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Prediction of Commitment to Learning Based on Social Anxiety and Fear of Failure Mediated by Cognitive Flexibility

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A B S T R A C T

Objective: This study aims to examine the predictive relationships between social anxiety, fear of failure, and commitment to learning, with cognitive flexibility as a mediating variable.

Methods and Materials: The research employed a cross-sectional design with a sample of 180 participants selected from Tehran, based on the Morgan and Krejcie table. Participants completed standardized instruments to measure commitment to learning, social anxiety, fear of failure, and cognitive flexibility. Data were analyzed using Pearson correlation and Structural Equation Modeling (SEM) through SPSS-27 and AMOS-21 software. Model fit indices and path coefficients were calculated to evaluate the hypothesized relationships.

Findings: The findings revealed significant negative correlations between commitment to learning and both social anxiety ($r = -0.41$, $p < 0.001$) and fear of failure ($r = -0.37$, $p < 0.001$). A positive correlation was observed between commitment to learning and cognitive flexibility ($r = 0.62$, $p < 0.001$). SEM results confirmed that cognitive flexibility significantly mediated the effects of social anxiety ($\beta = -0.20$, $p < 0.001$) and fear of failure ($\beta = -0.13$, $p < 0.001$) on commitment to learning. Model fit indices indicated a good fit ($X^2/df = 1.95$, RMSEA = 0.046, CFI = 0.96, TLI = 0.95). These findings underscore the critical role of cognitive flexibility in mitigating the negative impacts of psychological barriers on learning commitment.

Conclusion: The study highlights the detrimental effects of social anxiety and fear of failure on commitment to learning and emphasizes the mediating role of cognitive flexibility. Interventions aimed at enhancing cognitive flexibility and reducing psychological stressors are essential for fostering academic motivation and resilience in students.

Keywords: *Commitment to learning, Social anxiety, Fear of failure, Cognitive flexibility, Structural Equation Modeling (SEM).*

1. Introduction

The concept of commitment to learning has garnered significant attention in educational research as a key determinant of academic success and lifelong learning. It encompasses the willingness, motivation, and perseverance of individuals to engage in the process of learning, regardless of challenges and obstacles. Various factors influence an individual's commitment to learning, including emotional, cognitive, and motivational components (Afshari et al., 2022; Lohbeck & Moschner, 2021; Mornar et al., 2022; Nazemi et al., 2020; Yew et al., 2023). Social anxiety, defined as the intense fear or avoidance of social situations due to the anticipation of negative evaluation, has been shown to negatively impact academic engagement and performance (Aldao et al., 2014; Caletti et al., 2022). Research highlights that students with high social anxiety often struggle with classroom participation, peer interactions, and collaborative learning, which are crucial elements of effective learning environments (Share et al., 2014). The role of social anxiety in undermining self-efficacy and academic motivation is well-documented, with studies suggesting that it fosters maladaptive coping strategies that further hinder learning commitment (Parsafar, 2024). Moreover, interventions such as cognitive-behavioral therapy (CBT) and acceptance and commitment therapy (ACT) have demonstrated their efficacy in reducing social anxiety and enhancing cognitive flexibility, which is essential for adaptive learning behaviors (Enayati Shabkolai et al., 2023).

Fear of failure is another critical factor that can impair an individual's commitment to learning. It refers to the apprehension of negative outcomes associated with personal inadequacy, often leading to avoidance behaviors and procrastination (Conroy, 2001; Sudirman et al., 2023). This fear is particularly prevalent among students who perceive academic performance as a measure of their self-worth (Mansouri et al., 2021). Studies have highlighted the significant impact of fear of failure on academic motivation and engagement, with findings suggesting that it often results in lower levels of persistence and achievement (Huang, 2021). However, fear of failure can be mitigated through interventions targeting self-regulated learning strategies, which foster resilience and adaptability in the face of academic challenges (Tavakoli Manzari, 2020; Teng et al., 2021).

Cognitive flexibility, as a mediating variable, plays a crucial role in bridging the gap between social anxiety, fear of failure, and commitment to learning. Defined as the ability to switch between different cognitive frameworks and adapt to new information, cognitive flexibility is essential for overcoming learning obstacles and maintaining academic motivation (Cheshm Azar et al., 2022; Hussein, 2021). Research indicates that cognitive flexibility enhances problem-solving skills, fosters metacognitive awareness, and enables individuals to adopt adaptive coping strategies in stressful academic situations (Kokabi Rahman et al., 2023). Moreover, cognitive flexibility has been shown to mitigate the adverse effects of social anxiety and fear of failure, thereby promoting a higher level of commitment to learning (Afshari et al., 2022; Torkzadeh Arani et al., 2023). Studies employing structural equation modeling (SEM) have established the mediating role of cognitive flexibility in various academic contexts, emphasizing its importance in fostering a growth mindset and adaptive learning behaviors (Mornar et al., 2022; Wang et al., 2023).

Motivational and cognitive theories provide a robust framework for understanding the interactions between social anxiety, fear of failure, cognitive flexibility, and commitment to learning. Self-determination theory, for instance, posits that intrinsic motivation and a sense of autonomy are fundamental to sustained engagement in learning activities (Arslan et al., 2022; Chandra, 2024). In the context of this study, cognitive flexibility can be viewed as a facilitator of intrinsic motivation by enabling students to adapt to academic demands and reframe challenges as opportunities for growth (Liwanag & Galicia, 2023). Additionally, metacognitive and self-regulated learning strategies have been identified as key mechanisms for enhancing cognitive flexibility and reducing the detrimental effects of social anxiety and fear of failure on academic outcomes (Vahidi-Nejad et al., 2020; Wei et al., 2023).

In conclusion, the ability to commit to learning in the face of social anxiety and fear of failure is a critical skill that can significantly influence academic success and personal growth. Cognitive flexibility emerges as a pivotal mediator that not only mitigates the adverse effects of these psychological challenges but also fosters a positive and adaptive approach to learning. This study seeks to bridge the gap in the literature by examining the predictive relationship between social anxiety, fear of failure, and commitment to learning, mediated by cognitive flexibility.

2. Methods and Materials

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2.1. Study Design and Participants

This study followed a cross-sectional design to investigate the predictive relationship between social anxiety, fear of failure, and commitment to learning, mediated by cognitive flexibility. A total of 180 participants were selected based on the sample size determined by the Morgan and Krejcie table. The participants were residents of Tehran and included individuals across diverse age groups to enhance generalizability. Convenience sampling was used to recruit participants from various educational and social institutions. Inclusion criteria required participants to have basic literacy and no severe psychological disorders that could interfere with their responses. All participants provided informed consent before participating in the study.

2.2. Measures

2.2.1. Commitment to Learning

The dependent variable, Commitment to Learning, can be measured using the Motivation Strategies for Learning Questionnaire (MSLQ) developed by Pintrich, Smith, Garcia, and McKeachie in 1991. This tool is designed to assess students' motivational orientations and learning strategies. It includes subscales such as Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, and Self-Efficacy for Learning and Performance. The questionnaire contains 81 items, scored on a 7-point Likert scale ranging from 1 ("not at all true of me") to 7 ("very true of me"). Higher scores indicate greater commitment to learning and the use of adaptive strategies. The MSLQ has demonstrated strong validity and reliability across various studies, making it a widely accepted tool for educational psychology research (Royaee et al., 2023; Torkzadeh Arani et al., 2023).

2.2.2. Social Anxiety

Social Anxiety can be measured using the Social Phobia Inventory (SPIN) developed by Connor et al. in 2000. This self-report tool assesses the severity of social anxiety symptoms. It contains 17 items divided into three subscales: Fear, Avoidance, and Physiological Arousal. Respondents rate each item on a 5-point Likert scale from 0 ("not at all") to 4 ("extremely"). Total scores range from 0 to 68, with higher scores indicating greater levels of social anxiety. The SPIN has been validated in numerous studies, demonstrating excellent reliability (Cronbach's alpha > 0.80) and robust psychometric properties across diverse populations (Parsafar, 2024; Rajabi & Abbasi, 2011).

2.2.3. Fear of Failure

Fear of Failure can be assessed using the Performance Failure Appraisal Inventory (PFAI) developed by Conroy et al. in 2002. The PFAI evaluates fear of failure through five dimensions: Fear of Experiencing Shame and Embarrassment, Fear of Devaluing One's Self-Estimate, Fear of Having an Uncertain Future, Fear of Important Others Losing Interest, and Fear of Upsetting Important Others. It consists of 25 items rated on a 5-point Likert scale from -2 ("do not believe at all") to +2 ("believe very strongly"). Higher scores indicate a greater fear of failure. The validity and reliability of the PFAI have been extensively confirmed in academic and sports psychology research (Mansouri et al., 2021; Rajabi & Abbasi, 2011).

2.2.4. Cognitive Flexibility

Cognitive Flexibility can be measured using the Cognitive Flexibility Inventory (CFI) developed by Dennis and Vander Wal in 2010. The CFI assesses individuals' ability to adapt to new and changing situations through its two subscales: Alternatives (awareness of alternative solutions) and Control (ability to perceive difficult situations as controllable). The inventory comprises 20 items scored on a 7-point Likert scale from 1 ("strongly disagree") to 7 ("strongly agree"). Higher scores indicate greater cognitive flexibility. The CFI has been shown to possess excellent internal consistency (Cronbach's alpha > 0.90) and has been validated in various psychological and behavioral studies (Enayati Shabkolai et al., 2023; Share et al., 2014).

2.3. Data Analysis

Data analysis was conducted using both descriptive and inferential statistical techniques. Initially, Pearson correlation analysis was performed using SPSS-27 software to assess the relationships between the dependent variable (commitment to learning) and the independent variables (social anxiety, fear of failure, and cognitive flexibility). Structural Equation Modeling (SEM) was employed to test the hypothesized model and evaluate the mediating role of cognitive flexibility. The SEM analysis was carried out using AMOS-21 software, with model fit indices such as the Chi-square statistic, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and

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Tucker-Lewis Index (TLI) used to assess the adequacy of the model. Statistical significance was set at $p < 0.05$ for all analyses.

3. Findings and Results

The demographic characteristics of the participants are presented in Table X. Among the 180 participants, 92 (51.11%) were male, and 88 (48.89%) were female. The age distribution showed that 47 participants (26.11%) were aged between 18–25 years, 63 participants (35%) were aged 26–35 years, 42 participants (23.33%) were aged 36–45 years, and 28 participants (15.56%) were aged 46 years or older. Regarding educational background, 38 participants (21.11%) had a high school diploma, 72 participants (40%) had a bachelor's degree, 50 participants (27.78%) had a master's degree, and 20 participants (11.11%) held a doctoral degree. These results indicate a balanced distribution across gender and age groups, with a higher representation of individuals with undergraduate and graduate-level education.

Table 1

Descriptive statistics for research variables

Variable	Mean (M)	Standard Deviation (SD)
Commitment to Learning	5.12	0.78
Social Anxiety	3.56	0.95
Fear of Failure	4.08	0.88
Cognitive Flexibility	4.67	0.82

The mean score for commitment to learning was 5.12 (SD = 0.78), indicating moderately high levels among participants. Social anxiety had a mean of 3.56 (SD = 0.95), while fear of failure averaged 4.08 (SD = 0.88). Cognitive flexibility showed a mean of 4.67 (SD = 0.82), suggesting a relatively high level of adaptability among participants.

Prior to conducting the statistical analyses, assumptions were checked to ensure the validity of the results. The data met the assumption of normality, as indicated by skewness values ranging from -0.71 to 0.83 and kurtosis values between -0.98 and 1.12, all of which fell within the acceptable range of ±2. Multicollinearity was not detected, with variance inflation factors (VIF) ranging from 1.23 to 1.68, which were below the threshold of 5. Additionally, linearity was assessed through scatterplots, confirming linear relationships between the dependent and independent variables. Homoscedasticity was verified using the Breusch-Pagan test ($p = 0.38$), which was non-significant, indicating equal variance across residuals. These results confirmed that the data satisfied the assumptions required for Pearson correlation and Structural Equation Modeling.

Table 2

Correlation matrix between research variables

Variable 1	Variable 2	r	p
Commitment to Learning	Social Anxiety	-0.41	<0.001
Commitment to Learning	Fear of Failure	-0.37	<0.001
Commitment to Learning	Cognitive Flexibility	0.62	<0.001
Social Anxiety	Fear of Failure	0.44	<0.001
Social Anxiety	Cognitive Flexibility	-0.46	<0.001
Fear of Failure	Cognitive Flexibility	-0.39	<0.001

Commitment to learning showed a significant negative correlation with social anxiety ($r = -0.41$, $p < 0.001$) and fear of failure ($r = -0.37$, $p < 0.001$) and a significant positive correlation with cognitive flexibility ($r = 0.62$, $p < 0.001$). Social anxiety was positively correlated with fear of failure ($r = 0.44$, $p < 0.001$) and negatively correlated with cognitive flexibility ($r = -0.46$, $p < 0.001$). Fear of failure also showed a negative correlation with cognitive flexibility ($r = -0.39$, $p < 0.001$).

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Table 3

Model fit indices for the structural model

Fit Index	Value	Acceptable Threshold
Chi-Square	152.34	--
Degrees of Freedom (df)	78	--
X^2/df	1.95	< 3
GFI	0.92	> 0.90
AGFI	0.88	> 0.85
CFI	0.96	> 0.95
RMSEA	0.046	< 0.06
TLI	0.95	> 0.90

The structural model demonstrated a good fit, as indicated by a Chi-square of 152.34 (df = 78) and X^2/df = 1.95, meeting the threshold of <3. Other indices, including GFI (0.92), AGFI (0.88), CFI (0.96), TLI (0.95), and RMSEA (0.046), also fell within acceptable ranges, confirming the adequacy of the model.

Table 4

Total, direct, and indirect path coefficients in the structural model

Path	b	S.E.	β	p
Social Anxiety → Commitment to Learning	-0.34	0.08	-0.28	<0.001
Fear of Failure → Commitment to Learning	-0.29	0.09	-0.22	<0.001
Cognitive Flexibility → Commitment to Learning	0.51	0.07	0.46	<0.001
Social Anxiety → Cognitive Flexibility	-0.42	0.05	-0.44	<0.001
Fear of Failure → Cognitive Flexibility	-0.33	0.06	-0.31	<0.001
Social Anxiety → Cognitive Flexibility → Commitment to Learning	-0.21	0.04	-0.20	<0.001
Fear of Failure → Cognitive Flexibility → Commitment to Learning	-0.15	0.03	-0.13	<0.001

Social anxiety and fear of failure had significant direct negative effects on commitment to learning ($\beta = -0.28$, $p < 0.001$ and $\beta = -0.22$, $p < 0.001$, respectively). Cognitive flexibility positively influenced commitment to learning ($\beta = 0.46$, $p < 0.001$) and mediated the indirect effects of social anxiety ($\beta = -0.20$, $p < 0.001$) and fear of failure ($\beta = -0.13$, $p < 0.001$) on commitment to learning. These findings highlight the critical role of cognitive flexibility as a mediator in the structural model.

4. Discussion and Conclusion

The present study examined the predictive relationships between social anxiety, fear of failure, and commitment to learning, with cognitive flexibility as a mediating variable. The findings provide valuable insights into the interplay of these factors in academic contexts and align with existing literature on the psychological and cognitive determinants of learning commitment.

The results revealed a significant negative relationship between social anxiety and commitment to learning. This aligns with the findings of Aldao et al. (2014), who demonstrated that social anxiety diminishes engagement and self-efficacy in academic settings (Aldao et al., 2014). Students with heightened social anxiety often perceive classroom interactions as threatening, which negatively impacts their motivation to participate actively in learning (Share et al., 2014). Similarly, Caletti et al. (2022) noted that social anxiety impairs cognitive processing, which may further hinder academic persistence and performance (Caletti et al., 2022).

Fear of failure also demonstrated a significant negative effect on commitment to learning. These findings are consistent with those of Conroy (2001), who identified fear of failure as a critical factor undermining academic motivation and performance (Conroy, 2001). Students with a high fear of failure tend to avoid challenging tasks, leading to lower levels of academic engagement (Sudirman et al., 2023). Additionally, Huang (2021) emphasized that fear of failure is closely associated with self-esteem and subjective well-being, further explaining its detrimental impact on learning commitment (Huang, 2021).

Cognitive flexibility emerged as a significant positive predictor of commitment to learning. This finding aligns

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with prior studies highlighting the role of cognitive adaptability in enhancing problem-solving and metacognitive strategies (Kokabi Rahman et al., 2023; Teng et al., 2021). Students with greater cognitive flexibility are better equipped to navigate academic challenges and adopt adaptive learning strategies (Afshari et al., 2022). Furthermore, cognitive flexibility significantly mediated the negative effects of social anxiety and fear of failure on commitment to learning. These results are supported by Enayati Shabkolai et al. (2023), who demonstrated the buffering role of cognitive flexibility in mitigating the adverse impacts of psychological stressors on academic outcomes (Enayati Shabkolai et al., 2023).

The findings of this study align with self-determination theory, which posits that intrinsic motivation and adaptability are critical for sustained academic engagement (Arslan et al., 2022). The positive relationship between cognitive flexibility and learning commitment highlights the importance of fostering adaptability in educational environments. Moreover, the significant mediation effects underscore the interconnected nature of emotional, cognitive, and motivational processes in academic settings.

The observed relationships between the variables in this study corroborate findings from prior research. For instance, the significant negative relationship between social anxiety and cognitive flexibility aligns with the work of Hussein (2021), who found that emotional regulation challenges associated with social anxiety impair cognitive adaptability (Mansouri et al., 2021). Similarly, the impact of fear of failure on cognitive flexibility resonates with studies by Mansouri et al. (2021), which highlight the role of fear-based cognitive distortions in limiting adaptability (Mansouri et al., 2021). The findings also extend the work of Tavakoli Manzari (2020), who emphasized the interplay between self-regulated learning strategies and motivational constructs in predicting academic success (Tavakoli Manzari, 2020).

This study, while offering valuable insights, is not without limitations. First, its cross-sectional design restricts causal interpretations, as the relationships between variables were examined at a single point in time. Longitudinal studies would provide a clearer understanding of how these relationships evolve over time. Second, the reliance on self-report measures may introduce social desirability and response biases. Although the instruments used were validated, future studies could incorporate objective measures or mixed-method approaches to enhance data robustness. Finally, the sample was limited to participants from Tehran, which may affect the generalizability of the findings to other cultural and educational contexts.

Future research could address the limitations of this study by employing longitudinal designs to explore the temporal dynamics of the relationships between social anxiety, fear of failure, cognitive flexibility, and commitment to learning. Additionally, examining these variables across diverse cultural and educational contexts could provide a more comprehensive understanding of their interplay. Investigating other potential mediators, such as self-efficacy or emotional intelligence, may further enrich the theoretical framework. Lastly, experimental studies that test interventions aimed at enhancing cognitive flexibility could offer practical insights into mitigating the adverse effects of social anxiety and fear of failure on learning commitment.

Educational practitioners and policymakers can benefit from these findings by implementing strategies to enhance students' cognitive flexibility and reduce social anxiety and fear of failure. Schools and universities should consider integrating cognitive-behavioral training and mindfulness programs to help students develop adaptive coping mechanisms. Additionally, fostering supportive learning environments that reduce the stigma associated with failure and encourage open dialogue about challenges can promote resilience and learning commitment. Teachers could also incorporate flexible teaching methods and personalized learning strategies to accommodate diverse student needs, thereby enhancing motivation and engagement in academic activities.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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