

Exploring the Impact of Cognitive Flexibility on General Decision-Making Styles Among Pre-Service Teachers: A Regression Analysis

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ABSTRACT

The main aim of this study is to investigate the relationship between cognitive flexibility and general decision-making styles among preservice teachers. Using a descriptive research design and purposive random sampling. Data were collected from 300 Bachelor of Education students in Punjab through the Cognitive Flexibility Inventory (Dennis & Vander Wal, 2010) and the General Decision-Making Style (Scott & Bruce, 1995). Correlation analysis revealed significant relationship between cognitive flexibility and general decision-making styles, including their sub-dimensions. Regression analysis disclosed that cognitive flexibility explains approximately 18% of the variance in decision-making styles. The findings are analyzed in relation to their educational implications.

Keywords: *Cognitive Flexibility, General Decision-Making Styles, Pre-service Teachers, Punjab*

The role of teachers in shaping societal progress has been well-documented, underscoring their critical position as facilitators of the learning process (Tulqin et al., 2024). To navigate the multifaceted challenges of the classroom effectively, teachers must possess a diverse range of cognitive and interpersonal skills (Bufasi et al., 2024). Among these essential competencies, cognitive flexibility and decision-making are particularly noteworthy. Cognitive flexibility described as the mental capacity to shift between different concepts or perspectives and manage multiple streams of information simultaneously, a skill crucial for adapting to the dynamic and often unpredictable nature of classroom environments (Lin et al., 2024). This cognitive ability is bifurcated into two dimensions: the alternative dimension, which involves integrating diverse viewpoints to facilitate creative problem-solving and adaptability; and the control dimension, which entails managing and modifying cognitive processes to align with shifting task demands and contextual needs (Dajani & Uddin, 2015). These dimensions collectively aid preservice teachers in managing complex educational settings, enhancing their responsiveness to varied student needs and instructional challenges (Granziera et al., 2019).

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The educational significance of cognitive flexibility is further supported by research demonstrating its positive impact on various academic outcomes. For instance, Gokce and Guner (2024) identified a significant positive correlation between cognitive flexibility and academic achievement among university students. Additionally, cognitive flexibility has been linked to improved interpersonal problem-solving skills and techno-pedagogical competence among preservice teachers (Ozturk et al., 2020). However, Buechner et al. (2023) found no significant link between cognitive flexibility and cardiovascular disease risk, illustrating that its effects are context-specific. Kaur (2024) also highlighted that mindful attention awareness accounts for 30.6% of the variance in cognitive flexibility among preservice teachers, indicating that mindfulness practices may enhance this crucial cognitive skill.

Decision-making represents another core competency in teaching, involving the selection of instructional strategies, classroom management, and addressing individual student needs (Geurts et al., 2024). The study of decision-making among preservice teachers is crucial due to its implications for classroom management, instructional efficacy, and overall teacher performance. Decision-making styles, such as rational, intuitive, dependent, avoidant, and spontaneous, reflect habitual patterns used when making choices (Scott & Bruce, 1995). Rational decision-making, characterized by systematic analysis and logical evaluation, is vital for lesson planning and curriculum development. Intuitive decision-making, based on instinct and experience, is beneficial in dynamic classroom settings requiring rapid responses. Dependent decision-making involves seeking advice and reassurance, supporting collaborative practices but potentially indicating a lack of confidence. Avoidant decision-making, marked by procrastination and reluctance, can cause issues in classroom management, while spontaneous decision-making, involving quick decisions, may be advantageous in certain scenarios but lacks thorough consideration.

The interplay among cognitive flexibility and decision-making styles is rooted in cognitive psychology and decision-making theory. Cognitive flexibility, as described by Spiro et al. (1988), is crucial for adapting thinking and behavior to changing circumstances, enhancing problem-solving and learning in dynamic environments. Decision-making theory, particularly Dual-Process Theory (Yoo et al., 2024), highlights how cognitive flexibility integrates intuitive judgments and analytical reasoning, enabling preservice teachers to handle complex educational scenarios more effectively (Uddin, 2021). Despite significant advances in understanding these constructs independently, their interaction within preservice teacher education remains underexplored. This research aims to bridge this void by investigating the relationship between cognitive flexibility and decision-making styles among preservice teachers, providing insights into how cognitive flexibility can be incorporated into teacher education to improve decision-making and teaching effectiveness.

Objectives of the study

- To examine the relationship between cognitive flexibility and general decision-making styles among preservice teachers.
- To examine the relationship between the alternative dimension of cognitive flexibility and the specific dimensions of general decision-making styles, namely rational, intuitive, dependent, avoidant, and spontaneous, among preservice teachers.
- To examine the relationship between the control dimension of cognitive flexibility and the various dimensions of general decision-making styles, including rational, intuitive, dependent, avoidant, and spontaneous, among preservice teachers.

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- To examine cognitive flexibility as a predictive factor of general decision-making styles among preservice teachers.

Hypothesis of the study

- There is no significant relationship between cognitive flexibility and general decision making style among pre-service teachers.
- There is no significant relationship between the alternative dimension of cognitive flexibility and the specific dimensions of general decision-making styles, namely rational, intuitive, dependent, avoidant, and spontaneous, among preservice teachers.
- There is no significant relationship between the control dimension of cognitive flexibility and the various dimensions of general decision-making styles, including rational, intuitive, dependent, avoidant, and spontaneous, among preservice teachers.
- Cognitive flexibility is not a significant predictor of general decision making style among pre-service teachers.

METHODOLOGY

The study employed a descriptive survey method to thoroughly investigate the relationship between cognitive flexibility and general decision making style among pre-service teachers enrolled in Bachelor of Education programs across government and government-aided colleges in the Punjab region.

Sampling Strategy

A purposive sampling strategy selected 300 preservice teachers from government, government-aided, and private colleges in Punjab to ensure broad representation. Data collection occurred in May 2024, with recruitment involving direct outreach to educational institutions based on their willingness to participate. This approach aimed to reflect the region's demographic diversity and educational context, enhancing the generalizability of findings regarding the relationship between mindful attention awareness, self-esteem, and cognitive flexibility among preservice teachers.

Data Collection Procedure

Data collection commenced after participants were briefed on the study's purpose, procedures, and confidentiality. Informal informed consent was obtained, ensuring participant's voluntary participation and data use for research only. The Cognitive Flexibility Inventory (Dennis & Vander Wal, 2010) and the General Decision-Making Style scale (Scott & Bruce, 1995) were administered via Google Forms, with clear instructions to standardize responses. Ethical considerations included confidentiality, data security, and the right to retract at any time without consequence.

Table 1 Demographic profile of the sample

Variables	Category	Frequency	%
Sex	Male	128	42%
	Female	172	58%
Age	18-21	236	79%
	21-25	64	21%
Locale	Rural	162	54%
	Urban	138	46%
Family structure	Joint	57	19%
	Nuclear	243	81%

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Variables	Category	Frequency	%
Marital status	Married	76	25%
	Unmarried	224	74%

Table 1 presents the demographic attributes of the study sample. The sample comprises (42%) males and (58%) females. Age distribution reveals that a significant majority, participants (79%), are between 18 and 21 years old, while (21%) participants are between 21 and 25 years old. Regarding locale, (54%) respondents are from rural regions, and (46%) are from urban areas. The family structure shows that (19%) respondents come from joint families, whereas (81%) are from nuclear families. Marital status data indicates that (25%) respondents are married, while (74%) are unmarried.

Tools & Procedures

- Cognitive Flexibility Inventory**, by Dennis and Vander Wal in 2010, comprises 20 items designed to measure an individual’s adaptive responses to challenging life circumstances. Respondents rate each item on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Scores on the CFI vary from 20 to 140, with higher scores reflecting greater cognitive flexibility. The inventory evaluates two dimensions of cognitive flexibility: Alternative and Control.
- The General Decision-Making Styles (GDMS)** tool, developed by Scott and Bruce (1995), is designed to evaluate five distinct decision-making styles: rational, avoidant, intuitive, dependent, and spontaneous. Each style is assessed through five items, and responses are recorded using a 5-point Likert scale. Respondents indicate their level of agreement or disagreement with each statement, with the scale varying from 1 (strongly disagree) to 5 (strongly agree).

Analysis of data

Data were analyzed using SPSS version 22.0. Descriptive statistics summarized key variables, followed by correlation analysis to explore relationships. Assumptions for parametric tests were checked, and regression analysis assessed the predictive impact of cognitive flexibility on general decision-making styles, controlling for covariates.

Table 2 Descriptive analysis of data and correlation results between cognitive flexibility and general decision making among pre-service teachers

Variables	Mean	SD	General decision making
Cognitive Flexibility	86.08	23.20	.146*
General Decision Making	55.18	7.23	

*.Significant at the 0.05 level

Table 2 highlights the descriptive statistics and correlation analysis between cognitive flexibility and general decision-making among preservice teachers. The mean cognitive flexibility score is 86.08 with a SD of 23.20, indicating moderate variability among participants. The mean score for general decision-making is 55.18 with a SD of 7.23, reflecting the average decision-making ability in the sample. A statistically significant positive correlation ($r = 0.146, p < 0.05$) was found between cognitive flexibility and general decision-making, suggesting that higher cognitive flexibility is related with better decision-making skills among preservice teachers. Consequently, the first hypothesis, stating that there is no significant relationship between cognitive flexibility and general decision-making style among preservice teachers, is rejected.

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Table 3 Correlation results between alternative dimension of cognitive flexibility and sub-dimensions of general decision-making style [rational (R), intuitive (I), dependent (D), avoidant (A), and spontaneous (S)] decision making style among pre-service teachers.

Variables	R	I	D	A	S
Alternative dimension	-.151**	.130*	.140*	-.144*	.121*

**Significant at the 0.01 level.

*Significant at the 0.05 level.

Table 2 highlights several key correlations between the alternative dimension of cognitive flexibility and various decision-making styles among preservice teachers. A weak negative correlation was found with rational decision-making ($r = -0.151$, $p = 0.009$), while weak positive correlations were observed with intuitive ($r = 0.130$, $p = 0.024$), dependent ($r = 0.140$, $p = 0.015$), and spontaneous decision-making styles ($r = 0.121$, $p = 0.035$). A weak negative relation was also noted with avoidant decision-making ($r = -0.144$, $p = 0.013$). These findings reject the second hypothesis, which proposed no significant relationship between the alternative dimension of cognitive flexibility and the various dimensions of general decision-making style among preservice teachers.

Table 4 Correlation results between control dimension of cognitive flexibility and sub-dimensions of general decision-making style [rational (R), intuitive (I), dependent (D), avoidant (A), and spontaneous (S)] decision making style among pre-service teachers.

Variable	R	I	D	A	S
Control dimension	-.134*	.142*	.235**	-.124*	.159**

**Significant at the 0.01 level.

*Significant at the 0.05 level.

Table 3 reveals significant correlations between the control dimension of cognitive flexibility and various decision-making styles among preservice teachers. There is a weak negative correlation with rational decision-making ($r = -0.134$, $p = 0.020$) and a weak positive correlation with intuitive decision-making ($r = 0.142$, $p = 0.014$). A moderate positive correlation is observed with dependent decision-making ($r = 0.235$, $p < 0.001$), while weak negative and positive correlations exist with avoidant ($r = -0.124$, $p = 0.032$) and spontaneous decision-making styles ($r = 0.159$, $p = 0.006$), respectively. These findings lead to the rejection of the third hypothesis, which proposed no significant relationship between the control dimension of cognitive flexibility and the various dimensions of general decision-making style among preservice teachers.

Regression analysis of the data

Before proceeding with the linear regression analysis, researchers rigorously assessed the necessary assumptions. They examined scatter plots to evaluate homoscedasticity, which displayed rectangular patterns (Yang et al., 2019), thereby confirming that this assumption was satisfied. Additionally, the Durbin-Watson statistics fell between 1.5 and 2.5, indicating no serial correlation and fulfilling another essential assumption of linear regression analysis (Turner, 2019).

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Table 5 Results of the linear regression analysis: Cognitive flexibility predicting General decision making among pre-service teachers (N=300)

Variable	Non-standardized beta Coefficient	Standard. Error	standardized Coefficient beta	t	p
(Constant)	51.251	1.594		32.157	.000
Cognitive Flexibility	.046	.018	.146	2.551	0.00
R=.146 R ² = .021 Adjusted R ² = .018 F= (1,248)=(6.50) p = (0.00)					

Table 5 presents the linear regression analysis results, showing that cognitive flexibility is a key predictor of general decision-making among preservice teachers. The non-standardized beta coefficient for cognitive flexibility is 0.046 (SE = 0.018), with a standardized beta of 0.146 and a t-value of 2.551 (p = 0.00). The model explains 18% of the variance in decision-making (R² = 0.021, adjusted R² = 0.018), with an F-statistic of 6.50 (p = 0.011), confirming its significance. Consequently, the fourth hypothesis, stating that cognitive flexibility is not a significant predictor of general decision-making style among preservice teachers, is rejected.

DISCUSSION

The study uncovered several key relationships between the variables examined. Initially, it demonstrated a significant correlation between cognitive flexibility and general decision-making among preservice teachers, corroborating findings by Gokce and Guner (2024), who reported a positive correlation between cognitive flexibility and academic achievement. Furthermore, the research identified notable connections between the alternative dimension of cognitive flexibility and various sub-dimensions of decision-making styles, including rational, intuitive, dependent, avoidant, and spontaneous approaches.

However, some results diverged from existing literature. Specifically, our study revealed a positive link among cognitive flexibility and avoidant decision-making, which contrasts with El-Othman et al. (2020), who found no significant relationship between personality traits and avoidant decision-making. This discrepancy may be attributed to the unique developmental stage of preservice teachers, who may display a mixture of independent and dependent decision-making tendencies (Catherine & Somerville).

Additionally, the research found significant relationships between the control dimension of cognitive flexibility and the sub-dimensions of decision-making styles among preservice teachers. These results are consistent with findings by Cankaya and Aydogan (2022), who reported significant associations between the control dimension of cognitive flexibility and argumentation skills among preservice science teachers.

Finally, regression analysis indicated that cognitive flexibility significantly predicts general decision-making style, accounting for approximately 18% of the variance among preservice science teachers. This finding aligns with Martinez and Brusoni (2018), who identified cognitive flexibility as a significant predictor of adaptive decision-making. This predictive relationship underscores the crucial role of cognitive flexibility in shaping decision-making processes and suggests its potential as a focus for educational interventions.

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The findings of the study will be valuable for policymakers, academic counselors, and educationists in understanding the role of cognitive flexibility in enhancing decision-making among preservice teachers. It is recommended that cognitive flexibility be integrated into teacher preparation programs to ensure preservice teachers develop adaptive decision-making skills. Educationists and teacher training institutes should organize workshops and training programs focused on strengthening cognitive flexibility which will in turn foster decision-making skills among pre-service teachers. Additionally, curriculum should be tailored to incorporate theoretical and practical perspectives of cognitive flexibility to sensitize the future educators in exercising mental flexibility activities which in turn are influential in improving their decision-making capabilities and classroom management skills.

CONCLUSION

The study highlights the significant role of cognitive flexibility in shaping decision-making styles among preservice teachers. The findings underscore the importance of incorporating cognitive flexibility training into teacher preparation programs and professional development activities. Despite some limitations, the study contributes valuable insights into how cognitive adaptability influences decision-making processes in educational contexts. By addressing the identified research gaps and limitations, future studies can further elucidate the complex interplay between cognitive flexibility and decision-making, ultimately enhancing the effectiveness of educational practices and teacher preparation strategies.

REFERENCES

- Bufasi, E., Lin, T. J., Benedicic, U., Westerhof, M., Mishra, R., Namsone, D., & Buckley, J. (2024). Addressing the complexity of spatial teaching: a narrative review of barriers and enablers. *In Frontiers in Education*, 99 (4), 1306189.
- Cankaya, O. & Aydogan, N. (2022). The Relationship between Argumentation Skills and Cognitive Flexibility of PreService Science Teachers. *Asian Journal of Education and Training*, 8(2): 51-59.
- Dajani, D. R., & Uddin, L. Q. (2015). Demystifying cognitive flexibility: Implications for clinical and developmental neuroscience. *Trends in neurosciences*, 38(9), 571–578. <https://doi.org/10.1016/j.tins.2015.07.003>
- El-Othman, R., El Othman, R., Hallit, R., Obeid, S., & Hallit, S. (2020). Personality traits, emotional intelligence and decision-making styles in Lebanese universities medical students. *BMC psychology*, 8(1), 46. <https://doi.org/10.1186/s40359-020-00406-4>
- Geurts, E. M., Reijs, R. P., Leenders, H. H., Jansen, M. W., & Hoebe, C. J. (2024). Co-creation and decision-making with students about teaching and learning: A systematic literature review. *Journal of Educational Change*, 25(1), 103-125.
- Gokçe, S., & Güner, P. (2024). Pathways from cognitive flexibility to academic achievement: mediating roles of critical thinking disposition and mathematics anxiety. *Current Psychology*, 43(20), 18192-18206.
- Gorospe, J. D. (2022). Pre-Service Teachers' Teaching Anxiety, Teaching Self-Efficacy, and Problems Encountered During the Practice Teaching Course. *Journal of Education and Learning*; 11 (4), 1927-5269. URL: <https://doi.org/10.5539/jel.v11n4p84>.
- Graham, P. (2005). Classroom-based assessment: Changing knowledge and practice through preservice teacher education. *Teaching and Teacher Education*, 21(6), 607-621.
- Hartley CA, Somerville LH. (2015). The neuroscience of adolescent decision-making. *Curr Opin Behav Sci*. 108-115. doi: 10.1016/j.cobeha.2015.09.004. PMID: 26665151; PMCID: PMC4671080.

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- Kaur.B. (2024). Relationship between Mindful Attention Awareness and Cognitive Flexibility among Pre-Service Teachers: A Regression Analysis. *The New Educational Review*. 75. 217-227. 10.15804/tner.2024.75.1.17.
- Lin, S., Duan, W., Wang, Y., & Duan, H. (2024). Thinking Style Moderates the Impact of the Classroom Environment on Language Creativity. *Journal of Intelligence*, 12(1), 5.
- Martinez D.L and Brusoni. S. (2018). Cognitive flexibility and adaptive decision-making: Evidence from a laboratory study of expert decision makers. *Strategic Management Journal*, 39(4), 1031-1058. <https://doi.org/10.1002/smj.2774>
- Oztürk, G., Karamete, A., & Çetin, G. (2020). The relationship between pre-service teachers' cognitive flexibility levels and techno-pedagogical education competencies. *International Journal of Contemporary Educational Research*, 7(1), 40-53. DOI: <https://doi.org/10.33200/ijcer.623668>
- Paquette, K. R., & Rieg, S. A. (2016). Stressors and coping strategies through the lens of early childhood/special education pre-service teachers. *Teaching and teacher education*, 57, 51-58.
- Scott, S & Bruce.R. (1995). Decision-Making Style: The Development and Assessment of a New Measure. *Educational and Psychological Measurement - Educ psychol meas*. 55. 818-831. 10.1177/0013164495055005017.
- Spiro, Rand. (1988). Cognitive Flexibility Theory: Advanced Knowledge Acquisition in Ill-structured Domains.
- Tulqino'g'li, U. M., Zukhra, B., & Durdona, A. (2024). The role of the teacher in society. Education and upbringing: Innovations in Contemporary Scientific Development in the Era of Globalization: *Problems and Solutions.*, 2(2), 34-41.
- Turner, Paul. (2019). Critical values for the Durbin-Watson test in large samples. *Applied Economics Letters*. 27. 1-5. 10.1080/13504851.2019.1691711.
- Uddin, L.Q. Cognitive and behavioural flexibility: neural mechanisms and clinical considerations. *Nat Rev Neurosci* 22, 167–179 (2021). <https://doi.org/10.1038/s41583-021-00428-w>
- Ulla, Mark. (2016). Pre-service Teacher Training Programs in the Philippines: The Student-teachers Practicum Teaching Experience. *EFL JOURNAL*. 1. 10.21462/eflj.v1i3.23.
- Valls-Serrano. C, Francisco.C.D, Caballero-Lo'pez.E&Caracuel. A. (2022). Cognitive Flexibility and Decision Making Predicts Expertise in the MOBA Esport, League of Legends. *Original Research*. 1-13, DOI: 10.1177/21582440221142728.
- Yang, Kun & Tu, Justin & Chen, Tian. (2019). Homoscedasticity: an overlooked critical assumption for linear regression. *General Psychiatry*. 32. e100148. 10.1136/gpsych-2019-1001
- yıldız, Meltem & Eldeleklioğlu, Jale. (2021). The Relationship between Decision-Making and Intolerance to Uncertainty, Cognitive Flexibility and Happiness. *Eurasian Journal of Educational Research (EJER)*. 20. 39-60. 10.14689/ejer.2021.91.3.
- Yoo, J., Park, J., Ha, M., & Mae Lagmay Darang, C. (2024). Exploring Pre-Service Teachers' Cognitive Processes and Calibration with an Unsupervised Learning-Based Automated Evaluation System. *Sage Open*, 14(3). <https://doi.org/10.1177/21582440241262864>

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Conflict of Interest

The author(s) declared no conflict of interest.

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