LONELINESS AND RELATIONAL MOBILITY WITH PROBLEMATIC INTERNET USE IN COLLEGE STUDENTS

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Keywords	ABSTRACT
Loneliness, Problematic internet use, Relational mobility, Student	The rapid development of information and communication technology in addition to having a positive impact such as providing convenience in finding information for students, expanding knowledge, increasing insight, stimulating creativity and learning innovation and allowing wider access to education also has a negative impact such as various misuses of internet technology, such as excessive use to play games, reduced focus while studying which can result in decreased academic performance. One of the negative impacts that quite a lot occurs is Problematic internet use that can occur to anyone when the duration or activity used by individuals in accessing the internet is so high that it makes individuals ignore other aspects of their lives. This study aims to determine the relationship between Loneliness and Relational mobility with Problematic internet use in students. The subjects of this study were 250 college students. The sampling technique used in this study was purposive sampling. Data collection in this study used a Google Form. The measuring instruments in this study are problematic internet use, Loneliness, Relational mobility. The results showed that Loneliness and Relational mobility correlated with problematic internet use. There is a positive relationship between Loneliness and problematic internet use. The higher the Loneliness, the higher the problematic internet use. There is a negative relationship between Relational mobility and problematic internet use. The higher the Relational mobility, the lower the problematic internet use.

INTRODUCTION

The rapid development of information and communication technology (ICT) has significantly impacted education, making it more accessible and flexible, allowing students to learn from anywhere and at any time (Raja & Nagasubramani, 2018). ICT has transformed the way we learn, teach, and interact in the digital era (Rahmatullah et al., 2022). While these advancements offer numerous benefits, such as expanding knowledge, stimulating creativity, and providing wider access to education, they also come with challenges. Negative impacts include excessive gaming, reduced focus, potential declines in academic performance (Kwok et al., 2021), data leaks, and the digital divide (Wulandari, 2022). One of the most prevalent issues is problematic internet use, where individuals become overly reliant on the internet, often neglecting other aspects of life (Cao et al., 2011; Morin & Rahardjo, 2021).

A 2023 survey by the Indonesia Internet Service Providers Association (APJII) revealed that students represent the largest group of internet users, accounting for 98.88% of usage. Similarly, We Are Social-Hootsite highlighted that most internet users are between the ages of 18-40. The internet has become a fundamental part of student life, though it can have negative consequences, particularly when students have uncontrolled access, especially in campus environments. Famularsih (2020) noted that students frequently use the internet and online applications, while Walidaini & Arifin (2018) confirmed that students often use it to share learning materials and communicate online with peers.

High and intensive internet use by college students can cause problems when individuals feel that the internet provides comfort and confidence in interacting through online platforms such as social media, rather than interacting directly with others. Positively, the internet has a beneficial impact on various aspects of life, such as personal, social, and work aspects, such as facilitating individual interaction with friends and family and establishing relationships with people who share similar interests in virtual communities (Kittinger et al., 2012). On the other hand, problems also arise when students use the internet as a tool to manage emotions and negative feelings experienced. The internet is often used by students to change their feelings for the better when they are experiencing negative emotions, such as sadness or anger (Caplan, 2010).

The ease of accessing the virtual world through smartphones has led to increased online activity, which can result in Problematic Internet Use (PIU). PIU negatively impacts physical health, psychological well-being, social environments, academic performance, relationships, and other aspects of life. Individuals with PIU may experience a significant increase in their online activity, leading to harmful consequences (Cao et al., 2011). Odac & Kalkan (2010) noted that those affected by PIU often spend over five hours daily on the internet and feel discomfort when not online. These behaviors can disrupt personal development, hindering the ability to build meaningful relationships and prepare for future challenges. Moreover, PIU can have adverse effects on education, social interactions, and work (Shapira et al., 2003).

Research conducted by Moreno et al. (2022) stated that many students eliminate stess by using the internet continuously so that they are dependent on the internet and experience addiction in using the internet when they lose control when using the internet in cyberspace and always continue to use it (Tereshchenko et al., 2022). The results of interviews obtained by the researcher on three students where the three speakers revealed the same answer that they often open social media such as Instagram, online games, and whatsapp and read novels or watch movies, especially when they come home from college. The three speakers revealed the same reason when asked about using the internet as entertainment and being able to use the internet for hours until they forgot the time or until the battery on their smartphones ran out. The three speakers said that they had sleep disturbances due to the frequency of playing the internet.

The results of the interview describe the characteristics of individuals who experience problematic internet use as stated by Caplan (2010). Individuals with problematic internet use have psychosocial problems such as loneliness, a strong desire to interact online because they think online communication is safer and behavior in using the internet makes it uncontrollable in the real world. According to Caplan (2005) individuals with problematic internet use tend to use the internet compulsively, which can ultimately result in the negative impact of excessive internet use. This condition, termed as Preference for online social interaction (POSI), is a characteristic of individuals who believe that relationships formed through the internet are safer, more comfortable, and easier to do than face-to-face interactions. Mood regulation is the part of individuals who experience problematic internet use where the use of the internet as a tool to increase positive feelings individuals to use the internet as a strategy to monitor, assess and change emotional responses with the aim of improving mood. Deficient self-regulation is describing individuals who have a strong urge to continue using the internet while Negative outcomes are disturbances in managing life, disturbed social interactions and problems in various other aspects of life so that they tend to lead individuals to unhealthy mind distortions and inappropriate internet usage behaviors. POSI, Mood regulation, Deficient self-regulation and Negative outcomes are variables that have a significant role in encouraging the development of Problematic internet use (Caplan, 2003).

Based on the results of the study, there are several factors that affect PIU, namely Cognitive Distortion, Life Event, Loneliness (Tokunaga, 2015), relational mobility (Dong et al., 2023). Based on these three factors, one of the factors that affects PIU is Loneliness. According to Peplau & Perlman (1982), it is an unpleasant experience that occurs when a person does not have a connection with other people in the surrounding environment, either in terms of the number or level of proximity shows one of the characteristics that allow individuals to experience problematic internet use (PIU).

Loneliness contributes to 52% of Problematic Internet Use (PIU), with higher levels of loneliness leading to increased PIU. Another factor influencing PIU is relational mobility, which refers to the ability to form new relationships and choose interpersonal connections (Schug et al., 2010). Dong et al. (2023) suggested that higher relational mobility can reduce loneliness and, consequently, lower PIU. Despite existing research on factors such as psychological distress, cyberbullying, and communication (Dong et

al., 2023; Yashinta & Hurriyati, 2020), studies specifically linking loneliness and relational mobility to PIU are limited. This study aims to fill that gap, offering novel insights by focusing on these variables in a student population.

The main purpose of this study is to test the relationship between loneliness, relational mobility, and problematic internet use in students. Theoretically, this study is expected to contribute to the development of psychology by adding insight into the relationship between the three variables. Practically, the results are expected to provide guidance for students to be wiser in using the internet, especially when experiencing loneliness and relational mobility. In addition, this research can also help develop psychoeducational interventions that are relevant for individuals who experience problematic internet use.

The hypotheses used in this study are:
1) Loneliness and relational mobility are correlated with problematic internet use.
2) Loneliness is positively correlated with problematic internet use.
3) Relational mobility is negatively correlated with problematic internet use.

METHODS

The population of this study is students aged 18 to 40 years from public and private universities in Jakarta, Surabaya, Bau-Bau, and Bogor. This population was chosen because individuals in that age range belong to the early adult phase. The population criteria include students who own smartphones and use the internet for more than an hour every day. From the population, a sample of 250 people was selected using the purposive sampling technique, which did not provide an equal opportunity for all members of the population to be sampled. The age distribution of the sample was dominated by students aged 21-25 years (53.6%) and most of them were women (62.8%). In addition, the majority of respondents come from private universities and use the internet for more than 5 hours per day.

The research sample was processed using statistical analysis, which involved testing assumptions of normality, linearity, multicollinearity, and heteroscedasticity to ensure the validity of the data. This study measured the relationship between loneliness and relational mobility variables with problematic internet use using a scale developed by researchers based on the Likert scaling model. The scale includes several aspects such as online interaction, mood regulation, self-regulation, and the negative impact of internet use. The results of the reliability test show that the instrument used is valid and consistent in measuring the relationship between these variables.

RESULTS
Research Results
First Hypothesis

The first hypothesis in this study is that there is a relationship between loneliness and relational mobility variables and problematic internet use. Based on the results of multiple regression analysis, a significant value of 0.000 ($p<0.05$) and a Fcal value of 7.542 were obtained. This shows that there is a significant relationship between the variables of loneliness and relational mobility and problematic internet use. Based on the results of the analysis, the first hypothesis that states that there is a relationship between loneliness and relational mobility variables and problematic internet use is acceptable. The results of the multiple regression analysis test are summarized in table 23.

Table 1. Results of Linear Regression Analysis of Loneliness and Relational mobility with problematic internet use

F	p	Information
7,542	0,000	Very Significant

Source: SPSS Version 16.0 Output

Second Hypothesis

The second hypothesis of this study is that there is a positive relationship between loneliness and problematic internet use. Based on the results of the data analysis of the loneliness variable, a significant value of 0.000 < 0.005 and a value of t = 10.290 were obtained. This means that loneliness has a significant positive relationship with PIU. The results of the analysis stated that the research hypothesis that there was a positive relationship between loneliness and problematic internet use was accepted. The results of the analysis can be seen in table 2.

Table 2. Results of Linear Regression Analysis of Loneliness and Problematic Internet Use

t	p	Information
10,290	0,000	Very Significant

Source: SPSS Version 16.0 Output

Third Hypothesis

The third hypothesis of this study is that there is a negative relationship between relational mobility and problematic internet use. Based on the results of data analysis of the variables of relational mobility and problematic internet use, significant values of 0.003 < 0.005 and f-count -2.202 <3.033 were obtained. This means that relational mobility has a significant relationship with problematic internet use. The results of the analysis stated that the research hypothesis that relational mobility and problematic internet use have a negative relationship was accepted. The results of the analysis test can be seen in table 25.

Table 3. Results of Linear Regression Analysis Relational mobility and problematic Internet Use

t	p	Information
-2,202	0,003	Very Significant

Source: SPSS Version 16.0 Output

Effective Contribution Results

The calculation of the effective contribution (SE) for each variable is based on the following formula:

SE (X)% = βX. (cross product X1). (R2) / JK Regresi.100%

The effective contribution of the loneliness variable (X1) to the problematic internet use variable (Y) is as follows:

SE (X)% = βX1. (cross product X1). (R2) / JK Regresi.100%
= 0.414 X 10574.208 X 10886.663 / 0.602 X 100
= 24,22%

The effective contribution of the relational mobility variable (X2) to the problematic internet use variable (Y) is as follows:

SE (X)% = βX2. (cross product X1). (R2) / JK Regresi.100%
= 0.288 x 22593.504 x 10886.663 / 0.602.100
= 35,95%

The total Relative Contribution (SR) can be calculated as follows:

SR Total % = SE (X1)% + SE(X2)%
= 24,22% + 35,95%
= 60,17%

Based on the results of the calculation above, it can be seen that the effective contribution (SE) of the X1 variable to the Y variable is 24.22%, while the effective contribution (SE) of the X2 variable to the Y variable is 35.95%. So that the relative contribution (SF) of variables X1 and X2 to Y is 60.17%. This shows that Variable Y can be influenced by variables X1 and X2 by 60.17% and 39.83 by other factors or variables.

Regression Line Equation

Based on the results of data regression analysis using the SPSS program, a regression equation is obtained with the formula:

Y = βX0X0 + βX1X1 + βX2X2
Known: βX0= 5.131 ; βX1 = 0.414 ; βX2 = 0.288
Y = 5.131 – 0.414 + 0.288
Y = 4.429

Based on the results of the calculation above, it means that if the variables loneliness (X1) and relational mobility (X2) synergize, then, the PIU has a score of 5.131, the regression coefficient of 0.414 shows that an increase of 1 lonelines score will increase the PIU by 0.414 while the regression coefficient of 0.288 shows that every 1 increase in the relational mobility score will increase the PIU by 0.288.

Descriptive Data Statistics and Research Categorization

Based on the results of the descriptive analysis from spss, it is known that the problematic internet use variable has a mean value of 62.7120, std.deviation 8.52430. The loneliness variable had a mean value of 52.3640, std.deviation 7.58880. The relational mobility variable has a value of 124.6320, std.deviation 14.90588. The data description of the study can be seen in the following table.

Table 4. Research Description Data

Variable	Mean	St. Deviation
PIU	62,7120	8,52430,
Loneliness	52,3640	7,58880
Relational mobility	124,6320	14,90588

Source: SPSS Version 16.0 Output

Based on the results of the SPSS version 16.0 analysis, it is known that 157 research subjects have problematic internet use tends to be moderate (62.8%), followed by 12 subjects tend to be high (4.8%), followed by 13 subjects tend to be very low (5.2%), followed by 48 subjects tend to be low (19.2%), followed by 12 subjects tend to be very high (8.0%). It can be seen in the table below.

Table 5. Descriptive Data of the Scale of Problematic Internet Use

Interval	Category	Frequency	Presented
X≤49,926	Very Low	13	5,2
49,926<x≤ 58,450	Low	48	19,2
58,450<x≤ 71,382	Medium	157	62,8
71,382<x≤75,499	High	12	4,8
75,499<x	Very High	20	8,0

Source: SPSS Version 16.0 Output

Based on the results of the SPSS analysis version 16.0, it is known that 75 subjects tend to be low (30.0%), followed by 99 subjects tend to moderate (39.6%), followed by 60 subjects tend to be high (24.0) while 16 subjects tend to be very high (6.6%). It can be seen in the table below.

Table 6. Descriptive Data on the Loneliness Scale

Interval	Category	Frequency	Presented
x≤11,383	Very Low	-	-
11,383<X≤48,570	Low	75	30,0
48,570<X≤56,158	Medium	99	39,6
56,158<X≤ 3,747	High	60	24,0
63,747<X	Very High	16	6,6

Source: SPSS Version 16.0 Output

Table 7. Descriptive Data of Relational Mobility Scale

Interval	Category	Frequency	Presented
X≤22,358	Very Low	-	-
22,358<X≤ 117,179	Low	57	22,8
117,179<X≤ 132,084	Medium	149	59,6
132,084<X≤ 146,990	High	19	7,6
146,990<X	Very High	25	10,0

Source: SPSS Version 16.0 Output

Discussion

The first hypothesis accepted that loneliness and relational mobility correlate with problematic internet use can support the results of previous studies. Dissatisfaction in social relationships and not getting feedback when interacting with others makes individuals feel that the need for social relationships in their society or social environment is not fulfilled and the desire of individuals to

consciously decide to end or establish new relationships so that individuals get opportunities to form new friendships or relationships and have many opportunities to get to know others around them. Individuals believe that interacting online can increase their confidence, be more effective in getting new information or relationships that make it difficult for individuals to manage their time so that they tend to spend more time online than doing other activities. This makes individuals experience disturbances in managing their lives and interaction with their environment is disrupted, making individuals constantly think about things related to the internet so that individuals experience problematic behavior or problematic internet use.

Garvin (2019) stated that Loneliness has a significant relationship with problematic internet use. There are several factors that can affect problematic internet use in students, namely depression, social anxiety, shyness, loneliness and relational mobility. One of the things that causes students to experience problematic internet use is Loneliness where students experience obstacles in interacting with others in their environment. Loneliness has become a problem related to the lack of fulfillment of the need for social relationships and individual well-being (Hsu, 2020). Dong et al. (2023) stated that relational mobility is related to PIU, thus showing that relational mobility can be related to PIU. In this study, the results of the Loneliness and Relational mobility test were obtained in correlation with PIU, which means that Loneliness and Relational mobility have an influence that can reduce or increase the existence of problematic internet use in students. When Loneliness increases, problematic internet use will also increase, but vice versa, when Loneliness decreases, problematic internet use will decrease. While relational mobility increases, problematic internet use will decrease, while when relational mobility decreases, problematic internet use will increase. Respondents with a high level of Loneliness will make students experience Loneliness. Loneliness has become a problem related to the lack of fulfillment of the need for social relationships and individual well-being (Hsu, 2020). Students who experience Loneliness will use the internet a lot to establish relationships with others and avoid negative feelings so that students are vulnerable to experiencing problematic internet use.

Respondents with high relational mobility will make students avoid problematic internet use. The existence of high relational mobility allows students to interact directly or indirectly in their environment which can make individuals to prevent problematic internet use. The extent to which individuals can have the opportunity to establish new relationships or end existing relationships in a particular society or social context (Falk et al., 2009).

The second hypothesis was accepted which stated that Loneliness was positively correlated with problematic internet use. The need for intimacy that has been inherent in everyone throughout their lives, social attachment and unfulfilled social interaction in society make individuals feel helpless in the crowd and crowds in the surrounding environment make individuals use the internet to overcome dissatisfaction or unfulfilled interaction with others because individuals believe that online interaction is safer and more comfortable, Making individuals use the internet to change their emotional responses to change their mood so that individuals will constantly think about things related to the internet and social media even when offline so that the need for interaction can be met.

This hypothesis is supported by research conducted by Moretta & Buodo (2020), stating that there is a positive relationship between Loneliness and PIU. This means that the higher the Loneliness, the higher the Problematic internet use. Yashinta (2020) conducted a study on the relationship between Problematic internet use where there is a positive relationship between PIU and Loneliness which has results because high internet use reduces face-to-face interaction between users and their social environment. This means that it further reduces user involvement and attachment to the social environment they have. A person who experiences Loneliness will prefer to use the internet to communicate with others (McKenna-Plumley et al., 2021). Students who use social media as a substitute for face-to-face social interaction can make students experience problematic internet use. Peplau & Perlman (1982) put forward several aspects of Loneliness, namely Loneliness itself has 3 aspects, namely need for intimacy, cognitive process and social reinforcement. The need for intimacy aspect is the need for intimacy or a relationship that exists between individuals, cognitive process is the dissatisfaction felt by individuals who are established between other individuals in their environment, and social reinforcement is not getting feedback from other individuals in their environment. The existence of three aspects of Loneliness makes individuals experience Loneliness in their environment.

The third hypothesis is accepted that relational mobility is negatively correlated with problematic internet use. The individual's desire to consciously decide to end and can be very easy and choose to interact with anyone and get used to having a conversation with someone they have never met before.

This makes individuals use the internet as a strategy to monitor and assess emotions to increase positive feelings to fulfill their desire to establish new relationships in their social environment.

This hypothesis is supported by research by Dong et al. (2023) stating that relational mobility has a relationship with PIU and there are other factors that can affect it such as Loneliness. Dong, et al. mentioned that the higher the relational mobility, the less problematic internet use. In addition, low relational mobility can lead to Loneliness due to a lack of opportunities to create new friendships.

In line with the research conducted by Dong et al. (2023) stated that relational mobility is negatively related to PIU, thus showing that relational mobility can be a protective factor to reduce PIU.

According to Thomson et al. (2018), relational mobility is a socio-ecological variable that measures the freedom and opportunity of individuals to choose and end interpersonal relationships based on personal preferences. Relational mobility shows that relationships that have low relative mobility show more flexible relationships shaped by situations, and relationships that have high relative mobility show more flexible relationships shaped by situations. According to Yamagishi et al. (2008), in the environment, individuals can easily let go of their relationships with other people who consider the relationship not beneficial and seek a better relationship than the old one. This means that relational mobility can reduce problematic internet use because relationships with other people can be established. Relational mobility is a form of strategy used to establish relationships involving friendship, romance and hostility. There are 5 aspects of relational mobility proposed by Yuki et al. (2007), namely interaction, communication, self-control, self-defense and self-esteem. In the aspect of interaction, it is communication carried out by two or more people actively, communication is the process of exchanging information with each other to gain a deep understanding, self-control is the ability to control oneself in responding to others in communicating, self-defense is defense to protect oneself in the face of failure and self-esteem is the judgment made by the individual in reflecting success or failure in establish social relationships in their environment. The existence of relational mobility individuals can interact directly or indirectly in their environment which can make individuals to prevent problematic internet use.

CONCLUSION

Problematic Internet Use (PIU) is characterized by excessive internet behavior that negatively impacts individuals' lives, often linked to psychosocial problems like loneliness and a preference for online interactions over real-world engagement. This study aimed to explore the relationship between loneliness, relational mobility, and PIU among students, using a sample of 250 individuals aged 18 to 40 years in Indonesia. The findings revealed that loneliness is positively associated with PIU, while relational mobility negatively correlates with PIU, as higher relational mobility encourages more social interaction and reduces isolation. The majority of the sample (53.6%) were aged 21-25, aligning with data showing that younger individuals are more susceptible to PIU due to more frequent internet use for socializing and entertainment. Interestingly, women were found to have higher PIU than men, contradicting previous studies that suggested men were more prone to excessive internet use. The study recommends that students reduce internet use by engaging in more direct social interactions and positive activities, both on and off campus. Future research could explore other factors like social anxiety, self-esteem, and depression, and use different methods to deepen the understanding of PIU.

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