 |
| External Attribution Bias | Blaming Lack of Resources | 24 (8%) | 76 (25%) | 49 (16%) | 103 (34%) | 52 (17%) | 100 (33%) | 155 (51%) | 3.28 | 1.21 |

The table 1 showed that students experience different levels of cognitive biases in their academic behavior. Overall, the findings indicate a moderate to high presence of biased thinking patterns among students. The Recency Bias and Hindsight Bias had the highest mean scores (3.70), showing that students tend to give more importance to recently learned information and often believe they “knew the outcome all along” after receiving feedback or seeing results. The Cognitive Processing Bias (Mean = 3.58) also appeared strong, suggesting that many students face difficulty remembering older or less interesting topics. Similarly, Selection Biases including Anchoring, Confirmation, Availability, and Survivorship biases showed mean values between 3.44 and 3.53, reflecting students’ tendency to rely on the first or most convenient sources of information and to prefer materials that support their existing opinions.

In terms of Social Bias, both Groupthink and Halo Effect recorded moderate agreement (Means around 3.37–3.41), indicating that students are somewhat influenced by group opinions or the reputation of others, such as teachers or top-performing peers. The Overconfidence Bias (Mean = 3.44) showed that students often trust their own academic judgments and overlook potential errors or alternative viewpoints. Finally, External Attribution Bias had the lowest mean score (3.28), meaning fewer students blamed external factors like limited resources or internet issues for their academic challenges. Overall, these findings suggest that while cognitive biases are common among students, their intensity varies across categories, with stronger patterns in information selection and memory-related biases, and weaker patterns in blaming external factors.

Table 2 views of BS and M.Phil. students about Decision-Making in Academic Contexts

| Sr. | Sub-indicator | SA (%) | A (%) | SA+A (%) | UN (%) | DA (%) | SDA (%) | DA+SDA (%) | Mean | SD |
|-----|---------------|--------------|--------------|---------------|--------------|------------|------------|-------------|------|------|
| 1 | Uncertainty | 308 (21%) | 710 (48%) | 1018 (69%) | 387 (26%) | 87 (6%) | 27 (2%) | 114 (8%) | 3.78 | 0.89 |

| | | | | | | | | | | |
|---|----------------------|--------------|--------------|---------------|--------------|-------------|------------|------------------|------|------|
| 2 | Time/Money Pressure | 248 (17%) | 755 (51%) | 1003 (67%) | 350 (24%) | 97 (7%) | 70 (5%) | 167 (11%) | 3.67 | 0.92 |
| 3 | Information & Goals | 261 (24%) | 623 (57%) | 884 (81%) | 242 (22%) | 68 (6%) | 22 (2%) | 90 (8.2%) | 3.86 | 0.88 |
| 4 | Emotional Regulation | 276 (21%) | 746 (57%) | 1022 (78%) | 366 (28%) | 110 (8%) | 22 (2%) | 132 (10%) | 3.76 | 0.92 |
| 5 | Motivation | 331 (24%) | 733 (53%) | 1064 (77%) | 313 (23%) | 107 (8%) | 36 (3%) | 143 (10%) | 3.80 | 0.95 |
| 6 | Self-Regulation | 282 (26%) | 608 (57%) | 890 (83%) | 241 (23%) | 65 (6%) | 19 (2%) | 84 (7.8%) | 3.88 | 0.93 |
| 7 | Social Pressure | 290 (20%) | 790 (55%) | 1080 (75%) | 337 (24%) | 87 (6%) | 25 (2%) | 112 (8%) | 3.80 | 0.91 |

Table 2 presents Across all seven sub-indicators, the data reveal generally positive perceptions of students' decision-making abilities. The highest combined agreement was reported for Self-Regulation (83%, Mean = 3.88, SD = 0.93) and Information & Goals (81%, Mean = 3.86, SD = 0.88), showing that students most strongly value setting clear goals, gathering information, and structuring actions before deciding. Motivation (77%, Mean = 3.80, SD = 0.95) and Emotional Regulation (78%, Mean = 3.76, SD = 0.92) also scored high, indicating students generally feel confident, focused, and emotionally balanced during decision making. Social Pressure (76%, Mean = 3.80, SD = 0.91) and Consequences of Decision (around 73–74%, Mean = 3.84, SD ≈ 0.88–0.90) show that most students consider social norms and long-term effects of their choices, while still maintaining autonomy. The lowest agreement was seen for Time/Money Pressure (67%, Mean = 3.67, SD = 0.92), suggesting that although students try to organize actions based on available time and funds, they experience comparatively more difficulty in these situations. Overall, the findings indicate that BS and M.Phil. students perceive themselves as capable decision makers who are well-motivated, informed, and emotionally regulated, but who may benefit from further support in managing time and financial constraints during academic decision making.

| | Sum of Squares | Df | Mean Square | F | <i>P-value</i> |
|----------------|----------------|-----|-------------|-------|----------------|
| Between Groups | 1.603 | 4 | .401 | 1.228 | .299 |
| Within Groups | 97.525 | 299 | .326 | | |
| Total | 99.128 | 303 | | | |

Table 3 shows the results of a One-Way ANOVA for the comparison of Cognitive Biases with respect to students' CGPA. The analysis revealed that there was no statistically significant difference in the mean scores of Cognitive Biases across different CGPA groups, $F(4, 299) = 1.228, p = 0.299 > \alpha = 0.05$.

Table 4 One-Way ANOVA for comparison of Decision Making with respect to different CGPA

| | Sum of squares | Df | Mean Square | F | P-value |
|----------------|----------------|-----|-------------|------|---------|
| Between Groups | .272 | 4 | .068 | .295 | .881 |
| Within Groups | 68.904 | 299 | .230 | | |
| Total | 69.176 | 303 | | | |

Table 4 shows the results of a One-Way ANOVA for the comparison of Decision Making in Academic Contexts with respect to different CGPA categories. The analysis revealed that there was no statistically significant difference in the mean scores of Decision Making in Academic Contexts among students with different CGPA levels, $F(4, 299) = 0.295$, $p = 0.881 > \alpha = 0.05$.

Table 5 One-Way ANOVA for comparison of Cognitive Biases with respect to different Semester

| | Sum of Squares | Df | Mean Square | F | <i>P-value</i> |
|----------------|----------------|-----|-------------|--------|----------------|
| Between Groups | 17.189 | 5 | 3.438 | 12.503 | .000 |
| Within Groups | 81.939 | 298 | .275 | | |
| Total | 99.128 | 303 | | | |

Table 5 shows the results of a One-Way ANOVA for the comparison of Cognitive Biases with respect to different semesters. The analysis revealed a statistically significant difference in the mean scores of Cognitive Biases among students from different semesters, $F(5, 298) = 12.503$, $p = 0.000 < \alpha = 0.05$.

Table 6 One-Way ANOVA for comparison of Decision Making with respect to different Semester

| | Sum of squares | Df | Mean Square | F | P-value |
|----------------|----------------|-----|-------------|-------|---------|
| Between Groups | 3.763 | 5 | .753 | 3.429 | .005 |
| Within Groups | 65.412 | 298 | .220 | | |
| Total | 69.176 | 303 | | | |

Table 6 shows the results of a Oneq2s-Way ANOVA for the comparison of Decision Making in Academic Contexts with respect to different semesters. The analysis revealed that there was a statistically significant difference in the mean scores of Decision Making in Academic Contexts among students from different semesters, $F(5, 298) = 3.429$, $p = 0.005 < \alpha = 0.05$.

CONCLUSION

Students at BS and M.Phil. levels show several cognitive and behavioral biases in their academic work. Many rely on the first source they find, trust teachers or peers without verification, and prefer information that supports their existing opinions. They often depend on easy or readily available materials (e.g., past notes or recent discussions) instead of engaging with diverse or in-depth sources. Students also tend to

overvalue recent information, well-known authors, and high-achieving peers while ignoring contradictory or negative findings. Group influence is strong, as they frequently follow peers' opinions, writing styles, and judgments without critical evaluation. Additionally, many students overestimate their own work, avoid reviewing it, and resist feedback. Memory limitations are evident, especially for less interesting or older topics. Finally, students often attribute poor performance to external factors such as limited resources, internet issues, or lack of teacher guidance rather than their own effort. There was no significant difference in Cognitive Biases among students with different GPA levels. There was significant difference in Cognitive Biases among students of different semesters. Students demonstrate generally positive decision-making abilities. They are adaptable, aware of changing circumstances, and able to evaluate risks and outcomes. Most students manage time effectively, meet deadlines, and align their actions with available resources. They tend to gather information, plan steps, and consider both short-term and long-term consequences before making decisions. Students also show responsibility by managing negative outcomes and reflecting on their decisions. Additionally, they are motivated, goal-oriented, and confident in their abilities. Emotional control is evident, as many remain calm under pressure, manage fear, and avoid impulsive actions. Finally, students show social awareness by respecting norms, avoiding conflict, maintaining independence in decisions, and considering the broader impact of their choices. There was no significant difference in Decision Making Skills among students with different GPA levels. There was no significant difference in Decision Making Skills views about different semesters among university students.

DISCUSSION

The findings of the study indicate that students at the University of Sargodha exhibit a considerable presence of cognitive biases that influence their learning processes. Anchoring bias is highly evident, as many students rely heavily on the first source of information they encounter, such as teachers' explanations, initial Google search results, or seniors' notes, without further verification. In addition, confirmation bias is common, with students preferring information that supports their existing beliefs while ignoring contradictory evidence or feedback. The study also highlights the role of availability and recency biases, where students depend on easily accessible or recently presented information rather than exploring a broader and more diverse range of sources. Survivorship bias is also observed, as students tend to trust successful peers and well-known authors, overlooking less prominent but valuable academic contributions. The study further reveals that these cognitive biases are widespread and not significantly influenced by demographic factors such as gender, age, GPA, or residential background. However, variations across departments and academic levels suggest that educational context and academic maturity play a role in shaping the intensity of these biases. Overall, these biases limit students' ability to think critically, evaluate information objectively, and engage in deep learning, even though they may serve as mental shortcuts to reduce cognitive effort. On the other hand, the study shows that BS and M.Phil. students possess relatively strong decision-making skills. They demonstrate the ability to handle uncertainty, manage time and financial constraints, evaluate potential consequences, and regulate their emotions effectively. Students are generally adaptable, capable of adjusting their decisions according to changing circumstances, and willing to take responsibility for the outcomes of their choices. They also show awareness of both short-term and long-term consequences and engage in reflective thinking after making decisions. These positive decision-making abilities may be attributed to students' academic experiences, including exposure to challenges, group work, and project-based learning, which require them to analyze situations and make informed choices. Emotional control and self-regulation are particularly strong, enabling students to manage stress, avoid impulsive actions, and stay focused on their goals. However, despite these strengths, some students still rely on external factors such as peer influence, social pressure, or limited resources when explaining their decisions, indicating the presence of external attribution bias. This can weaken independent thinking and rational judgment.

In conclusion, the study suggests that while cognitive biases negatively affect students' critical thinking and learning depth, their strong decision-making skills contribute positively to their academic performance. Students who can effectively gather information, anticipate outcomes, and regulate their behavior are more likely to succeed and adapt in academic environments.

RECOMMENDATIONS

- 1.** The finding of the study reveals that most of the student opined that they rely on past notes instead of reading the textbook or recent research so it is recommended that students be encouraged to consult updated textbooks and current research articles to develop a deeper and more current understanding of their subjects.
- 2.** The finding of the study reveals that most of students ignore research papers with negative or unexpected results so it is recommended that students be guided to analyze both positive and negative research findings critically, as this can enhance their analytical thinking and provide a balanced academic perspective.
- 3.** The finding of the study reveals that If their group agrees on an answer, they accept it without verifying so it is recommended that students be trained to verify information independently and support their conclusions with reliable evidence, even in group settings.
- 4.** The finding of the study reveals that follow the writing style of their classmates instead of developing their own so it is recommended that educators encourage students to develop their individual writing styles by practicing critical reflection and engaging in creative academic writing exercises.
- 5.** The finding of the study reveals that they trust a senior's advice on assignments without verifying their accuracy so it is recommended that students be advised to cross-check the information they receive from peers or seniors with credible academic sources before applying it in their work.
- 6.** The finding of the study reveals that most of students assume their assignment is free of errors and don't review it before submission so it is recommended that students be encouraged to proofread and revise their assignments to enhance the quality and accuracy of their academic work.
- 7.** The finding of the study reveals that most of students say they couldn't complete their assignment because the library had limited books so it is recommended that students be guided to use online databases, e-libraries, and other digital resources to overcome limitations in physical library materials.
- 8.** The finding of the study reveals that most of students can quickly change their preferences if things go wrong so it is recommended that this adaptability be further developed through problem-solving activities and reflective learning exercises to strengthen their academic agility.
- 9.** The finding of the study reveals that most of students organize their actions based on the time available so it is recommended that students receive time management training to help them plan tasks more effectively and maintain academic quality under time constraints.
- 10.** The finding of the study reveals that most of students able to generate and utilize emotions that support them in making decisions so it is recommended that educators promote emotional intelligence training so students can continue to manage their emotions positively and make well-informed academic decisions.

REFERENCES

- Kahneman, D. (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.
- Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*, 185(4157), 1124–1131.
- Stanovich, K. E., & West, R. F. (2000). Individual Differences in Reasoning: Implications for the Rationality Debate? *Behavioral and Brain Sciences*, 23(5), 645–726.
- Evans, J. St. B. T. (2008). Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology*, 59, 255–278.
- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic Decision Making. *Annual Review of Psychology*, 62, 451–482.
- Gigerenzer, G., & Todd, P. M. (1999). *Simple Heuristics That Make Us Smart*. Oxford University Press.
- Toplak, M. E., West, R. F., & Stanovich, K. E. (2011). The Cognitive Reflection Test as a Predictor of Performance on Heuristics-and-Biases Tasks. *Memory & Cognition*, 39(7), 1275–1289.
- Khoo, C. S., Na, J. C., & Jaidka, K. (2011). Analysis of the macro-level discourse structure of literature reviews. *Online Information Review*, 35(2), 255-271.
- Korteling, J. E., Paradies, G. L., & Sassen-van Meer, J. P. (2023). Cognitive bias and how to improve sustainable decision making. *Frontiers in Psychology*, 14, 1129835.
- Baysal, E. A., & Ocak, G. (2022). University Students' Cognitive Bias in the Context of Their Analytical Thinking Skills: A Reliability and Validity Study. *International Journal of Progressive Education*, 18(3), 205-225.
- Gilovich, T., Griffin, D., & Kahneman, D. (2002). *Heuristics and Biases: The Psychology of Intuitive Judgment*. Cambridge University Press.
- Stanovich, K. E., & West, R. F. (2000). Individual Differences in Reasoning: Implications for the Rationality Debate? *Behavioral and Brain Sciences*, 23(5), 645–726.
- Bechara, A., Damasio, H., & Damasio, A. R. (1999). Emotion, Decision Making and the Orbitofrontal Cortex. *Cerebral Cortex*, 10(3), 295–307.
- Fiske, S. T., & Taylor, S. E. (2013). *Social Cognition: From Brains to Culture* (2nd ed.). SAGE Publications.
- Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175–220.
- Furnham, A., & Boo, H. C. (2011). A literature review of the anchoring effect. *The Journal of Socio-Economics*, 40(1), 35–42.

- Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, 1(1), 7–59.
- Fischhoff, B. (1975). Hindsight \neq Foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, 1(3), 288–299.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77(6), 1121–1134.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453–458.
- Eysenck, M. W., & Keane, M. T. (2015). *Cognitive Psychology: A Student's Handbook* (7th ed.). Psychology Press.
- Chi, M. T. H. (2005). Commonsense conceptions of emergent processes: Why some misconceptions are robust. *Journal of the Learning Sciences*, 14(2), 161–199.
- Koriat, A. (1997). Monitoring one's own knowledge during study: A cue-utilization approach to judgments of learning. *Journal of Experimental Psychology: General*, 126(4), 349–370.
- Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, 15(1), 20–27.
- Dunlosky, J., & Metcalfe, J. (2009). *Metacognition*. Sage Publications.
- Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology*, 64, 417–444.
- Bazerman, M. H., & Moore, D. A. (2012). *Judgment in Managerial Decision Making* (8th ed.). Wiley.
- Ariely, D. (2008). *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. HarperCollins.
- Milkman, K. L., Chugh, D., & Bazerman, M. H. (2009). How can decision making be improved? *Perspectives on Psychological Science*, 4(4), 379–383.
- Fischhoff, B. (2012). Judgment and decision making. In K. Holyoak & R. Morrison (Eds.), *The Oxford Handbook of Thinking and Reasoning* (pp. 707–730). Oxford University Press.
- Stanovich, K. E., West, R. F., & Toplak, M. E. (2016). *The Rationality Quotient: Toward a Test of Rational Thinking*. MIT Press.
- Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review*, 7(4), 351–371.
- Koriat, A. (1997). Monitoring one's own knowledge during study: A cue-utilization approach to judgments of learning. *Journal of Experimental Psychology: General*, 126(4), 349–370.

- Dunlosky, J., & Rawson, K. A. (2012). Overconfidence produces underachievement: Inaccurate self evaluations undermine students' learning and retention. *Learning and Instruction, 22*(4), 271–280.
- Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology, 64*, 417–444.
- Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences, 15*(1), 20–27.
- Bazerman, M. H., & Moore, D. A. (2012). *Judgment in Managerial Decision Making* (8th ed.). Wiley.
- Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review, 7*(4), 351–371.
- Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology, 64*, 417–444.
- Nickerson, R. S. (1998). *Confirmation bias: A ubiquitous phenomenon in many guises. Review of General Psychology, 2*(2), 175–220.
- Plous, S. (2003). *The Psychology of Judgment and Decision Making*. McGraw-Hill.
- Furnham, A., & Boo, H. C. (2011). A literature review of the anchoring effect. *The Journal of Socio-Economics, 40*(1), 35–42
- Moore, D. A., & Healy, P. J. (2008). *The trouble with overconfidence. Psychological Review, 115*(2), 502–517.
- Baysal, A., & Ocak, G. (2022). *University Students' Cognitive Bias in the Context of Their Analytical Thinking Skills: A Reliability and Validity Study. International Journal of Progressive Education, 18*(2), 110–123.
- Ghosh, M., et al. (2023). *Role of Feedback and Awareness in Managing Students' Cognitive Biases. International Journal of Social Science Research, 11*(1), 78–91.
- Agrawal, A., & Agrawal, A. (2023). *Using AI to Mitigate Cognitive Biases in Student Learning. Journal of Student Research, 12*(2).
- Pronin, E., Lin, D. Y., & Ross, L. (2002). *The Bias Blind Spot: Perceptions of Bias in Self Versus Others. Personality and Social Psychology Bulletin*. This foundational study explores how individuals perceive others as more biased than themselves, highlighting the introspection illusion and naive realism
- Evans, J. St. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology, 59*, 255–278.