

Fear of missing out (FoMO) and internet addiction among adolescence: The moderation effect of gender differences

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ABSTRACT

The use of the internet and its impact on adolescents is an increasingly important topic in the current digital era. This study explores the moderating role of gender in the relationship between Fear of Missing Out (FoMO) and internet addiction among adolescents in Indonesia. Data were collected through an online survey involving 169 participants. The scales used were the Internet Addiction Scale and the FoMO Scale. Statistical analysis employed moderation analysis using Jamovi. The results showed that FoMO significantly influences internet addiction, and there are gender differences in the level of internet addiction. However, the study also found that gender did not significantly moderate the relationship between FoMO and internet addiction. This implies that FoMO and gender independently contribute to internet addiction, emphasizing their distinctive roles in shaping online behaviors. The study underscores the importance of considering both factors in designing effective prevention and intervention strategies.

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Introduction

In the era of digital expansion, adolescents globally have become the central figures in the information and technology revolution. This period has granted adolescents unrestricted access to information resources, broader social connections, and unprecedented educational opportunities ([Haddock et al., 2022](#)). Digital technology facilitates various forms of communication and social interaction that can be advantageous for adolescent development ([Urbanova et al., 2023](#)). Additionally, the easy availability of information and resources can aid adolescents in their self-development ([Aschbrenner et al., 2019](#); [Benvenuti et al., 2023](#)).

Based on a survey conducted by the Asosiasi Penyelenggara Jasa Internet Indonesia (APJII), the number of internet users in Indonesia reached 215.63 million people in the period of 2022-2023, which is equivalent to 78.19% of the total population of Indonesia ([Asosiasi Penyelenggara Jasa Internet Indonesia, 2023](#)). The highest internet penetration is in the age group of 13-18 years old, with almost all of them (99.16%) connected to the internet ([Pahlevi, 2022](#)).

Alongside the technological advancements and advantages, several issues have emerged that demand serious attention. Issues such as the excessive use of digital technology

can have adverse effects on the psychological and emotional well-being of adolescents ([Limone & Toto, 2022](#)). The use of digital technology has been associated with negative emotions ([Dienlin & Johannes, 2020](#)) and disruptions in sleep patterns ([Holly et al., 2023](#)). Furthermore, the impact of technology can also lead to internet addiction ([Prambayu & Dewi, 2019](#); [Ying Ying et al., 2020](#)).

Internet addiction is a term used to describe problematic and compulsive internet use resulting in significant disruptions in an individual's daily life ([Cash et al., 2012](#); [Gergely, 2022](#); [Shaw & Black, 2008](#)). Research on 2932 adolescents in Indonesia indicated a prevalence of internet addiction at 19.3% ([Siste, Hanafi, et al., 2021](#)).

The consequences of internet addiction in adolescents can be negative, including decreased academic performance due to reduced focus and attention ([Dou & Shek, 2021](#); [Javaeed et al., 2019](#); [Kurnia & Afifah, 2021](#); [Muliani & Widjaja, 2022](#)), adverse mental health outcomes such as depression, anxiety, and stress ([Alavi et al., 2011](#); [Devi et al., 2022](#); [Kumar & Mondal, 2018](#); [Kwak et al., 2022](#); [Saikia et al., 2019](#)), and physical health issues such as obesity, poor posture, and eye strain ([Aghasi et al., 2020](#); [Mylona et al., 2020](#); [Yang et al., 2019](#); [Zhang et al., 2023](#)).

Individuals can become addicted to the internet due to the desire to remain connected or the experience of the fear of missing out (FoMO). Fear of missing out (FoMO) is defined as a pervasive apprehension that others might be having rewarding experiences from which one is absent ([Przybylski et al., 2013](#)). The internet provides access to various social platforms, apps, and websites that enable individuals to stay connected with friends, family, and their social circle ([Li et al., 2022](#)). Some individuals may feel the need to constantly check messages, notifications, and social media updates to stay connected with what is happening in their world. This need for constant connection can lead individuals to spend a significant amount of time online, even when it interferes with their daily activities or productivity.

Internet addiction has been extensively researched, particularly in connection with FoMO (Fear of Missing Out) ([Anastasya et al., 2022](#); [Metin-Orta, 2020](#)). Adolescents often utilize the internet as a means to escape from anxiety and insecurity, driven by a desire to constantly stay updated on the latest information and interesting events in their surroundings. Internet addiction is viewed as a coping strategy, allowing individuals to temporarily distance themselves from stress, loneliness, or other negative emotions that may arise when disconnected from information, i.e., the internet.

Internet addiction can be understood as adolescents' attempt to break free from the fear of missing out, seeking comfort, or discovering their identity in the virtual environment. This is because the fear of missing out on events, activities, or information in the online world drives individuals to continuously check their phones or digital devices to stay connected with the virtual world ([Bickham, 2021](#)). In other words, FoMO serves as the primary driver behind the tendency to consistently check digital devices, which, in turn, may contribute to the emergence of internet addiction in adolescents.

Previous studies ([Dufour et al., 2016](#); [Gul et al., 2022](#); [Khan et al., 2017](#); [Liu et al., 2023](#)) have consistently found differences in how males and females use the internet. For example, a study suggest that females may be more active on social media platforms, using them for communication, sharing, and connecting with others. In contrast, males might be more engaged in different online activities, such as online gaming or content consumption ([Naskar et al., 2016](#)).

Research has also indicated that gender can influence how individuals experience FoMO. It's suggested that males and females may have different triggers for FoMO. For instance, females may experience FoMO more intensely in social contexts, where they fear missing out on social events, while males might experience FoMO more strongly in competitive or achievement-oriented contexts ([Qutishat, 2020](#)). Previous research suggests that male and female adolescents may have different experiences when engaged in online activities, and this can influence how FoMO predicts internet addiction in both groups.

While previous studies have investigated FoMO and internet addiction individually, the current research uniquely explores the moderation effect of gender. This approach allows for a more comprehensive understanding of how gender differences may influence the dynamics of internet addiction in the context of FoMO. The research contributes to gender studies by examining how gender influences the relationship between FoMO and internet addiction. Understanding the role of gender in shaping online behaviors adds a valuable dimension to the broader discourse on gender dynamics in the digital realm.

This novel approach is pivotal in enhancing the comprehension of the intricate interplay between FoMO and gender in the context of adolescent internet addiction. This research aims to illuminate how FoMO contributes to internet addiction in adolescents, taking into consideration the influence of gender differences. This approach offers a comprehensive view of how distinct social and psychological factors in male and female adolescents can shape their experiences related to internet addiction. The objective is to evaluate the moderating role of gender differences in the FoMO-internet addiction relationship. This study not only fills a critical gap in the existing literature but also provides practical insights that can inform interventions, educational practices, and policies tailored to the unique needs of male and female adolescents in the digital age.

Method

This research employed a quantitative approach, specifically utilizing a correlational design to investigate the relationships among three key variables: internet addiction (dependent variable), fear of missing out (independent variable), and gender (moderator variable). The study involved the administration of a survey to adolescents in Indonesia.

The process of gathering data occurred online through the utilization of a Google Form, which was distributed across various social media platforms like WhatsApp, Instagram, and Twitter. Participants were requested to complete the form. Individuals who received messages regarding data collection could share the link within their social circles.

The Google Form link contained explicit instructions and details for informed consent. Adolescents, being active internet users, are likely to be acquainted with and comfortable using online platforms. Google Form offers a user-friendly interface that is easily navigable, making it accessible to a diverse range of participants, including those from the digital-native generation. Participants who believed they met the criteria voluntarily participated by filling out the form. Participation in this study was entirely of their own volition.

Participants

The study involved adolescents who utilize the internet. The determination of the sample size adhered to the rule of thumb recommended by Roscoe ([Sekaran, 2013](#)), suggesting that the sample size for a study should be a minimum of 30 and less than 500. The total number of participants in this research was 169, the majority of participants are female, constituting 68% of the sample. The age distribution shows a diverse representation, with the highest percentage of participants falling into the 18-year-old category (44.38%). The educational status of the participants is categorized into three groups: higher education students (37.28%), junior high school students (40.24%), and senior high school students (22.49%). The details of the data are presented in [Table 1](#).

Instruments

The measurement tool employed to assess internet addiction is the Internet Addiction Test (IAT). Developed by Young ([1998](#)), the IAT serves as an evaluative instrument to measure the potential extent of someone experiencing internet addiction. Covering crucial aspects of internet addiction, such as salience, excessive use, neglect of work, anticipation,

lack of control, and withdrawal ([Faraci et al., 2013](#)). Adapted for use in Indonesia, the IAT demonstrates strong psychometric properties, including high internal consistency ($\alpha = 0.913$) ([Siste, Suwartono, et al., 2021](#)).

Table 1
The Distribution of Study Participants

		Frequency	Percentage
Gender	Male	54	32
	Female	115	68
Age	15	39	23.08
	16	26	15.38
	17	27	15.98
	18	75	44.38
Educational status	Higher education student	63	37.28
	Senior highschool student	38	22.49
	Junior highschool student	68	40.24

Fear of Missing Out (FoMO) is evaluated through the FOMO Scale, a tool designed to assess individuals' apprehension about missing out on experiences. Derived from the framework initially proposed by Przybylski ([2013](#)) and subsequently refined by Abel, Buff & Burr ([2016](#)), this scale consists of 10 items that explore two primary dimensions of FoMO: fear (e.g., "I worry that my friends have more enjoyable experiences than me") and control (e.g., "It bothers me when I miss the chance to meet up with friends"). Adapted for use in Indonesia, the FoMO Scale exhibits solid psychometric properties, with strong internal consistency ($\alpha = 0.763$) ([Wibaningrum & Aurellyya, 2020](#)).

Data Analysis

In this study, we conducted a moderation analysis to explore the moderating influence of gender on the association between internet addiction and fear of missing out. For this analysis, we utilized the statistical software Jamovi, specifically employing the medmod module. Moderation analysis enables us to investigate whether the strength or direction of the relationship between our variables of interest is affected by a third variable, in this case, gender ([The Jamovi Project, 2022](#)). Additionally, we performed supplementary analyses using independent sample t-tests to examine gender differences in fear of missing out and internet addiction.

Results

Based on the data gathered from a total of 169 participants, comprising 54 males and 115 females, it is noteworthy that there were no missing values in the dataset. Among male participants, the average level of internet addiction was calculated to be 53.9, while among their female counterparts, the average stood at 51.2.

Furthermore, when examining Fear of Missing Out (FoMO), males exhibited an average score of 27.2, and females scored slightly lower at 26.9. The standard deviation for internet addiction was 7.54 for males and 6.53 for females, indicating variations in the dataset's spread. Likewise, the standard deviation for FoMO was 4.20 for males and 4.56 for females, further highlighting the data's dispersion.

All this data is comprehensively detailed in [Table 2](#). Based on the results of the data analysis presented in [Table 3](#), it is evident that fear of missing out has a significant effect on internet addiction ($p < 0.001$). Gender also has a significant effect on internet addiction ($p <$

0.05). However, the interaction between fear of missing out and gender does not have a significant effect on internet addiction ($p > 0.005$). This means that gender does not significantly moderate the relationship between fear of missing out and internet addiction.

Table 2*Descriptives Statistic*

	<i>Gender</i>	<i>Addiction</i>	<i>FoMO</i>
<i>N</i>	<i>Male</i>	54	54
	<i>Female</i>	115	115
<i>Missing</i>	<i>Male</i>	0	0
	<i>Female</i>	0	0
<i>Mean</i>	<i>Male</i>	53.9	27.2
	<i>Female</i>	51.2	26.9
<i>Median</i>	<i>Male</i>	53.0	27.5
	<i>Female</i>	51	28
<i>Standard deviation</i>	<i>Male</i>	7.54	4.20
	<i>Female</i>	6.53	4.56
<i>Minimum</i>	<i>Male</i>	38	19
	<i>Female</i>	36	13
<i>Maximum</i>	<i>Male</i>	72	36
	<i>Female</i>	72	37

Table 3*Moderation Estimates*

	Estimate	SE	95% Confidence Interval		Z	p
			Lower	Upper		
Fear of Missing Out	0.4436	0.114	0.220	0.667	3.887	< .001
Gender	-2.4973	1.079	-4.611	-0.383	-2.315	0.021
Fear of missing out * gender	-0.0894	0.253	-0.584	0.406	-0.354	0.724

Additional analysis with independent samples t-test reveals a significant gender difference internet addiction ($p < 0.05$), while there is no significant gender difference in fear of missing out ($p > 0.05$). Data presented in [Table 4](#).

Table 4*Independent Samples T-Test*

	Statistic	df	p
Fear of missing out	Student's t	0.493	0.623
Internet addiction	Student's t	2.357	0.020

Discussion

The results of the moderation analysis indicate that Fear of Missing Out (FoMO) has a significant effect on internet addiction, consistent with findings from numerous prior studies ([Alutaybi et al., 2020](#); [Gupta & Sharma, 2021](#)). FoMO is a phenomenon in which individuals continually feel the need to stay connected to the internet and check for the latest information to avoid feeling left out of what's happening in their environment ([Gupta & Sharma, 2021](#); [Rozgonjuk et al., 2020](#)). FoMO has been linked to excessive internet use and the potential for negative impacts on psychological well-being ([Elhai et al., 2021](#); [Franchina et al., 2018](#); [Rozgonjuk et al., 2020](#)). FoMO represents an individual's anxiety or discomfort regarding the possibility of missing out on positive experiences occurring elsewhere ([Huan You et al., 2018](#); [Przybylski et al., 2013](#)). This trigger propels individuals to stay continuously connected to the digital world to avoid feelings of being left out.

Each time an individual checks their phone or engages in online activities, particularly when responding to stimuli that trigger FoMO, they may experience positive reinforcement in the form of brief satisfaction or a sense of social connection ([Parasuraman et al., 2017](#)). Consequently, this positive reinforcement can strengthen excessive internet usage behaviors. Over time, individuals who consistently use the internet in response to FoMO may develop internet addiction as a coping strategy ([Akbari et al., 2021](#)). This dependency emerges because the internet provides an effective means of addressing anxiety, even if only temporarily.

In this study, it was found that gender has a significant impact on internet addiction. Additionally, differences in internet addiction were observed between males and females, suggesting distinct tendencies toward internet addiction based on gender. These findings are consistent with the research conducted by Mari et al. ([2023](#)), which also identified gender-related distinctions in internet addiction.

Prior studies have highlighted variations in internet usage patterns between males and females, with some research indicating that females tend to be more active on social media, whereas males may be more immersed in diverse online activities ([Khan et al., 2017](#)). Previous investigations have further indicated that females exhibit higher usage of social media platforms, while males are more prominently involved in online gaming ([Liu et al., 2023](#); [Pantu, 2018](#); [Shan et al., 2021](#)).

The most interesting finding is that the moderation analysis results show that the interaction between FoMO and gender does not have a significant effect on internet addiction. This means that, despite differences in the levels of FoMO and internet addiction between males and females, gender does not significantly moderate the relationship between FoMO and internet addiction.

The findings indicate the non-significance of the interaction between FoMO and gender in moderating their combined influence on internet addiction, possibly stemming from the independent nature of the effects of FoMO and gender on internet addiction. This suggests that both factors play distinct roles in influencing internet addiction without significantly impacting each other.

The limited variability among participants, both in terms of FoMO and gender, may contribute to the lack of a significant interaction effect. This is evident in the study's findings, which revealed no significant gender differences in FoMO, and the majority of participants identified as female. Consequently, the insufficient diversity in participant characteristics may result in a lack of substantial differences, preventing the emergence of a significant moderation effect.

Additionally, the non-significant interaction might be attributed to the possibility that FoMO and gender independently contribute to internet addiction without a synergistic effect.

This means that individuals may experience the impact of FoMO and gender separately, and the combined effect does not deviate significantly from the sum of their individual influences.

The data indicates that the average internet addiction score in males (53.9) is slightly higher than in females (51.2).

This supports previous research findings that have shown differences in the levels of internet addiction between genders ([Mari et al., 2023](#)). Earlier studies have recorded that males tend to have higher levels of internet addiction than females, which is in line with these results ([Lin et al., 2021](#); [Shan et al., 2021](#)).

Similarly, the average FoMO scores for males (27.2) and females (26.9) indicate a relatively small difference between genders. This aligns with prior research that has observed that FoMO is not always strongly associated with gender ([Rozgonjuk et al., 2021](#)). The absence of a significant interaction between FoMO and gender in moderating their effects on internet addiction could be explained by the independent influence of FoMO and gender, indicating distinct roles for each factor.

The limited variability among participants, particularly in gender distribution, may further contribute to the lack of a significant interaction effect, as the study's findings revealed no substantial gender differences in FoMO.

These insights suggest that future research may benefit from exploring additional factors or employing a more diverse sample to uncover a more nuanced understanding of the complex relationships involved.

These results can assist researchers and practitioners in designing more effective prevention and intervention strategies to address internet addiction and FoMO issues while taking into account the existing gender differences in addiction tendencies and FoMO. This understanding will be beneficial in efforts to enhance well-being and mental health in a society increasingly connected by digital technology.

Conclusion

In conclusion, the study's comprehensive analysis revealed significant effects of FoMO and gender on internet addiction. FoMO, characterized by the persistent need for online connection to avoid missing out, showed a substantial impact on internet addiction. Gender differences in internet addiction were evident, with males exhibiting slightly higher addiction scores than females. The interaction between FoMO and gender did not significantly moderate the relationship with internet addiction. This suggests that FoMO and gender independently contribute to internet addiction, highlighting their distinct roles in shaping online behaviors. The study emphasizes the need for future research to explore additional factors and employ a more diverse sample for a nuanced understanding of these complex relationships.

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Declarations

Author contribution. As the sole author, Martaria Rizky Rinaldi played a pivotal role in every aspect of this research. She conceptualized and designed the study, conducted data collection and analysis, authored the manuscript, and performed the reviewing and editing processes. Martaria Rizky Rinaldi's singular authorship is evident throughout this scholarly work.

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