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Disconnected Minds: How Phubbing Fuels Foreign Language Anxiety and Academic Delay Behaviors in University Students

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Abstract. Phubbing – ignoring others by focusing on smartphones – has become prevalent among university students, potentially contributing to foreign language anxiety (FLA) and academic delay behaviors. Despite growing research interest, the psychological mechanisms linking these

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phenomena remain underexplored. This study examined whether FLA mediates the relationship between phubbing and academic delay behaviors among Egyptian university students using a cross-sectional correlational design. Two samples participated: a psychometric validation sample (N = 642) and a main study sample (N = 1,062), recruited from Al-Azhar University, Egypt, through convenience sampling via their respective academic departments. Participants completed online questionnaires via Google Forms including the Generic Scale of Phubbing, Short-Form Foreign Language Anxiety Scale, and Academic Procrastination Scale–Short Form. Data analysis was conducted using SPSS-29 and AMOS-27, with mediation analysis employing Hayes' PROCESS macro, Model 4, with 5,000 bootstrap resamples. Results revealed that FLA significantly mediated the phubbing-academic delay relationship, accounting for 40.21% of the total effect (indirect effect: b = 0.020, 95% CI [0.011, 0.029]), with the direct effect remaining significant, indicating partial mediation. Significant positive correlations emerged among all variables, with phubbing predicting FLA (β = 0.292) and FLA predicting academic delays (β = 0.328). This study is among the first to explore this relationship in Egyptian higher education, indicating that anxiety is a key pathway linking smartphone-related disruptions to academic performance. Universities should consider strategies that combine smartphone management with anxiety reduction, while future research should use longitudinal designs and examine other potential mediators.

Keywords: phubbing; foreign language anxiety; academic procrastination; smartphone use

1. Introduction

Phubbing – blending "phone" and "snubbing" – describes ignoring others in social or academic settings by focusing on smartphones over face-to-face interaction (Garrido et al., 2021; Davey et al., 2018). It involves checking or using mobile devices during conversations, meetings, or lectures, disrupting communication and weakening interpersonal connections (Garrido et al., 2021; David & Roberts, 2017). Among university students, phubbing is widespread, with prevalence rates between 42% and 89% globally (Barbed-Castrejón et al., 2024; Kobicheva et al., 2024). In academic contexts, frequent phone use during lectures and discussions reduces attention to peers and instructors (Kobicheva et al., 2024).

FLA significantly affects academic performance due to its complex psychological and emotional impact. It manifests as nervousness, fear, and worry during language learning, impairing cognitive processing and hindering the acquisition and application of new language skills (Botes et al., 2020; Oflaz, 2019). This anxiety also undermines self-confidence and motivation, fostering negative attitudes toward language learning (Jin et al., 2024). As a result, students often disengage from class, avoid participation, and exhibit behaviors that hinder learning (Han et al., 2022; Li et al., 2024), ultimately reducing academic productivity and language proficiency.

Phubbing, or excessive smartphone use that disrupts academic engagement, is a key predictor of academic delay among university students (Suárez-Perdomo et al., 2024). It contributes to procrastination and incomplete tasks through mechanisms such as disrupted attention during lectures and study sessions (Yang et al., 2018), impaired self-regulation and time management (Chen et al., 2021; Tian et al., 2021), and reduced academic motivation due to instant gratification from social media (Iftikhar et al., 2022; Zhou et al., 2023). These factors collectively hinder academic progress and performance (Parmaksiz, 2022; Rachman et al., 2020). Recent findings indicate that problematic social media use is a stronger predictor of phubbing behavior than fear of missing out among university students (Al-Awadhi et al., 2025).

Foreign language classroom anxiety (FLCA) peaks during high-stakes tasks like oral presentations and exams, where fear of negative evaluation is heightened (Dewaele et al., 2017; Hu et al., 2021). This anxiety often disrupts performance and leads to maladaptive coping, including phubbing as a temporary escape from stress (Effiong, 2015; Li et al., 2025). However, such avoidance can delay academic engagement and intensify anxiety, creating a self-reinforcing cycle of stress and disengagement (Zheng & Cheng, 2018).

Understanding how phubbing contributes to academic delay requires theoretical models that clarify anxiety's mediating role. The Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) views phubbing as a chronic social stressor that triggers anxiety when students feel unable to meet academic demands (Gao, 2023; Wu et al., 2024). Social cognitive theory (SCT) highlights how phubbing disrupts social interaction, weakens academic self-efficacy, and increases anxiety while reducing engagement (Lei et al., 2021). Cognitive-behavioral frameworks further explain how phubbing, as a negative social cue, fosters maladaptive coping, such as social anxiety and fear of evaluation, leading to avoidance and impaired academic functioning (Jiang et al., 2023; Li et al., 2025).

Despite growing interest, key gaps remain in understanding phubbing's psychological effects. Yam et al. (2025) called for person-centered research on its links to social anxiety, while Bakir and DïLmaç (2023) urged longitudinal studies to clarify causality and explore additional variables. Li et al. (2025) noted the limits of single-dimension analyses and emphasized the need for diverse samples. Dibajnia et al. (2025) highlighted challenges in establishing causality and generalizability, and Barbed-Castrejón et al. (2024) pointed to inconsistent findings that require experimental and multi-source approaches. Chu et al. (2023) identified social anxiety as an underexplored factor, underscoring the need for deeper inquiry into how phubbing contributes to student anxiety.

Given the widespread occurrence of phubbing among university students and its established links to academic delay behaviors and anxiety, alongside notable research gaps, this study investigates whether FLA mediates the relationship between phubbing and academic delay. Specifically, it responds to calls for deeper inquiry by examining FLA as a psychological mechanism through which phubbing may drive academic procrastination and task avoidance. Grounded in the Transactional Model of Stress and Coping and SCT, the study aims to provide

empirical evidence for the indirect pathways linking smartphone-related social disruptions to academic performance outcomes.

2. Literature Review

2.1 Phubbing: Conceptualization and Prevalence

Phubbing – the act of prioritizing smartphone use over face-to-face interaction – occurs when individuals attend to mobile devices during direct social encounters, causing present others to feel excluded (Chotpitayasunondh & Douglas, 2016; David & Roberts, 2017). This multidimensional behavior intersects with smartphone, internet, and social media dependencies, with smartphone addiction serving as the strongest predictor (Talan et al., 2023). Student populations exhibit particularly elevated prevalence rates alongside diminished self-control and adverse psychological outcomes (Purwar et al., 2023).

Multiple factors contribute to phubbing prevalence among university students. Smartphone addiction and excessive non-academic usage constitute primary predictors (Talan et al., 2023; Yam et al., 2025), while problematic social media use drives compulsive notification-checking during interactions (González et al., 2025; Lv & Wang, 2023). Generation Z students demonstrate heightened vulnerability through multitasking behaviors and technology overload (Sun & Yoon, 2023). Psychological factors including fear of missing out, social anxiety, and low self-esteem further compel constant connectivity (González et al., 2025; Barbed-Castrejón et al., 2024).

Phubbing research primarily focuses on Europe, Asia, and the Americas, with significant gaps in African and Middle Eastern regions. A cross-cultural validation of the Phubbing Scale across 20 countries revealed concentrated efforts in Belarus, Brazil, China, Croatia, Ecuador, India, Israel, Italy, Netherlands, Pakistan, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Turkey, UK, Ukraine, and USA (Błachnio et al., 2021), alongside national studies in Spain (Barbed-Castrejón et al., 2024), Turkey (Ergün et al., 2019), China (Chen et al., 2021), and Australia (Al-Saggaf & MacCulloch, 2019). Cross-cultural comparisons demonstrate consistent negative effects across collectivistic and individualistic societies (Yousaf et al., 2022). However, the absence of Egyptian and North African research represents a critical gap limiting understanding of regional cultural, social, and technological influences on phubbing behaviors.

2.2 Foreign Language Anxiety: Causes and Effects

University students' FLA, measured via Horwitz's FLCAS, arises from interconnected triggers. Fear of negative evaluation represents the primary source, with students experiencing heightened concern regarding peer and instructor judgments during oral and evaluative tasks (Alla et al., 2020; Awan et al., 2010; Mohamad, 2020). Communication apprehension manifests as fear of public speaking and spontaneous interaction (Akter, 2024; Amengual-Pizarro, 2018), while perfectionism intensifies anxiety through students' fear of linguistic errors (Alla et al., 2020; Awan et al., 2010). Peer pressure and negative social comparisons further contribute to classroom anxiety (Mohamad, 2020).

Digital learning environments substantially intensify FLA through multiple mechanisms. Technical difficulties, including connectivity issues and platform unfamiliarity, markedly elevate anxiety during synchronous communication (Cancino & Cabello, 2024; Russell, 2020). Limited digital literacy among students and instructors diminishes confidence in virtual settings (Fathali et al., 2024; Wang & Zhang, 2021), while reduced face-to-face interaction and delayed feedback foster isolation and disengagement (Dewaele et al., 2022; Russell, 2020). Performance pressure intensifies during video-based speaking activities, with persistent fear of negative evaluation (Dewaele et al., 2022; Russell, 2020). Home-based learning introduces additional distractions and diminished peer interaction, indirectly elevating anxiety (Dewaele et al., 2022; Wang & Zhang, 2021).

FLA exhibits temporal patterns that significantly affect academic performance. Longitudinal research demonstrates anxiety peaks during transitional periods, particularly at semester initiation, declining as familiarity increases (Pan & Zhang, 2021; Shirvan & Taherian, 2018). However, anxiety resurges during high-stakes assessments, showing stronger negative correlations with achievement than routine evaluations (Hu et al., 2021; Liu, 2021). This cyclical fluctuation pattern, documented across multiple studies, indicates that test-related anxiety particularly impairs attention and performance during critical evaluation phases (Aydın et al., 2020; Zheng & Cheng, 2018), highlighting students' temporal vulnerability to FLA's adverse academic effects.

2.3 Academic Delay Behaviors: Definitions and Consequences

Academic delay behaviors in university education encompass procrastination, task avoidance, and incomplete assignments, fundamentally rooted in self-regulation failures (Limone et al., 2020; Park & Sperling, 2012). Procrastination represents the voluntary yet irrational postponement of academic tasks despite anticipated negative consequences (Fentaw et al., 2022; Valenzuela et al., 2020). Task avoidance manifests through engagement in non-academic activities to escape perceived unpleasant or overwhelming responsibilities (Araya-Castillo et al., 2023; Fentaw et al., 2022). Incomplete assignments result from repeated delays and avoidance patterns (Fentaw et al., 2022; Shi, 2023). These behaviors stem from self-regulation deficits, including poor time management, inadequate planning, and ineffective metacognitive strategies (de la Fuente et al., 2021; Limone et al., 2020; Park & Sperling, 2012), compounded by anxiety (Fan et al., 2024), and motivational issues (Wieland et al., 2021).

Research reveals distinct demographic and personality profiles that heighten susceptibility to anxiety-induced academic delays. Non-native language learners demonstrate particularly pronounced vulnerability, experiencing elevated anxiety in speaking and testing situations that correlate with academic avoidance and diminished achievement (Amengual-Pizarro, 2018; Hu et al., 2021; Zheng & Cheng, 2018). University students in emerging adulthood exhibit increased susceptibility when exposed to parental phubbing, which exacerbates social anxiety and avoidance behaviors (Li et al., 2025). Students with high neuroticism, low self-esteem, and elevated social anxiety show greater propensity for

phubbing behaviors and academic disengagement (de la Fuente et al., 2021; Wu et al., 2024; Yam et al., 2025).

2.4 Mediating Relationships: Phubbing, Anxiety, and Delays

Research demonstrates that FLA serves as a critical mediator between phubbing and academic delays through distinct psychological pathways. Phubbing behavior, characterized by prioritizing phone use over interpersonal interactions, significantly increases social anxiety and fear of negative evaluation among students (Jiang et al., 2023; Li et al., 2025). This heightened social anxiety subsequently manifests as FLCA, marked by apprehension, participation avoidance, and negative self-evaluation in language learning contexts (Han et al., 2022; Zhang & Zhang, 2022). Path analysis and structural equation modeling confirm that FLCA precipitates maladaptive coping mechanisms, including procrastination and academic disengagement, ultimately culminating in academic delays (Botes et al., 2020; Zhang & Zhang, 2022). The mediating effect operates through amplified avoidance behaviors, as students temporarily reduce anxiety by postponing language learning tasks, thereby perpetuating a detrimental cycle of increased anxiety and further academic delays (Parmaksiz, 2022).

While existing literature establishes associations between phubbing, anxiety, and academic behaviors, critical gaps remain in understanding the psychological mechanisms linking these phenomena. Previous research has examined phubbing's direct effects on social anxiety (Jiang et al., 2023; Li et al., 2025) and academic outcomes (Suárez-Perdomo et al., 2024), yet the specific pathway through which phubbing influences academic delay behaviors via FLA remains underexplored. Although FLCA mediates relationships between various stressors and academic performance (Botes et al., 2020; Zhang & Zhang, 2022), no research has empirically tested whether FLA specifically mediates the phubbing-academic delay relationship.

Despite calls for examining anxiety as a mediating variable in phubbing research (Chu et al., 2023; Yam et al., 2025), the domain-specific role of FLA has not been investigated. Geographically, the absence of Egyptian and North African studies limits understanding of how regional contexts shape these relationships (Błachnio et al., 2021). This study addresses these gaps by examining FLA as a mediator between phubbing and academic delay behaviors among Egyptian university students, employing mediation analysis to quantify indirect effects and provide empirical evidence for this unexplored pathway in an underrepresented cultural context.

3. Methodology

3.1 Research Design

This study employed a cross-sectional correlational design. Data were collected at a single time point to examine the relationships among phubbing behaviors, foreign language anxiety, and academic delay behaviors, and to test the mediating role of FLA in the phubbing-academic delay relationship.

3.2 Participants

The study comprised two distinct samples: a psychometric validation sample and a main study sample. The psychometric sample consisted of 642 university students (60.3% male, 39.7% female) enrolled at Al-Azhar University, Egypt, specifically from the Faculty of Education for Boys in Dakahlia and the Faculty of Education for Girls in Cairo. Participants' ages ranged from 19 to 22 years (M = 20.48, SD = 1.00). The distribution across academic years was relatively balanced, with 23.7% first-year students, 23.4% second-year students, 20.9% third-year students, and 32.1% fourth-year students.

The main study sample included 1,062 university students (50.1% male, 49.9% female) from the same institutions. Ages ranged from 19 to 23 years (M = 20.55, SD = 1.07). The academic year distribution showed 18.5% first-year students, 24.5% second-year students, 25.7% third-year students, and 31.3% fourth-year students. All participants were Arabic-speaking students enrolled in foreign language courses as part of their academic curriculum. Detailed demographic characteristics of both samples are presented in Table 1.

Table 1: Demographic Characteristics of Study Participants

Variable	Category	Psychometric Sample (N = 642)		Main Sample (N = 1062)	
		N	%	N	%
Academic Year	First Year	152	23.7	197	18.5
	Second Year	150	23.4	260	24.5
	Third Year	134	20.9	273	25.7
	Fourth Year	206	32.1	332	31.3
Gender	Male	387	60.3	532	50.1
	Female	255	39.7	530	49.9

3.3 Instruments

This study employed three standardized instruments. Three independent expert translators translated all scales into Arabic using a translation-back-translation method to ensure linguistic and cultural appropriateness for Arabic-speaking participants.

3.3.1 Generic Scale of Phubbing (GSP)

The Generic Scale of Phubbing, developed by Chotpitayasunondh and Douglas (2018), assessed phubbing behaviors among university students. The scale consists of 15 items distributed across four dimensions: Nomophobia (4 items), Interpersonal Conflict (4 items), Self-isolation (4 items), and Problem Acknowledgment (3 items). Participants responded using a seven-point Likert scale ranging from 1 (never) to 7 (always). The four-factor structure explained 65.72% of the total variance.

Confirmatory factor analysis conducted on the psychometric sample demonstrated acceptable model fit indices: $\chi^2/df = 2.711$, RMR = .122, GFI = .955, AGFI = .936, PGFI = .669, NFI = .934, RFI = .918, IFI = .958, TLI = .947, CFI = .957, and RMSEA = .052. Reliability analyses revealed satisfactory internal consistency for all subscales. Coefficient omega values were .749 for Nomophobia, .805 for

Interpersonal Conflict, .808 for Self-isolation, and .707 for Problem Acknowledgment. The total scale demonstrated strong reliability with coefficient omega of .879, a coefficient alpha of .880, and Guttman's λ2 of .883. Internal consistency was further supported by significant positive correlations among all subscale scores (r range = .353 to .605, $p < .01$) and between subscales and the total scale score (r range = .710 to .823, $p < .01$).

3.3.2 Short-Form Foreign Language Classroom Anxiety Scale (S-FLCAS)

FLA was measured using the SFLCA Scale developed by Botes et al. (2022). This abbreviated version comprises eight items designed to assess anxiety experienced during foreign language learning contexts. Participants indicated their agreement with each statement using a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). The scale demonstrated a mean score of 25.586 in the psychometric sample. Confirmatory factor analysis supported the unidimensional structure of the scale with acceptable fit indices: $\chi^2/df = 3.610$, RMR = .047, GFI = .974, AGFI = .947, PGFI = .487, NFI = .946, RFI = .916, IFI = .961, TLI = .938, CFI = .960, and RMSEA = .064. The scale exhibited adequate reliability with coefficient omega of .733, a coefficient alpha of .731, and Guttman's λ2 of .748. Internal consistency was evidenced by significant correlations between individual items and the total anxiety score (r range = .467 to .726, $p < .01$), with most inter-item correlations demonstrating statistical significance.

3.3.3 Academic Procrastination Scale – Short Form (APS-SF)

Academic delay behaviors were assessed using the Academic Procrastination Scale – Short Form developed by Yockey (2016). The scale consists of five items measuring students' tendency to procrastinate on academic tasks. Responses were recorded on a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). Confirmatory factor analysis yielded acceptable model fit: $\chi^2/df = 4.773$, RMR = .043, GFI = .988, AGFI = .956, PGFI = .264, NFI = .972, RFI = .929, IFI = .977, TLI = .943, CFI = .977, and RMSEA = .077. The unidimensional scale demonstrated satisfactory reliability with a coefficient omega of .722, a coefficient alpha of .722, and Guttman's λ2 of .729. Convergent validity was established through a significant positive correlation with the Qattata (2025) Academic Procrastination Scale ($r = .78$, $p < .01$).

3.4 Procedure

Data collection was conducted during the second semester of the 2024/2025 academic year through a Google Forms questionnaire. Participants were recruited through their respective academic departments and provided with an electronic link to access the survey. Prior to completing the questionnaires, participants received information about the study's purpose and voluntary nature, and informed consent was obtained electronically. The survey was administered in Arabic to accommodate participants' native language. Participants completed the demographic information form followed by the three psychological measures in a randomized order to minimize potential order effects. The entire survey took approximately 15-20 minutes to complete. All responses were anonymous and confidential, with no personally identifiable information collected.

3.5 Data Analysis

Statistical analyses used SPSS-29 and AMOS-27. Preliminary assessments, via exploratory factor analysis, indicated that the first factor accounted for 18.976% of total variance, suggesting minimal concern for common method bias. Descriptive statistics for all variables were calculated, and Pearson correlation coefficients assessed bivariate associations among phubbing, FLA, and academic delay behaviors. The mediating role of FLA was tested using Hayes' PROCESS macro, Model 4, with 5,000 bootstrap resamples to derive bias-corrected 95% confidence intervals for indirect effects. The mediation model's pathway strength was evaluated using standardized regression coefficients.

4. Results and Findings

Prior to testing the primary hypotheses, preliminary analyses were conducted to ensure the data were appropriate for subsequent statistical procedures. Standard-method variance bias was assessed through an exploratory factor analysis using the unrotated principal component method. Results indicated that the first factor extracted accounted for 18.976% of the total variance, which falls well below the conservative threshold of 50% suggested by Podsakoff et al. (2003). This finding indicates that common method bias was not a substantial concern in the current dataset and that the observed relationships among variables were unlikely to be artifacts of the measurement method employed.

3.6 Descriptive Statistics and Bivariate Correlations

Descriptive statistics and intercorrelations among the study variables are presented in Table 2. Examination of the correlation matrix revealed significant positive associations among all three primary variables. Phubbing demonstrated a moderate positive correlation with FLA ($r = .292$, $p < .01$) and academic delay behaviors ($r = .238$, $p < .01$). Furthermore, FLA exhibited a moderate positive correlation with academic delay behaviors ($r = .369$, $p < .01$). The magnitude and direction of these correlations provided initial support for examining FLA as a potential mediator in the relationship between phubbing and academic delay behaviors.

Table 2: Correlations Among Study Variables

Variable	1	2	3
1. Phubbing	1		
2. FLA	.292**	1	
3. Academic Delay Behaviors	.238**	.369**	1

*Note. ** $p < .01$.*

3.7 Mediation Analysis

To test the central hypothesis that FLA mediates the relationship between phubbing and academic delay behaviors, a mediation analysis was conducted using Hayes' PROCESS macro, Model 4, with 5,000 bootstrap resamples. The conceptual model depicting the hypothesized pathways is illustrated in Figure 1. Complete results of the mediation analysis are presented in Table 3. The first regression equation examined the effect of phubbing on FLA (Path a), revealing that phubbing significantly predicted FLA ($\beta = 0.292$, $b = 0.133$, $SE = 0.013$, $t = 9.939$, $p < .001$). This pathway accounted for 8.52% of the variance in FLA. The

second regression equation examined the simultaneous effects of phubbing (Path c') and FLA (Path b) on academic delay behaviors. After controlling for the mediator, phubbing maintained a significant direct effect on academic delay behaviors (β = 0.142, b = 0.030, SE = 0.006, t = 4.809, p < .001), while FLA also demonstrated a significant effect on academic delay behaviors (β = 0.328, b = 0.149, SE = 0.013, t = 11.100, p < .001). Together, these predictors accounted for 15.49% of the variance in academic delay behaviors.

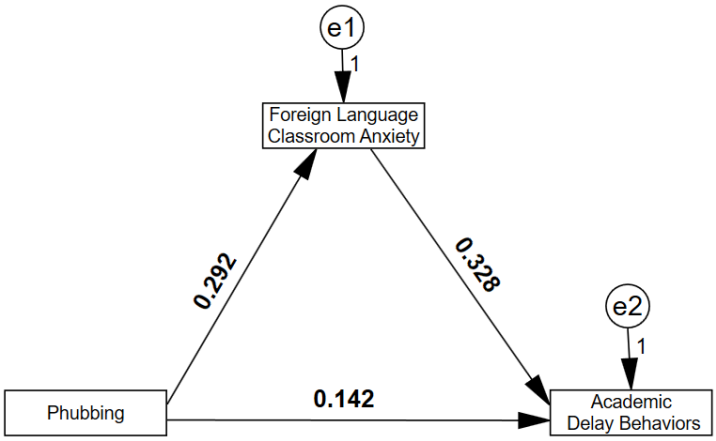

Figure 1: Mediation Model of the Relationship Between Phubbing and Academic Delay Behaviors Through FLA

Table 3: Mediation Analysis: Direct and Indirect Effects

Outcome Variable	Predictor Variable	b	SE	β	t	R^2	F
Path a							
S-FLCAS	Phubbing	0.133	0.013	0.292	9.939***	.085	98.784***
Paths b and c							
APS-SF	Phubbing	0.030	0.006	0.142	4.809***	.155	97.019***
APS-SF	S-FLCAS	0.149	0.013	0.328	11.100***	---	---

As detailed in Table 4, the total effect of phubbing on academic delay behaviors was significant (β = 0.238, b = 0.050, p < .001), accounting for 5.65% of the variance. The significance of the indirect effect was formally tested using bias-corrected bootstrap confidence intervals, revealing a significant indirect effect through FLA (b = 0.020, SE = 0.004, 95% CI [0.011, 0.029]). The standardized indirect effect was 0.096, with the bootstrap confidence interval not including zero, confirming statistical significance. The indirect effect accounted for 40.21% of the total effect, while the direct effect accounted for 59.79%, indicating partial mediation.

Table 4: Total, Direct, and Indirect Effects in the Mediation Model

Effect Type	b	SE	β	LLCI	ULCI	% of Total Effect
Total Effect (c)	0.050	0.006	0.238	0.037	0.062	100.00%
Direct Effect (c')	0.030	0.006	0.142	0.018	0.042	59.79%
Indirect Effect (a×b)	0.020	0.004	0.096	0.011	0.029	40.21%

Note. b = unstandardized coefficient; SE = standard error; β = standardized coefficient; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

These findings provide strong empirical support for the hypothesized mediation model, demonstrating that FLA serves as a significant psychological mechanism through which phubbing influences academic delay behaviors among university students. However, the persistence of a significant direct effect suggests that FLA represents only one of potentially multiple pathways through which phubbing affects academic delay behaviors.

5. Discussion

The present study reveals that FLCA significantly mediates the relationship between phubbing behaviors and academic delay patterns, accounting for 40.21% of the total effect while 59.79% remains a direct pathway. This partial mediation indicates a complex, multifaceted relationship involving multiple interconnected mechanisms. FLCA's mediating role operates through dual cognitive and emotional pathways, where anxiety impairs attentional control and depletes cognitive resources necessary for processing academic information and maintaining engagement (Fu & Li, 2023; Zheng & Cheng, 2018). When students experience heightened anxiety in foreign language contexts, they become more susceptible to phubbing as a maladaptive coping strategy for managing discomfort and stress, which subsequently disrupts attention, reduces classroom participation, and precipitates academic delays (Dewaele et al., 2022).

The partial mediation underscores that FLCA operates alongside other influential factors including teacher support, emotional intelligence, perceived classroom environment, and individual personality traits (Han & Haider, 2022; Li et al., 2024), suggesting that anxiety-focused interventions alone may prove insufficient for fully addressing academic delay patterns. The psychological pathway may involve mediators such as self-efficacy and resilience (Gordani & Sadeghzadeh, 2023), while autonomy and self-regulation likely moderate how anxiety affects academic outcomes (Ghorbandordinejad & Ahmadabad, 2016), which helps explain the remaining direct effect beyond the anxiety pathway.

The current study's correlation magnitudes align with existing literature while revealing noteworthy variations. The observed phubbing-anxiety correlation (r = .292) falls within the lower-to-moderate range reported across diverse samples (r = .19–.30) (Bitar et al., 2022; Bakir & DïLmaç, 2023; Dibajnia et al., 2025), though substantially lower than correlations found in specific populations such as parental phubbing contexts (r = .545–.663) (Li et al., 2025). Similarly, the anxiety-procrastination relationship (r = .369) demonstrates consistency with meta-analytic findings and cross-sectional studies typically reporting weak-to-moderate associations (r = .30–.40) (Hameed et al., 2025). These discrepancies likely reflect methodological variations including sample characteristics, with adolescent or emerging adult populations yielding stronger correlations (Gao et al., 2025; Jiang et al., 2023), and cultural contexts influencing social norms around smartphone use (Bitar et al., 2022).

These findings have important implications for higher education. Universities should implement integrated programs targeting both smartphone use and anxiety, as addressing one alone may be less effective due to partial mediation.

Foreign language instructors should foster psychologically safe classrooms that reduce evaluation anxiety and set clear device-use rules. Campus mental health services should include smartphone behavior strategies in anxiety treatments, recognizing phubbing as both symptom and contributor to academic challenges. Orientation programs should educate first-year students on the links between technology use, anxiety, and performance. Institutional policies could introduce phone-free periods during key learning activities, especially in language classes where communication is vital.

6. Limitations and Future Directions

Several limitations should be noted. The cross-sectional design prevents causal conclusions, leaving unclear whether phubbing leads to anxiety, vice versa, or if the relationship is bidirectional. Reliance on self-reports may introduce social desirability bias and method variance, though preliminary analyses suggest minimal impact. The sample, limited to Arabic-speaking Egyptian university students, restricts generalizability to cultures with different norms around smartphone use and academic anxiety. The focus on FLA, rather than general academic anxiety, may overlook broader anxiety effects on academic delay. Moreover, unmeasured confounders – such as socioeconomic status, academic history, personality traits, and mental health – could influence the observed relationships.

Future research should use longitudinal and experimental designs to clarify temporal and causal links among phubbing, anxiety, and academic delays. It should also examine additional mediators – such as self-efficacy, emotional regulation, and social support – to account for the remaining direct effects. Cross-cultural comparisons can reveal how cultural norms around technology and communication moderate these dynamics across educational settings. Studies should assess the effectiveness of integrated versus single-focus interventions targeting phubbing and anxiety. Employing mixed-methods, including qualitative interviews and behavioral observations, would deepen understanding of the subjective experiences underlying statistical patterns. Finally, potential moderators such as personality traits, learning styles, and technological literacy warrant investigation for their roles in shaping susceptibility to phubbing's adverse impacts.

7. Conclusion

The study empirically demonstrates that FLA significantly mediates the link between phubbing behaviors and academic delay patterns among university students. However, partial mediation suggests other pathways warrant exploration. Integrating the Transactional Model of Stress and Coping and SCT, the findings show how smartphone-related social disruptions affect academic functioning via psychological mechanisms. By highlighting anxiety as an underexplored risk factor and applying rigorous statistical methods, the study addresses gaps in the literature and clarifies relationships among variables. Moderate correlations indicate that while phubbing and anxiety contribute to academic delays, they are modifiable and open to intervention. Future longitudinal research should examine additional mediating and moderating

variables to understand better how modern technology shapes academic outcomes in higher education.

Ethical Approval
The study protocol was approved by the Research Ethics Committee of the Faculty of Education at Al-Azhar University, Dakahlia, Egypt (Ref. No. EDU-REC-2025-0250).

Consent to Participate
Informed consent was obtained from all student participants.

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AI Tools for Language Enhancement
The authors acknowledge the use of AI-based tools to enhance the language and grammar of this manuscript. QuillBot was used for paraphrasing and improving sentence structure, while Grammarly was employed for grammar checking, punctuation, and overall clarity.

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