

The Internal and External Escape: A Multi- Variable Analysis of Boredom Proneness, Phubbing, and Mind-Wandering in Medical Education

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Abstract

This study investigates the relationships among boredom proneness, phubbing (phone snubbing), and mind-wandering in medical students (N = 250). As medical curricula demand sustained cognitive load, students often resort to digital or mental escapes to mitigate the aversive state of boredom. Using a cross-sectional design, Pearson correlation revealed significant positive associations between boredom proneness, phubbing, and mind-wandering ($p < .01$). Multiple regression analysis demonstrated that boredom proneness ($\beta = .44, p < .001$) and phubbing ($\beta = .18, p < .01$) significantly predicted mind-wandering, accounting for 31.6% of the total variance ($R^2 = .316, F(2, 247) = 57.12, p < .001$). These findings highlight the role of self-regulatory failure in professional training and suggest that educational institutions must prioritize active learning and mindfulness to mitigate these effects.

Keywords: Boredom, Phubbing, Mind-Wandering, Educational Psychology, Behavioral Addiction

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Introduction

The rigorous nature of medical education necessitates deep engagement and the ability to sustain attention over prolonged periods. Medical training involves the acquisition of high-density information and the development of acute clinical observation skills, both of which require an unwavering cognitive presence. However, recent literature suggests that the modern digital landscape has fundamentally altered the classroom and clinical experience, giving rise to “digital disengagement”⁹. Central to this phenomenon is Boredom Proneness, a stable trait defined as a persistent inability to find meaning or interest in one’s environment²⁶. Unlike situational boredom, which is transient, boredom

feeling chronically under-stimulated and frustrated. In a medical context, when students experience this chronic boredom, they frequently engage in two distinct “escape” mechanisms to mitigate the aversive state of under-arousal. The first is Phubbing, the behavioral act of snubbing others in favor of a smartphone⁴. This provides an immediate, dopamine-driven “digital escape” that offers instant gratification but erodes the social fabric of the doctor-patient or student-mentor relationship. The second is Mind-Wandering, the cognitive decoupling of attention from the immediate task toward internal, task-unrelated thoughts²⁵. While mind-wandering offers a “mental escape,” it creates significant “attentional blinks” where critical clinical information may be missed. Together, these two

mechanisms form a dual-pathway of disengagement that poses a significant threat to the academic integrity and professional competence of future healthcare providers.

Literature Review

The relationship between these variables is rooted in the Interaction of Person-Affect-Cognition-Execution (I-PACE) model, which suggests that individual predispositions, like boredom proneness, trigger specific behavioral addictions^{3,11}.

Boredom Proneness and Phubbing

Research has established that boredom is an unpleasant emotional state that drives individuals to seek high-stimulation alternatives, such as smartphones, to release dopamine¹¹. Studies in higher education show that students with high boredom proneness are more likely to develop mobile phone addiction⁸ and engage in phubbing as a coping mechanism for loneliness or social anxiety^{1,14}. In medical faculties specifically, phubbing prevalence has been linked to long hours of study and decreased physical activity².

Mind-Wandering and Academic Achievement

Mind-wandering is often considered a “cognitive failure”²¹. Studies have shown that the mind wanders approximately 50% of the time during waking hours¹⁶. For medical students, frequent mind-wandering is detrimental as it competes for limited executive resources, leading to poorer performance on tests of working memory and reading comprehension^{20,24}. Also, boredom has been identified as a primary catalyst for mind-wandering; as tasks become monotonous, attention shifts inward to seek “mental stimulation”^{13,29}.

Methodology

Participants and Design

This study utilized a cross-sectional design involving 250 medical students (ages 18–30)

recruited from three public and private medical institutions in Punjab, Pakistan. Data collection occurred over six months using a purposive sampling technique. A total of 300 questionnaires were distributed, and 250 completed responses were returned, yielding a response rate of 83.3%.

A post-hoc power analysis conducted via G*Power indicated that a sample size of $N = 250$ provides adequate statistical power (greater than .95) to detect a medium effect size ($f^2 = 0.15$) in a multiple linear regression model with two predictors at an alpha level of .05.

Measures

Short Boredom Proneness Scale (SBPS)

An 8-item scale assessing the trait-level tendency toward boredom²⁶. Items are rated on a 7-point Likert scale. In the present study, the scale demonstrated good internal consistency ($\alpha = .81$).

Generic Scale of Phubbing (GSP)

A 15-item instrument measuring the extent of phone-related social snubbing (5) using a 5-point Likert scale. The localized adaptation of this scale exhibited high reliability ($\alpha = .86$).

Mind-Wandering Questionnaire (MWQ)

A 5-item scale measuring the frequency of task-unrelated thoughts²¹ using a 6-point Likert scale. The scale showed acceptable internal consistency in this sample ($\alpha = .79$).

Ethical Considerations:

The study protocol was approved by the Ethics Review Committee of the Department of Psychology, Riphah University, Lahore. Written informed consent was obtained from all participants before participation. Written informed consent was obtained from all participants before data collection. Participants were assured of data confidentiality, anonymity, and their rights to withdraw from the study at any stage without penalty.

Data Analysis

Quantitative analysis was performed via SPSS-27. We employed Pearson correlation to examine the bivariate associations between variables. To determine the predictive capacity of the independent variables, a standard multiple linear regression analysis was conducted with boredom proneness and phubbing acting as predictors, and mind-wandering as the outcome variable.

Results

Bivariate correlation analysis revealed that all study variables were significantly and positively inter-correlated (see Table 1). Boredom proneness shared a strong positive correlation with both phubbing ($r = .48, p < .01$) and mind-wandering ($r = .54, p < .01$). Phubbing was also significantly correlated with mind-wandering ($r = .39, p < .01$).

Table 1. Means, Standard Deviations, and Intercorrelations among Variables (N = 250)

Predictor	B	SE	β	t	p
Constant	4.21	1.12	—	3.76	< .001
Boredom Proneness	0.22	0.03	.44	7.74	< .001
Phubbing	0.06	0.02	.18	3.16	= .002

* $p < .05$, * $p < .01$

Note: $R^2 = .316$; $F(2, 247) = 57.12, p < .001$.

Table 2. Multiple Regression Analysis Predicting

Mind-Wandering (N = 250)

Variable	Mean	SD	1	2	3
1. Boredom Proneness	34.2	8.5	—		
2. Phubbing	42.8	12.1	.48**	—	
3. Mind-Wandering	18.5	4.2	.54**	.39**	—

A multiple linear regression analysis was performed to evaluate how well boredom proneness and phubbing predict mind-wandering scores. The regression model was highly significant ($F(2, 247) = 57.12, p < .001$) and explained 31.6% of the variance ($R^2 = .316$, Adjusted $R^2 = .311$). Both boredom proneness ($\beta = .44, t = 7.74, p < .001$) and phubbing ($\beta = .18, t = 3.16, p = .002$) were revealed to be significant independent positive predictors of mind-wandering.

Discussion

The statistical analysis revealed that boredom proneness was significantly associated with both phubbing and mind-wandering, consistent with its role as a vulnerability factor for disengagement. The significant positive correlation with phubbing suggests that students with a high trait-level predisposition to boredom perceive the traditional medical lecture as a source of “under-stimulation,” which was associated with an increased likelihood of seeking external sensory input via smartphone use. This behavior is consistent with the “Escape Theory” of digital use, where the smartphone acts as a primary tool for mood regulation. By shifting focus from a monotonous educational task to the varied, high-velocity rewards of social media or digital communication, students attempt to alleviate the aversive internal state of boredom,

albeit at the cost of their immediate social and academic environment.

Moreover, the empirical regression data establishes a critical link between this internal dissatisfaction, behavioral escape, and the final phenomenon of mind-wandering. As students experience chronic boredom, their attention naturally decouples from external pedagogical stimuli and retreats into self-generated, task-unrelated thoughts. This internal “mental escape” often occurs simultaneously with, or as a direct consequence of, behavioral phubbing, as evidenced by the significant unique variance explained by both variables in the regression model.

The findings suggest a compounding effect: once a student engages in phubbing to mitigate boredom, they become habituated to rapid, fragmented digital stimuli. This habituation reduces their threshold for sustained attention, making it increasingly difficult to remain cognitively present during “low-stimulation” tasks like clinical observations or deep-reading assignments, eventually leading to a chronic state of shallow information processing.

Finally, the discussion of these results points toward a self-reinforcing cycle of disengagement that is particularly hazardous in medical training. When students utilize phubbing and mind-wandering as coping mechanisms, they do not merely “miss” information; they actively weaken their executive control functions. Over time, the frequent shifting between the digital world and internal fantasies may impair the development of clinical reasoning and empathetic patient interaction. This suggests that the relationship between boredom and disengagement is not merely situational but a structural challenge to professional identity formation, necessitating educational interventions that focus on cognitive stamina and the management of digital impulses in high-stakes environments.

Limitations

This study's cross-sectional design precludes causal inference regarding the relationships among boredom proneness, phubbing, and mind-wandering. Reliance on self-report measures may introduce social desirability bias, and the use of

purposive sampling may limit generalisability to the broader population of medical students across all regions of Pakistan.

Conclusion and Recommendations

The findings of this research highlight that boredom proneness serves as a fundamental vulnerability factor for medical students, potentially undermining both academic performance and professional ethics. To mitigate these risks, educational institutions should adopt the following strategies:

Transition to Active Learning Models

Implementing pedagogies such as Problem-Based Learning (PBL) can heighten task significance and engagement, making the curriculum more meaningful to students²⁷

Incorporate Mindfulness Training

Offering programs like Mindfulness-Based Stress Reduction (MBSR) equips students with the cognitive tools to regulate their focus and resist the impulse for digital or mental “escape”⁷

Establish Professional Digital Conduct

Proactively addressing the social and professional implications of phubbing within clinical environments is essential to safeguarding the integrity of patient-provider communication²²

Conflict of Interest

The authors declare no conflict of interest.

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