

# SCRUTINIZE THE RAMIFICATIONS OF THE CAUSES, PSYCHOLOGICAL, AND SOCIAL IMPACTS OF PHUBBING, AND FEAR OF MISSING OUT

Ira Kusumawaty <sup>1\*</sup>, Yunike Yunike <sup>2, 3</sup>, Fadly Fadly <sup>3</sup>,  
Tri Basuki Kurniawan <sup>4</sup>, Mulya Virgonita Iswindari Winta <sup>5</sup>, and  
Margaretha Maria Shinta Pratiwi <sup>6</sup>

<sup>1,2,3</sup> Poltekkes Kemenkes Palembang, Palembang, Indonesia.

<sup>4</sup> Universitas Bina Dharma Palembang, Palembang, Indonesia.

<sup>5,6</sup> Universitas Semarang, Semarang, Indonesia.

\*Corresponding Author Email: [irakusumawaty@poltekkespalembang.ac.id](mailto:irakusumawaty@poltekkespalembang.ac.id)

DOI: [10.5281/zenodo.12605063](https://doi.org/10.5281/zenodo.12605063)

## Abstract

The phenomena of phubbing and Fear of Missing Out (FoMO) because of social media addiction have been identified as having a negative impact on mental health and the quality of social interactions, so they should not be ignored. This study aims to identify the causative factors of phubbing and FoMO and their psychological and social impacts through a literature review. This study collects and analyses the results of previous research focusing on phubbing, FoMO, and social media addiction, with particular attention to the psychological and social factors that influence and are influenced by these phenomena. The results of the literature review indicate that phubbing and FoMO are positively correlated with levels of anxiety, depression, and loneliness. Individuals who experience FoMO tend to use social media compulsively, which further triggers phubbing behavior. In addition, phubbing has been shown to impair the quality of interpersonal interactions and exacerbate feelings of social alienation and isolation. Recommendations to address and prevent phubbing and FoMO due to social media addiction include psychological interventions, education, and environmental regulation. Psychological interventions such as cognitive-behavioral therapy (CBT) can help individuals identify and change maladaptive thought patterns and behaviors related to social media use. Awareness campaigns and digital education programs need to be enhanced to minimise the negative impacts of phubbing and FoMO and promote healthier social media use. Environmental settings, such as setting time limits on social media use and encouraging technology-free time, can help individuals reduce their dependence on social media.

**Keywords:** Phubbing, Fear of Missing Out (FoMO), Social Media Addiction, Mental Health, Social Well-Being.

## INTRODUCTION

Excessive social media use has become a phenomenon resulting in phubbing behavior and feelings of Fear of Missing Out (FoMO). Phubbing occurs when a person prefers to focus on their mobile phone rather than interacting with others around them, thus neglecting in-person social presence (1). Meanwhile, FoMO arises as a result of constant exposure to social media content that showcases others' idealized lives, triggering anxiety and fear of missing out on important information or experiences (2).

Phone snubbing or better known as phubbing is a behavior when a person ignores others in social situations because they prefer to focus on their phone. Phubbing occurs when a person prefers to interact with their mobile phone rather than communicate with people around them (3,4). Overall, phubbing reflects the changes in social behavior caused by advances in technology, particularly smartphones, and highlights the importance of maintaining a balance between digital and face-to-face interactions (3,5).

Overuse of social media has become a common phenomenon in the digital age, bringing negative impacts such as phubbing and Fear of Missing Out (FoMO) (6–8). Phubbing, the act of ignoring people around you to focus on your mobile phone, damages interpersonal relationships by making people feel ignored and unappreciated. In addition, phubbing may lead to decreased life satisfaction, increased stress and anxiety (9,10). FoMO, or the fear of missing out on information or experiences, also enhances with excessive social media use. FoMO causes anxiety, stress, and dissatisfaction with personal life, and disrupts sleep patterns and productivity (11,12). Both phenomena reflect changes in the way humans communicate and interact, negatively impacting social relationships and mental health. To address this, awareness of healthy social media use and a balance between digital and face-to-face interactions is essential (9,12). Education and development of interpersonal communication skills are needed to minimize these negative impacts.

The world's overuse of social media has developed, being associated with mental health problems, including anxiety, depression and sleep disorders (3,4). Phubbing, the act of ignoring people around you to focus on your mobile phone, damages interpersonal relationships and leads to decreased life satisfaction, increased stress and anxiety (4,13). Fear of Missing Out on information or experiences, also increases with excessive social media use, causing anxiety, stress and life dissatisfaction (14–16). To overcome these negative impacts, it is important to have an awareness of healthy social media use and a balance between digital and face-to-face interactions (15,17,18). Education and development of interpersonal communication skills are necessary to minimize these negative impacts (19,20). Phubbing and FoMO are influenced by dependence on social media, the need for social validation, social pressure, addictive design of apps, unlimited information access, and the need for instant entertainment (5,21).

Phubbing and FoMO can be explained through several psychological and sociological theories. Media addiction theory states that individuals who rely heavily on media for information and social interaction will feel anxious when unable to access it. The Need for Social Validation Theory explains that humans have a drive to seek recognition and validation from others, which is reinforced by likes and comments on social media (22,23).

Social pressure theory (24,25) shows how individuals tend to conform their behavior to group norms to avoid social rejection and to be accepted by the group. states that norms and pressures from the social environment can encourage individuals to imitate behaviors such as phubbing. Technology addiction theory suggests that the addictive design of social media applications, with notifications and engaging content, makes it difficult for users to quit (26–28). Intermittent reinforcement theory from behavioral psychology states that the provision of unexpected rewards, such as likes or new messages, reinforces the habit of checking the phone constantly (19). Information availability theory suggests that non-stop access to information makes individuals feel the need to stay connected to not miss anything important. Finally, instant gratification theory suggests that social media provides instant entertainment (29,30), replacing face-to-face interactions and increasing anxiety about missing out on something fun or important. The literature research on phubbing and FoMO aims to identify the causative factors and psychological and social impacts outlined in the existing literature.

## METHODS

The research method of using a literature review to examine phubbing and FoMO due to social media addiction involved several systematic stages. First, the researcher identified clear objectives and research questions to guide the literature search. Second, conducted a comprehensive search of relevant studies in various academic databases such as PubMed, Google Scholar, and JSTOR, using specific keywords including: "phubbing," "FoMO," "social media," "mental health," and "interpersonal relationships." Thirdly, the researchers screened the search results based on predetermined inclusion and exclusion criteria, including English language, publication time span of the last 10 years, original articles, not reviews, and topic relevance.

Next, the researcher assessed the quality and validity of the selected studies through a critical review process, considering the methodology used, sample size, data collection techniques, and statistical analyses. The next stage was to extract and categorize data from relevant studies to identify patterns, key findings and gaps in the literature. Thematic analysis was used to organize key findings by categories such as causes as well as psychological and social impacts. The researcher then compared the results from different studies to gain a comprehensive understanding of phubbing and FoMO. Finally, the researcher compiled a full report that included background, methods, findings, conclusions, and recommendations, which can be used by academics, practitioners, and policy makers to understand and address the phenomena of phubbing and FoMO more effectively. With this approach, the literature review provides a strong foundation for understanding the phenomena of phubbing and FoMO and offers guidance for further empirical studies.

## RESULTS AND DISCUSSION

Based on the analysis of the ten submitted journal articles, the following is an identification of the factors causing phubbing and FoMO and the psychological and social impacts outlined in the literature showing important and complex findings. One of the main factors leading to phubbing is the reliance on social media for social validation. Intense social media use can enlarge FoMO as individuals feel the need to keep up to date with what their friends are doing (15). The fear of missing important moments or information from social media can encourage an individual to keep checking their mobile phone, which then leads to phubbing (26,30). The need for social connection, in the form of a desire to continue to connect with others online can lead to phubbing behavior. Furthermore, compulsive or addictive internet use disorder may cause individuals to neglect face-to-face interactions in favor of online interactions (31). Mental health issues such as anxiety and depression can exacerbate FoMO as individuals feel they miss out on important moments experienced by others (2). Lack of fulfilment of psychological needs such as belongingness and self-esteem may drive individuals to engage more frequently in social media to satisfy these needs (22,32).

While the psychological and social impacts that can occur are relationship deterioration, phubbing can damage interpersonal relationships as phubbed individuals feel neglected and unappreciated. Individuals who phub excessively can feel more isolated and lonelier, even though they feel more connected online (12,33). One of the main factors leading to phubbing is the reliance on social media for social validation (22,23). Individuals who often seek recognition through the number of likes and comments on social media tend to focus more on their mobile phones, even when

during in-person social interactions (11,34). The addictive design of social media apps, such as notification features and constant content updates, also contribute greatly to phubbing behavior (35–37). Phubbing can exacerbate mental health conditions such as depression and anxiety, especially when this behavior interferes with social interactions and emotional support in the real world (20). Social pressure and cultural norms that require one to be connected and active on social media exacerbate the phubbing phenomenon (2,38). People feel the need to check their mobile phones constantly so as not to miss important information or interactions, which ultimately reduces the quality of face-to-face interactions (17,39). Other factors include unlimited access to information and the need for instant entertainment, which makes it difficult for users to detach themselves from social media (3).

FoMO can also reduce psychological well-being as individuals feel dissatisfied with their own lives and always feel like something is missing (28,40). Ultimately, overuse of technology and unmet psychological needs can be the main contributing factors to phubbing and FoMO, which ultimately have a negative impact on mental health and social relationships. FoMO, or the fear of missing out on information and experiences, is also fueled by excessive social media use. The need to stay connected and monitor others' activities on social media often fuels FoMO. The design of social media platforms designed to capture users' attention, such as constantly updated feeds and algorithms that display interesting content, exacerbate this condition (4,41). FoMO creates feelings of anxiety and stress as individuals feel the need to stay up to date and don't want to feel left out.

Some studies have also shown that individuals with low self-esteem or mental health issues are more prone to phubbing and FoMO. Reliance on social media for validation and instant entertainment can exacerbate mental health conditions, creating a cycle of dependency that is difficult to break. For example, individuals with depression or anxiety may use social media as an escape, but ultimately this only exacerbates their condition. To address this issue, the literature recommends education on healthy social media use and the development of interpersonal communication skills. Education can help individuals understand the healthy boundaries of social media use and develop skills to manage their time more effectively. In addition, specialized mental health support programs can help individuals who experience depression or anxiety due to excessive social media use.

Phubbing indicates decreased life satisfaction as individuals who engage in phubbing often neglect face-to-face interactions that are important for emotional and social well-being (42,43). When people feel neglected by their partners or friends who are more focused on their mobile phones, this lowers the quality of interpersonal relationships and can damage emotional bonds. These feelings of neglect and disrespect can increase stress and anxiety levels. In addition, reliance on social validation from social media, instead of seeking happiness from in-person interactions, makes individuals feel less satisfied with their real lives (17,44,45). As a result, they experience decreased overall life satisfaction due to the loss of meaningful social connections.

Phubbing and FoMO can escalate anxiety and depression as individuals who engage in phubbing often feel neglected and unappreciated in face-to-face interactions, which damages the quality of interpersonal relationships and brings emotional stress. FoMO, which encourages reliance on social media to keep up with others' information and experiences, causes feelings of anxiety due to fear of missing out, which can lead to

chronic stress. Constant social comparison with the lives of others on social media often lowers self-esteem, making individuals feel their lives are less fulfilling. Reliance on social validation from social media rather than seeking happiness from real interactions worsens mental health. Finally, sleep disturbances and poor sleep patterns resulting from excessive social media use also contribute to increased anxiety and depression.

Productivity can suffer from Phubbing and FoMO as dependence on social media causes individuals to check their mobile phones frequently, distracting from important tasks and reducing concentration. The need to stay connected and follow updates on social media leads to frequent interruptions, slowing down work completion and reducing efficiency. This habit leads to poor time management, as time that should be used for work or rest is instead spent interacting on social media. In addition, feelings of anxiety due to FoMO make it difficult for individuals to focus on the task at hand, constantly feeling the need to monitor social media. As a result, productivity decreases and individuals struggle to manage their time effectively.

Some recommended strategies include the development of more responsible social media apps and platforms, designed to reduce dependency and encourage healthier interactions. For example, features that limit screen time or reduce the frequency of notifications can help users better manage their social media use. With a better understanding of the contributing factors and their impact, society can develop a more holistic and effective approach in addressing phubbing and FoMO. This approach should include efforts to raise awareness about the negative impacts of excessive social media use and the development of strategies to create a healthier balance between digital and face-to-face interactions. Further research is also needed to explore effective intervention strategies and the long-term impact of social media overuse. Hence, the results of this literature review provide a forceful foundation for understanding and addressing the phenomena of phubbing and FoMO in the context of social media addiction.

**Table 1: Literature Review**

No.	Component	Explanation
1.	Article Identity	Title: Effects of Social Media Use on Psychological Well-Being: A Mediated Model Journal: Frontiers in Psychology, Volume 12, 2021. Authors: Dragana Ostic, Sikandar Ali Qalati, Belem Barbosa, Syed Mir Muhammad Shah, Esthela Galvan Vela, Ahmed Muhammad Herzallah, Feng Liu.
	Objectives	Understanding the impact of social media use on psychological well-being by considering mediators such as social capital (bonding and bridging), social isolation, and smartphone addiction.
	Methods	Quantitative approach with online survey method. Data were collected from 940 social media users in Mexico and analysed using structural equation modelling (SEM). Population: social media users in Mexico The sample consisted of 940 university students who use social media, with a gender distribution of 76.4% female and 23.6% male. The study used a convenience random sampling technique due to the COVID-19 pandemic, with participants recruited through university emails and social media platforms.
	Results	Social media use has indirect positive impacts on psychological well-being, mainly through social capital (bonding and bridging). However, there are also significant negative impacts through smartphone addiction and social isolation.
	Discussion	Social media use can enhance psychological well-being through increasing social capital. However, excessive use can lead to smartphone addiction and social isolation, which negatively impact psychological well-being. These findings help understand the contradictions in the existing literature regarding the impact of social media use.

No.	Component	Explanation
	Conclusion	The overall impact of social media use on psychological well-being is positive, although there are some negative impacts. This study provides insights into how to mitigate the potential negative impacts of social media use.
2.	Article Identity	Title: Negative consequences from heavy social networking in adolescents: The mediating role of fear of missing out Journal: Journal of Adolescence, Volume 55, 2017, 51-60 Authors: Ursula Oberst, Elisa Wegmann, Benjamin Stodt, Matthias Brand, Andrés Chamarro
	Objectives	Examines the role of "fear of missing out" (FOMO) and intensity of social networking site (SNS) use in explaining the relationship between psychopathological symptoms and negative consequences of mobile SNS use in adolescents.
	Methods	An online survey to collect data from adolescent Spanish-speaking social media users in Latin America. The analysis method used structural equation modelling. Population: Spanish-speaking 16–18-year-old adolescents in Latin America. Sample: 1468 adolescents (1091 females). Snowball sampling through Facebook profiles.
	Results	FOMO and SNS use intensity mediate the relationship between psychopathological symptoms and negative consequences of mobile SNS use. Depression has a direct effect on negative consequences, whereas anxiety does not. FOMO had a significant mediating effect on the relationship between anxiety and negative consequences of mobile SNS use, but SNS use intensity did not. There is a gender difference where depression has no direct effect on negative consequences in males but has a mediating effect through FOMO in females.
	Discussion	This study highlights the importance of understanding the psychological factors that contribute to maladaptive SNS use and its impact on adolescent mental health. FOMO may be one mechanism that explains the relationship between psychopathological symptoms and excessive SNS use.
	Conclusion	This study confirmed the role of FOMO in the development of negative consequences of maladaptive technology use in adolescents. Psychopathological symptoms such as depression and anxiety may contribute to FOMO and negative consequences of mobile device use, especially in females.
3.	Article Identity	Title: Social Media Use: Association with Digital Stress and Anxiety and Depression Symptoms in Youth Journal: Psychological Topics, Volume 33, 2024, 133-154 Authors: Tamara Martinac Dorčić, Sanja Smojver-Ažić, Sanja Bradić
	Objectives	Examine the relationship between social media use and digital stress (including stress availability, anxiety approval, fear of missing out, connection overload, and online vigilance), and whether social media use and digital stress predict symptoms of anxiety and depression in adolescents.
	Methods	Quantitative study through survey Instruments: An online questionnaire developed to measure social media use and the Multidimensional Digital Stress Scale. Data Analysis: Multiple regression analysis and moderation analysis Population: University students in Rijeka, Croatia Sample: 267 university students (M = 21.06 years, SD = 2.01; 81.3% female). Sampling was done by convenient sampling through online questionnaire distribution.
	Results	The relationship between social media use and symptoms of anxiety and depression was weak. Higher levels of digital stress were related to more symptoms of anxiety and depression. Stress availability, anxiety approval, and connection overload were significant positive predictors for anxiety symptoms. Connection overload was a significant positive predictor of depressive symptoms. Stress availability and connection overload were significant moderators in the relationship between Instagram use and anxiety symptoms, whereas stress availability was a significant moderator in the relationship between Instagram use and depressive symptoms.
	Discussion	This study highlights the importance of attending to the digital stress component in understanding the impact of social media use on adolescents' mental health. The findings suggest that interventions targeting digital stress reduction may help reduce symptoms of anxiety and depression associated with social media use.
	Conclusion	Digital stress plays an important role in the relationship between social media use and mental health in adolescents. More time spent on Instagram was related to more

No.	Component	Explanation
4.		severe symptoms of anxiety and depression in individuals with high levels of stress availability.
	Article Identity	Title: Envy and problematic smartphone use: The mediating role of FOMO and the moderating role of student-student relationship Journal: Personality and Individual Differences, Volume 146, 2019, 136-142 Authors: Pengcheng Wang, Xingchao Wang, Jia Nie, Pan Zeng, Ke Liu, Jiayi Wang, Jinjin Guo, Li Lei
	Objectives	To examine whether envy is positively associated with adolescent problematic smartphone use, whether Fear of Missing Out (FOMO) mediates this relationship, and whether the relationship between envy and problematic smartphone use is moderated by relationships between students.
	Methods	Type of quantitative research with survey Instruments: A questionnaire measuring envy, problematic smartphone use, FOMO, and student relationships. Data Analysis: Path analysis and mediation and moderation analyses using PROCESS macros for SPSS Population: Adolescents in China Sample: 724 adolescents (312 boys and 412 girls) from two middle schools in Hebei Province, China. Mean age: 16.79 years (SD = 0.91) Sampling technique: convenience sampling
	Results	Envy was positively associated with problematic smartphone use. FOMO mediated the relationship between envy and problematic smartphone use. Relationships between students moderated all pathways between envy and problematic smartphone use. The moderation effect suggests that good student relationships can attenuate the negative effects of envy on FOMO and problematic smartphone use.
	Discussion	This study found that envy can increase adolescents' problematic smartphone use through FOMO. Moreover, relationships between students can moderate this effect, with better relationships reducing the negative impact of envy. These findings emphasize the importance of positive social relationships in reducing problematic smartphone use in adolescents.
	Conclusion	This study reveals that envy is a risk factor for problematic smartphone use in adolescents, and FOMO is one of the mechanisms explaining this relationship. Relationships between students also play an important role in moderating this relationship, with better relationships reducing the negative impact of envy.
5.	Article Identity	Title: Online-specific fear of missing out and Internet-use expectancies contribute to symptoms of Internet-communication disorder Journal: Addictive Behaviors Reports, Volume 5, 2017, 33-42 Authors: Elisa Wegmann, Ursula Oberst, Benjamin Stodt, Matthias Brand
	Objectives	Examines the role of online-specific Fear of Missing Out (FoMO) and internet usage expectancies in explaining internet-communication disorder (ICD) symptoms.
	Methods	Research Type: Quantitative using an online survey Instruments: Modification of the Short Internet Addiction Test for ICD (s-IAT-ICD), FoMO scale, and Internet Use Expectations Scale (IUES-ICD). Data Analysis: Structural equation modelling Population and Sample Population: Internet communication application users in Germany and Spain Sample: 270 participants (190 female, 80 male) from two countries (153 from Germany and 117 from Spain), using convenience sampling through Facebook adverts and local promotions.
	Results	Psychopathological symptoms predicted higher levels of FoMO on internet communication apps and expectations of using these apps as a tool to avoid negative feelings. FoMO and internet usage expectancies mediate the relationship between psychopathology symptoms and internet communication disorder (ICD). The proposed model suggests that psychopathology symptoms influence internet usage expectancies and FoMO, which in turn increase the risk of ICD symptoms.
Discussion	This research supports the I-PACE model showing how internet-related cognitive biases mediate the relationship between a person's core characteristics (such as psychopathological symptoms) and internet use disorder. FoMO is an important factor in this relationship, suggesting that individuals with psychopathology symptoms tend to have high expectations of using internet communication applications to avoid negative feelings, ultimately leading to internet communication disorder.	

No.	Component	Explanation
6.	Conclusion	This study reveals that psychopathological symptoms influence internet use expectancies and FoMO, which contribute to the development and maintenance of internet communication disorder symptoms. FoMO was a significant mediating factor in this relationship, emphasizing the importance of understanding the specific mechanisms underlying internet use disorder.
	Article Identity	Title: Exploring the role of positive metacognitions in explaining the association between the fear of missing out and social media addiction Journal: Addictive Behaviors, Volume 85, 2018, 83-87 Authors: Silvia Casale, Laura Rugai, Giulia Fioravanti
	Objectives	Examined the contribution of Fear of Missing Out (FoMO) in explaining problematic social media use with respect to fear of being negatively evaluated and perceived low self-presentation skills. Additionally, examined the mediating role of positive metacognitions about social media use in the relationship between FoMO and problematic social media use.
	Methods	Quantitative research through survey Instruments: written questionnaires measuring FoMO, fear of being negatively evaluated, self-presentation skills, and positive metacognitions about social media use. Data Analysis: Structural equation modelling using LISREL 8.8 with Robust Maximum Likelihood (RML) estimation. Population: University students in Italy Sample: 579 students (54.6% female; mean age 22.39 ± 2.82 years). Convenience sampling with approach by three research assistants.
	Results	FoMO: Positively associated with problematic social media use in both genders. Positive Metacognition: Mediated the relationship between FoMO and problematic social media use. Low self-presentation skills (LSS): Directly and indirectly related to problematic social media use in females, but only indirectly in males. Fear of being Negatively Evaluated: Not related to problematic social media use in females, but indirectly related through positive metacognition in males.
	Discussion	This study confirms the importance of assessing FoMO in the context of problematic social media use and highlights the mediating role of positive metacognition. These findings support previous literature showing that FoMO is related to problematic social media use. Moreover, this study adds evidence that positive metacognitions play a mediating role in this relationship, suggesting that individuals with high FoMO may have positive beliefs about social media use that boost the risk of problematic use.
	Conclusion	FoMO was related to problematic social media use both directly and through the mediation of positive metacognition. Fear of being negatively evaluated and low self-presentation skills also contributed to problematic social media use, but their roles differed between males and females. Positive metacognition plays an important role in the relationship between FoMO and problematic social media use.
7.	Article Identity	Title: Mobile Phone Addiction, Phubbing, and Depression Among Men and Women: A Moderated Mediation Analysis Journal: Psychiatric Quarterly, Volume 91, 2020, 855-868 Authors: Ana Ivanova, Oleg Gorbaniuk, Agata Błachnio, Aneta Przepiórka, Natalia Mraka, Viktoria Polishchuk, Julia Gorbaniuk.
	Objectives	Identify the relationship between mobile phone addiction and depression in university students, as well as whether phubbing mediates this relationship. The study also tested whether this mediating effect was moderated by loneliness and whether the model of the relationship between these variables was the same for men and women.
	Methods	Research design: quantitative with survey Instrument: Adapted Mobile Phone Use Habits (AMPUH). The Phubbing Scale Centre for Epidemiologic Studies Depression Scale (S-CES-D) De Jong Gierveld Loneliness Scale Data Analysis: Path analysis using Hayes algorithm with bootstrapping. Population: University and college students in Ukraine Sample: 402 students aged 17 to 31 (74% female) Sampling Technique: Convenience sampling via online survey



No.	Component	Explanation
		In men, loneliness enhanced the mediating role of phubbing in the relationship between mobile phone addiction and depression. In women, the mediating effect of phubbing decreased with increasing loneliness.
	Discussion	This study shows that mobile phone addiction contributes to depression through the mechanism of phubbing, with the moderating role of loneliness. In men, phubbing more strongly mediated this relationship when loneliness levels were high, whereas in women, phubbing had less effect on depression when loneliness levels were high. These results indicate that social interaction and mobile phone use have different impacts on the psychological well-being of men and women.
	Conclusion	Mobile phone addiction and phubbing had a significant impact on depression, with phubbing acting as a mediator. Loneliness moderated the strength of this mediation, with differences in effects by gender. These results highlight the importance of considering psychological and social factors in understanding the impact of mobile phone use on mental health.
8.	Article Identity	Title: Digital social multitasking (DSMT) and digital stress among adolescents: A peer norm perspective Journal: Heliyon, Volume 10, 2024, Artikel e31051 Authors: Chia-chen Yang, Christina Smith
	Objectives	This study aims to explore how perceived peer norms related to DSMT (digital social multitasking) and individual DSMT relate to digital stress in adolescents.
	Methods	Research Design: Quantitative with survey Instruments: A questionnaire that included the Digital Stress Scale, self DSMT, and perceived peer norms related to DSMT. Data Analysis: Path analysis using Mplus with MLR estimator Population: Adolescents aged 12-18 years in the United States Sample: 2105 adolescents (Mage = 15.39, S.D. = 1.82) Sampling technique: Recruitment via Qualtrics survey panel with validation via embedded attention check.
	Results	Relationship between self DSMT and Digital Stress: All self- DSMT variables (level, positive perception, negative perception) were associated with higher digital stress. Level and negative perceptions had a stronger relationship than positive perceptions. Perceived Peer Norms: Perceived peer norms related to DSMT (level, positive perceptions, negative perceptions) were related to digital stress both directly and indirectly through self-DSMT. Level and negative peer perception had a greater influence than positive peer perception. Peer Positive Perception: While associated with higher digital stress through increased self DSMT and positive perceptions, positive peer norms were also associated with decreased digital stress through reduced negative perceptions.
	Discussion	This study found that perceived peer norms play a large role in adolescents' experiences of DSMT and digital stress. Levels of DSMT self and negative perceptions of DSMT showed the strongest association with digital stress. Positive peer norms can have a protective effect by reducing negative perceptions of DSMT, but overall, positive peer norms were still associated with increased digital stress.
	Conclusion	All perceived peer norms related to DSMT (level, positive perceptions, negative perceptions) have the potential to increase digital stress either directly or through their influence on self DSMT. At the individual level, self DSMT and negative perceptions showed stronger associations with digital stress than positive perceptions. These results suggest the importance of considering peer norms in interventions to reduce digital stress in adolescents.
9.	Article Identity	Title: Smartphone addiction and phubbing behavior among university students: A moderated mediation model by fear of missing out, social comparison, and loneliness Journal: Frontiers in Psychology, Volume 13, 2023. Authors: Ruqia Safdar Bajwa, Haslinda Abdullah, Zeinab Zaremohzzabieh, Wan Munira Wan Jaafar, Asnarulkhadi Abu Samah
	Objectives	This study aims to explore the relationship between smartphone addiction (SMA) and phubbing behaviour (PHUB) by considering the mediating roles of fear of missing out (FoMO) and social comparison orientation (SCO), as well as the moderation of loneliness.

No.	Component	Explanation
		<p>Research Design: Quantitative with survey            Instruments: Questionnaires measuring smartphone addiction, phubbing, FoMO, SCO, and loneliness.            Data Analysis: Mediation and moderation analyses using SPSS and PROCESS macros</p> <p>Population: University students in Pakistan            Sample: 794 university students (53% female, 47% male) aged 18-26 years.            Sampling Technique: Multistage cluster random sampling</p>
	Methods	<p>SMA is positively associated with PHUB.            Mediation of FoMO and SCO: FoMO and SCO mediated the relationship between SMA and PHUB.            Moderation of Loneliness: Loneliness moderated the relationship between SMA and PHUB, with stronger effects on college students who felt lonelier.</p>
	Results	<p>This study found that SMA contributes to PHUB through FoMO and SCO mechanisms. Loneliness amplified this relationship, suggesting that lonelier college students are more vulnerable to the negative effects of smartphone addiction. These findings support the importance of understanding the psychological factors that influence phubbing behavior and interventions that focus on reducing loneliness and FoMO.</p>
	Discussion	<p>This study reveals that SMA has a significant effect on phubbing behavior among university students, which is mediated by FoMO and SCO and moderated by loneliness. Interventions that address these factors may help reduce the negative impact of smartphone addiction in university students.</p>
10.	Conclusion	<p>Title: Neuroticism, Trait Fear of Missing Out, and Phubbing: The Mediating Role of State Fear of Missing Out and Problematic Instagram Use            Journal: International Journal of Mental Health and Addiction, Volume 18, 2020, 628-639            Authors: Sabah Balta, Emrah Emirtekin, Kagan Kircaburun, Mark D. Griffiths.</p>
	Objectives	<p>Investigating the direct and indirect relationships between neuroticism, trait anxiety, and trait Fear of Missing Out (FoMO) with phubbing behavior through state FoMO and problematic Instagram use.</p>
	Methods	<p>Research Design: Quantitative with survey            Instrument:            Social Media Use Questionnaire (SMUQ) modified for Instagram            Fear of Missing Out Scale (FoMOS)            The Phubbing Scale (TPS)            Neuroticism Subscale of the Adjective Based Personality Scale (ABPT)            State-Trait Anxiety Inventory Short Form (STAI-6)            Data Analysis: Path analysis using SPSS 23.0 and AMOS 23.0            Population: Teenagers and young adults using Instagram in Turkey            Sample: 423 participants aged 14-21 years (53% female)            Sampling technique: Mixed methods approach with promotion through social media groups and paper survey distribution in high schools and universities.</p>
	Results	<p>Neuroticism: Indirectly related to phubbing through problematic Instagram use.            Trait FoMO: Indirectly related to phubbing through state FoMO and problematic Instagram use.            State FoMO: Directly and indirectly related to phubbing through problematic Instagram use.</p>
	Discussion	<p>Neuroticism and trait FoMO contribute to phubbing behavior through the mechanism of FoMO state and problematic Instagram use. These findings support the I-PACE model which proposes that core individual characteristics are related to internet use disorders and that specific cognitions may mediate this relationship.</p>
	Conclusion	<p>Neuroticism, trait anxiety, and trait FoMO have direct and indirect influences on phubbing behavior through state FoMO and problematic Instagram use. These results demonstrate the importance of understanding the psychological and cognitive factors underlying phubbing behavior to develop more effective interventions.</p>

## CONCLUSION

Neuroticism, trait anxiety, and FoMO play an important role in driving phubbing behavior through problematic social media use. Individuals high in neuroticism and FoMO tend to be more susceptible to social media addiction, which increases the

tendency to phubbing. To address and prevent phubbing as well as FoMO, several recommendations can be implemented. Psychological interventions such as cognitive-behavioral therapy (CBT) and stress management can help individuals overcome social media-related anxiety. Digital awareness and education campaigns are important to advance understanding of the negative impacts of phubbing and FoMO. Setting time limits on social media use and using time management apps can help reduce addiction. Social support through support groups and engagement in offline social activities are also very important. Organization or academic institutions can assist by implementing gadget use rules in workplaces and schools and promoting work-life balance. Implementation of these recommendations is expected to reduce the negative impact of phubbing and FoMO furthermore would be enhance individuals' psychological well-being.

## References

- 1) Kalaitzaki A, Laconi S, Spritzer DT, Hauck S, Gnisci A, Sergi I, et al. The Prevalence and Predictors of Problematic Mobile Phone Use: a 14-Country Empirical Survey. *Int J Ment Health Addict* [Internet]. 2024;22(1):746–65. Available from: <https://doi.org/10.1007/s11469-022-00901-2>
- 2) Gupta M, Sharma A. Fear of missing out: A brief overview of origin, theoretical underpinnings and relationship with mental health. *World J Clin Cases*. 2021;9(19):4881–9.
- 3) Khoo SS, Yang H. Smartphone addiction and checking behaviors predict aggression: A structural equation modeling approach. *Int J Environ Res Public Health*. 2021;18(24).
- 4) Świątek AH, Szcześniak M, Bielecka G. Trait anxiety and social media fatigue: Fear of missing out as a mediator. *Psychol Res Behav Manag*. 2021;14:1499–507.
- 5) Servidio R, Soraci P, Griffiths MD, Boca S, Demetrovics Z. Fear of missing out and problematic social media use: A serial mediation model of social comparison and self-esteem. *Addict Behav Reports* [Internet]. 2024;19(January):100536. Available from: <https://doi.org/10.1016/j.abrep.2024.100536>
- 6) Safdar Bajwa R, Abdullah H, Zaremohzzabieh Z, Wan Jaafar WM, Abu Samah A. Smartphone addiction and phubbing behavior among university students: A moderated mediation model by fear of missing out, social comparison, and loneliness. *Front Psychol*. 2023;13(January):1–11.
- 7) Sommantico M, Ramaglia F, Lacatena M. Relationships between Depression, Fear of Missing Out and Social Media Addiction: The Mediating Role of Self-Esteem. *Healthc*. 2023;11(12):1–12.
- 8) Kusumawaty, Ira; Fadly, Fadly; Kurniawan, Tri Basuki; Yunike Y. View of How to support teenagers in social media utilization\_ based on mother's experience.pdf. *Int J Adv Heal Sci Technol*. 2022;2(3):214–9.
- 9) Lin SC, Jian ET. Effects of Personality Traits Concerning Media Use Decisions on Fear of Missing Out and Social Media Use Behavior. *Behav Sci (Basel)*. 2022;12(11).
- 10) Mazlum MM, Atalay A. Developing the fear of missing out (FoMO) scale for university students: The validity and reliability study. *J Pedagog Res*. 2022;6(4):20–34.
- 11) Servidio R, Sinatra M, Griffiths MD, Monacis L. Social comparison orientation and fear of missing out as mediators between self-concept clarity and problematic smartphone use. *Addict Behav* [Internet]. 2021;122(March):107014. Available from: <https://doi.org/10.1016/j.addbeh.2021.107014>
- 12) Mao J, Zhang B. Differential Effects of Active Social Media Use on General Trait and Online-Specific State-FoMO: Moderating Effects of Passive Social Media Use. *Psychol Res Behav Manag*. 2023;16:1391–402.
- 13) Zhang MX, Zhou H, Yang HM, Wu AMS. The prospective effect of problematic smartphone use and fear of missing out on sleep among Chinese adolescents. *Curr Psychol*. 2023;42(7):5297–305.

- 14) Montag C, Müller M, Pontes HM, Elhai JD. On fear of missing out, social networks use disorder tendencies and meaning in life. *BMC Psychol.* 2023;11(1):1–8.
- 15) Sun J, Wong N. “i Can’t Believe i Phubbed Up Our Friendship!”: Examining Relationships between Loneliness, Problematic Smartphone Use, Friend Phubbing, and Life Satisfaction. *Hum Behav Emerg Technol.* 2024;2024.
- 16) Bulut S, Nazir T. Phubbing Phenomenon: A Wild Fire, Which Invades Our Social Communication and Life. *Open J Med Psychol.* 2020;09(01):1–6.
- 17) Dwyer RJ, Kushlev K, Dunn EW. Smartphone use undermines enjoyment of face-to-face social interactions. *J Exp Soc Psychol [Internet].* 2018;78(March 2017):233–9. Available from: <https://doi.org/10.1016/j.jesp.2017.10.007>
- 18) Al-Saggaf Y. State phubbing fully mediates the relationship between state fear of missing out and time spent on social media. 2019;253–61.
- 19) Luo S, Yang H, Meinel C. Reward-based intermittent reinforcement in gamification for e-learning. *CSEdu 2015 - 7th Int Conf Comput Support Educ Proc.* 2015;1:177–84.
- 20) Zhu X, Yang C, Ding L, Zhang X, Qiao G, Gao X, et al. Social media usage of chinese nursing students: Attitudes, motivations, mental health problems, and self-disclosure. *PLoS One [Internet].* 2022;17(12 October):1–13. Available from: <http://dx.doi.org/10.1371/journal.pone.0277674>
- 21) Wegmann E, Oberst U, Stodt B, Brand M. Online-specific fear of missing out and Internet-use expectancies contribute to symptoms of Internet-communication disorder. *Addict Behav Reports [Internet].* 2017;5(February):33–42. Available from: <https://doi.org/10.1016/j.abrep.2017.04.001>
- 22) Hillman JG, Fowlie DI, MacDonald TK. Social Verification Theory: A New Way to Conceptualize Validation, Dissonance, and Belonging. *Personal Soc Psychol Rev.* 2023;27(3):309–31.
- 23) Bakioğlu F, Deniz M, Griffiths MD, Pakpour AH. Adaptation and validation of the Online-Fear of Missing Out Inventory into Turkish and the association with social media addiction, smartphone addiction, and life satisfaction. *BMC Psychol [Internet].* 2022;10(1):1–10. Available from: <https://doi.org/10.1186/s40359-022-00856-y>
- 24) Worthy DA, Markman AB, Todd Maddox W. What is pressure? Evidence for social pressure as a type of regulatory focus. *Psychon Bull Rev.* 2009;16(2):344–9.
- 25) Chemnad K, Aziz M, Belhaouari SB, Ali R. The interplay between social media use and problematic internet usage: Four behavioral patterns. *Heliyon.* 2023;9(5).
- 26) Li YX, Zhang YH, Yang R, Lian SL, Yan L, Zhu XM. Relationship Between Perceived Social Norms and Phubbing: Individual Control and Fear of Missing Out as Mediators. *Int J Ment Health Addict [Internet].* 2023;21(3):1898–913. Available from: <https://doi.org/10.1007/s11469-021-00696-8>
- 27) Karaman HB, Arslan C. The mediating role of social media addiction and phubbing in basic psychological needs in relationships and relationship satisfaction. *Front Psychol.* 2024;15(March).
- 28) O’Brien O, Sumich A, Baguley T, Kuss DJ. A partial correlation network indicates links between wellbeing, loneliness, FOMO and problematic internet use in university students. *Behav Inf Technol.* 2023;42(16):2717–34.
- 29) Febrian A, Husna N. Understanding the Uses and Gratification [Internet]. Vol. 241, Icebe 2022, Aebmr. Atlantis Press SARL; 2023. 520–532 p. Available from: [http://dx.doi.org/10.2991/978-2-38476-064-0\\_53](http://dx.doi.org/10.2991/978-2-38476-064-0_53)
- 30) Dr. Komal Nagar NG. Why Do Individuals Engage in Phubbing? An Empirical Study Integrating Fear of Missing Out, Boredom Proneness, Smartphone Use. *Eur Econ Lett.* 2024;14(1):2008–21.
- 31) Dam VAT, Dao NG, Nguyen DC, Vu TMT, Boyer L, Auquier P, et al. Quality of life and mental health of adolescents: Relationships with social media addiction, Fear of Missing out, and stress associated with neglect and negative reactions by online peers. *PLoS One [Internet].* 2023;18(6 June):1–14. Available from: <http://dx.doi.org/10.1371/journal.pone.0286766>
- 32) Chotpitayasunondh V, Douglas KM. The effects of “phubbing” on social interaction. *J Appl Soc Psychol.* 2018;48(6):304–16.

- 33) Sommantico M, Ramaglia F, Boursier V, Gioia F, Lacatena M. Factor structure and psychometric properties of the Italian version of the online fear of missing out in young adults. *Comput Hum Behav Reports* [Internet]. 2024;13(October 2023):100374. Available from: <https://doi.org/10.1016/j.chbr.2024.100374>
- 34) Wu-Ouyang B. Boosting or Limiting? Examining How FoMO Influences Personal News Curation Through News Fatigue in Social Media. *Digit Journal* [Internet]. 2024;0(0):1–20. Available from: <https://doi.org/10.1080/21670811.2024.2326629>
- 35) Alinejad V, Parizad N, Yarmohammadi M, Radfar M. Loneliness and academic performance mediates the relationship between fear of missing out and smartphone addiction among Iranian university students. *BMC Psychiatry* [Internet]. 2022;22(1):1–13. Available from: <https://doi.org/10.1186/s12888-022-04186-6>
- 36) Kusumawaty I, Yunike Y, Elviani Y, Arifin H. Contributing Factors of Cyberbullying Behavior among Youths During Covid-19. *J Ners*. 2021;16(1):54–9.
- 37) Mediarti D, Kusumawaty I, Yunike, Oktarina R. What Are the Facts in Online Nursing Education During the Covid-19 Pandemic? *First Int Conf Heal Soc Sci Technol (ICoHSST 2020)*. 2021;521(ICoHSST 2020):62–7.
- 38) Chi LC, Tang TC, Tang E. The phubbing phenomenon: a cross-sectional study on the relationships among social media addiction, fear of missing out, personality traits, and phubbing behavior. *Curr Psychol* [Internet]. 2022;41(2):1112–23. Available from: <https://doi.org/10.1007/s12144-021-02468-y>
- 39) Li W, Bizumic B, Sivanathan D, Chen J. Vulnerable and grandiose narcissism differentially predict phubbing via social anxiety and problematic social media use. *Behav Inf Technol* [Internet]. 2023;1–15. Available from: <https://doi.org/10.1080/0144929X.2023.2262608>
- 40) Ostic D, Qalati SA, Barbosa B, Shah SMM, Galvan Vela E, Herzallah AM, et al. Effects of Social Media Use on Psychological Well-Being: A Mediated Model. *Front Psychol*. 2021;12(June).
- 41) Einstein DA, Dabb C, Fraser M. FoMO, but not self-compassion, moderates the link between social media use and anxiety in adolescence. *Aust J Psychol* [Internet]. 2023;75(1). Available from: <https://doi.org/10.1080/00049530.2023.2217961>
- 42) Deniz M. Fear of missing out (FoMO) mediate relations between social self-efficacy and life satisfaction. *Psicol Reflex e Crit*. 2021;34(1).
- 43) Uram P, Skalski S. Still Logged in? The Link Between Facebook Addiction, FoMO, Self-Esteem, Life Satisfaction and Loneliness in Social Media Users. *Psychol Rep*. 2022;125(1):218–31.
- 44) Balta S, Emirtekin E, Kircaburun K, Griffiths MD. Neuroticism, Trait Fear of Missing Out, and Phubbing: The Mediating Role of State Fear of Missing Out and Problematic Instagram Use. *Int J Ment Health Addict*. 2020;18(3):628–39.
- 45) Catur, BS, Jayanto, I, Kusumawaty, I. Understanding digital technology trends in healthcare and preventive strategy. *Int J Heal Med Sci* [Internet]. 2021;4(3):347–54. Available from: <https://doi.org/10.31295/ijhms.v4n3.1769>