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ASSOCIATION BETWEEN SOCIAL MEDIA AND MENTAL HEALTH CHANGES AMONG GEN-Z IN BATAM, INDONESIA: A CROSS-SECTIONAL STUDY

Hubungan antara Media Sosial dan Perubahan Kesehatan Mental pada Gen-Z di Batam, Indonesia: Studi Cross Sectional

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ABSTRACT

Background: This study explores the association between YouTube usage and the mental health status of Gen-Z, focusing on the roles of social anxiety and parasocial interaction in YouTube addiction**. Purpose:** To identify the link between social anxiety (LSAS) and parasocial interaction (PSI) and YouTube addiction (IAT), while also evaluating the role of social support (MSPSS). **Methods:** Data were collected from 380 respondents in Batam City. The measurement tools included the Internet Addiction Test (IAT), LieBowltz Social Anxiety Scale (LSAS), Parasocial Interaction (PSI), and the Multidimensional Scale of Perceived Social Support (MSPSS). **Results:** Multiple regression analysis revealed that 84.5% of the variability in YouTube addiction can be explained by LSAS, PSI, and MSPSS. The F-test results indicated high significance ($F = 681.862$, $p < 0.05$). The t-test showed that LSAS ($B = 0.609$, $t = 11.623$, $p < 0.0001$) and PSI ($B = 0.707$, $t = 6.642$, $p < 0.0001$) had a significant influence on IAT, while MSPSS was not significant ($B = 0.067$, $t = 0.893$, $p = 0.372$). The regression model for IAT was IAT = -2.151 + 0.609LSAS + 0.707PSI + 0.067MSPSS, and for PSI was PSI = -2.715 + 0.517LSAS. **Conclusion:** Confirm that social anxiety and parasocial interaction significantly affect YouTube addiction, while social support does not show a significant influence.

Keywords: social media, youtube, social anxiety

ABSTRAK

Latar Belakang: *Penelitian ini mengeksplorasi hubungan penggunaan YouTube dengan kesehatan mental anak-anak Gen-Z, dengan fokus pada peran kecemasan sosial dan interaksi parasosial dalam kecanduan YouTube.* ***Tujuan:*** *untuk mengidentifikasi hubungan antara kecemasan sosial (LSAS) dan interaksi parasosial (PSI) dengan kecanduan YouTube (IAT), serta mengevaluasi peran dukungan sosial (MSPSS).* ***Metode:*** *Data dikumpulkan dari 380 responden di Kota Batam. Alat ukur yang digunakan mencakup Internet Addiction Test (IAT), LieBowltz Social Anxiety Scale (LSAS), Parasocial Interaction (PSI), dan Multidimensional Scale of Perceived Social Support (MSPSS).* ***Hasil:*** *Analisis regresi berganda mengungkapkan bahwa 84,5% variabilitas kecanduan YouTube dapat dijelaskan oleh LSAS, PSI, dan MSPSS. Hasil uji F menunjukkan signifikansi tinggi ($F = 681,862$, $p < 0,05$). Uji t menunjukkan bahwa LSAS ($B = 0,609$, $t = 11,623$, $p < 0,0001$) dan PSI ($B = 0,707$, $t = 6,642$, $p < 0,0001$) memiliki pengaruh signifikan terhadap IAT, sedangkan MSPSS tidak signifikan ($B = 0,067$, $t = 0,893$, $p = 0,372$). Model regresi untuk IAT adalah IAT = -2,151 + 0,609LSAS + 0,707PSI + 0,067MSPSS, dan untuk PSI adalah PSI = -2,715 + 0,517LSAS.* ***Kesimpulan****: Kecemasan sosial dan interaksi parasosial berpengaruh signifikan terhadap kecanduan YouTube, sedangkan dukungan sosial tidak menunjukkan pengaruh signifikan.*

Kata Kunci: *media sosial, youtube, kecemasan sosial*

INTRODUCTION

Social media is one of the platforms used to disseminate and provide information. It is a tool that enables its users to share ideas and information. Parents, researchers, and mental health advocates have raised significant concerns regarding the imbalance caused by excessive usage. One of the most common activities among Gen-Z is the excessive use of social media sites like YouTube. Repeated or excessive social media use among adolescents may have indirect negative impacts on mental health

"Indonesia is a country with one of the highest numbers of social media users, particularly among adolescents (Yasin *et al*., 2022; Septiana, 2021). Social media usage among adolescents has a significant impact on their development, both socially and psychologically. Adolescence is a phase where individuals experience growth toward adulthood, meaning they go through biological, emotional, and psychological changes. These emotional shifts make adolescence a sensitive period requiring careful attention. During this stage, regardless of their abilities, adolescents strive to engage in social interaction and build a personal brand through social media platforms (Aprilia *et al*., 2020).

Health Behavior in School-Aged Children (HBSC) conducted by the WHO Regional Office for Europe found that impoverished children aged 11, 13, and 15 years across 45 European countries reported feelings of loneliness, tension, and low self-esteem. This study suggests that excessive use of digital technology contributes to mental health issues such as loneliness and irritability among adolescents. In fact, subsequent research found that 80% of Gen-Z in Indonesia spend time on social media (Pratama & Sari, 2020).

YouTube is an online video platform that provides a variety of content in the form of videos and interactive videos accessible and viewable by anyone (Hidayati & Hidayat, 2021). Like other social media platforms, YouTube has a significant influence on everyone. This influence can be either negative or positive, with the outcome depending on how the platform is utilized by the individual (Amelia & Lestari, 2021). Moreover, evidence shows that young people are at the highest risk of experiencing loneliness and mental health problems due to the negative impacts reported, despite YouTube's best efforts to prevent this from happening (Balcombe, 2023).

Recent research has found that various factors, such as personality traits, development, and social interactions, play a role in influencing the impact of social media on adolescent mental health, particularly in terms of depression and anxiety. Although using YouTube for peer-to-peer support has benefits, such as reducing negative perceptions and increasing accessibility for seeking and sharing information, concerns have arisen regarding the lack of privacy and potential breaches of personal confidentiality. On this platform, interactions often occur publicly, which can make adolescents feel exposed and vulnerable. Additionally, due to the open nature of YouTube, the information shared is not always reliable, and this risk must be considered in the context of mental health. As noted earlier, concerns about the quality and safety of parasocial relationships remain. It is still unclear at what point YouTube use may become a psychological risk.

According to the World Health Organization (WHO), mental health is a state that allows individuals to realize their potential, cope with the normal stresses of everyday life, work productively, and contribute to the community around them.

Each person's mental health varies and develops dynamically. Essentially, people are faced with problems that they must solve using different solutions. According to Yusuf, mental health encompasses several aspects: first, how people think, feel, and live their daily lives; second, how they view themselves and others; and third, how they evaluate different solutions and make decisions in various situations. Common examples of mental disorders among adolescents include depression, generalized anxiety, and fear.

Excessive use of social media platforms like YouTube can lead to addiction, which in turn triggers various psychological issues. Moreover, excessive social media use can also contribute to physical disorders such as myopia, high blood pressure, back pain, and even obesity. These psychological effects often cause individuals to become lazy and less productive in their daily activities.

Excessive use of social media platforms like YouTube can have negative effects on the mental health of the public, particularly Gen-Z. This addiction to social media can trigger psychological issues such as laziness, irritability, arrogance, envy, jealousy, greed, and anxiety. Therefore, individuals, parents, and society must be aware of the potential risks associated with excessive social media use. It is important to practice balanced usage and provide the necessary support to those affected by it. Based on this background, this study aims to test several hypotheses related to the link between YouTube use and mental health, particularly addiction and parasocial relationships with favorite YouTubers.

METHOD

This study employed a quantitative method with a Conceptual Moderated-Mediation Model approach. The model was adapted from research conducted by Pierre de Bérail, Guillon, and Bungener, who also applied a similar approach. In this study, several variables were used to measure social anxiety, perceived social support, parasocial interaction, and YouTube addiction.

Independent Variables:

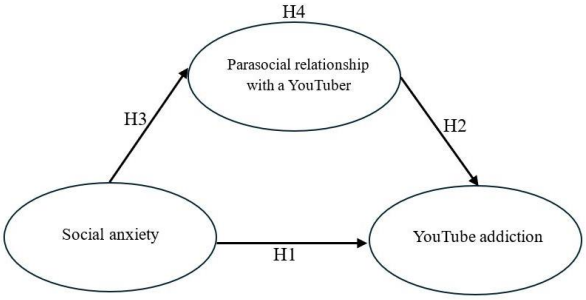
1. LieBowltz Social Anxiety Scale (LSAS): Measures the level of social anxiety through items related to anxiety while speaking in public, eating in public places, or interacting with unfamiliar people.
2. Multidimensional Scale of Perceived Social Support (MSPSS): Assesses the level of perceived social support from friends, family, and significant others.
3. Parasocial Interaction (PSI): Evaluates the level of parasocial interaction with favorite YouTubers, including comfort, familiarity, and the desire to connect with those YouTubers.

Dependent Variable:

Internet Addiction Test (IAT): Used to measure the level of YouTube addiction by adapting relevant items such as excessive viewing frequency, impact on social and work relationships, and feelings of anxiety when unable to access YouTube.

Research Model:

Figure 1 below illustrates the research model to be used. This model reflects the relationships between social anxiety, parasocial interaction, perceived social support, and YouTube addiction.



Source: (de Bérail, Guillon Bungener)
Figure 1. Research Model

From the diagram above, there are 8 hypotheses in the writer's study:

1. H10: Social anxiety will positively correlate with YouTube addiction.
2. H1a: Social anxiety will not positively correlate with YouTube addiction.
3. H20: The strength of the parasocial relationship with favorite YouTubers will positively correlate with YouTube addiction.
4. H2a: The strength of the parasocial relationship with favorite YouTubers will not positively correlate with YouTube addiction.
5. H30: Social anxiety will positively correlate with the parasocial relationship with favorite YouTubers.
6. H3a: Social anxiety will not positively correlate with the parasocial relationship with favorite YouTubers.
7. H40: The parasocial relationship with favorite YouTubers will mediate the relationship between social anxiety and YouTube addiction, such that social anxiety has both direct and indirect effects on YouTube addiction through the parasocial relationship.
8. H4a: The parasocial relationship with favorite YouTubers will not mediate the relationship between social anxiety and YouTube addiction, such that social anxiety has direct and indirect effects on YouTube addiction through the parasocial relationship.

Operational Definitions of Variables:

Below are the operational definitions for each variable measured in this study:

1. Internet Addiction Test (IAT): Measures YouTube addiction through 18 items that include aspects such as usage duration, impact on daily life, and negative feelings related to the inability to reduce usage.
2. LieBowltz Social Anxiety Scale (LSAS): Measures social anxiety through 23 items covering common social situations, such as public speaking, interacting with new people, or being the center of attention.
3. Parasocial Interaction (PSI): Assesses the level of parasocial interaction with favorite YouTubers through 9 items that include feelings of closeness, familiarity, and the desire to follow the YouTuber's activities.
4. Multidimensional Scale of Perceived Social Support (MSPSS): Measures perceived social support through 12 items covering sources of support from friends, family, and other close individuals.

The Internet Addiction Test (IAT) was chosen as the primary measurement tool for assessing YouTube addiction due to its proven validity and reliability in measuring internet addiction, including social media use. In the context of this study, several items on the IAT were adapted to be more relevant to YouTube use, such as frequency of use, impact on social relationships, and effects on daily productivity. These adaptations ensure that the measurement tool covers specific aspects of YouTube addiction, providing more accurate results in describing respondent behavior.

Variable: Internet Addiction Test (IAT)

1. Frequency of spending more time on YouTube than intended.
2. Tendency to neglect household responsibilities in favor of spending time on YouTube.
3. Preference for the enjoyment derived from YouTube over intimate relationships.
4. Formation of new relationships with other YouTube users.
5. Concerns expressed by close individuals about the time spent on YouTube.

6. Negative impact of YouTube on academic or work performance.
7. Priority given to watching YouTube over immediate obligations.
8. Job performance or productivity affected by YouTube use.
9. Tendency to be defensive or secretive about YouTube activities.
10. Anticipation for the next YouTube session.
11. Fear of boredom or emptiness without YouTube.
12. Anger when interrupted during YouTube viewing.
13. Loss of sleep due to late-night YouTube use.
14. Anxiety related to thoughts about YouTube while offline.
15. Attempts to reduce YouTube use that have been unsuccessful.
16. Concealment of the amount of time spent on YouTube.
17. Choosing YouTube over socializing.
18. Mood changes related to YouTube use.

Variable: LieBowltz Social Anxiety Scale (LSAS)

1. Level of anxiety when making phone calls in public places.
2. Level of comfort when participating in small groups.
3. Feelings of anxiety when eating in public places.
4. Discomfort when drinking with others in public places.
5. Level of anxiety when speaking with authority figures.
6. Stress related to performing in public.
7. Level of anxiety when attending parties.
8. Degree of fear when working under supervision.
9. Stress when writing under supervision.
10. Anxiety when calling someone not well-known.
11. Level of comfort when talking to strangers.
12. Degree of anxiety when meeting unfamiliar people.
13. Anxiety when using public restrooms.
14. Stress when entering a room where everyone is already seated.
15. Level of anxiety when the center of attention being.
16. Level of comfort when speaking in meetings.
17. Anxiety when facing written exams.
18. Stress when expressing disagreement to acquaintances.
19. Anxiety when making eye contact with unfamiliar people.
20. Stress when delivering reports to groups.
21. Anxiety when trying to initiate romantic meetings.
22. Level of comfort when returning items to a store.
23. Level of resistance when dealing with highly persistent salespeople.

Variable: Parasocial Interaction (PSI)

1. Feeling comfortable and relaxed when in the presence of a YouTuber, similar to being with close friends.
2. Perception that the YouTuber appears genuine and relatable.
3. Anticipation for new content from the YouTuber.
4. Tendency to watch the YouTuber's content regardless of the platform used.
5. Feeling that the YouTuber understands and provides information that is engaging to the respondent.
6. Willingness to engage with stories or news about the YouTuber.
7. Desire to meet the YouTuber in person.
8. Empathy towards the YouTuber when they make mistakes.
9. Interest in the YouTuber's persona.

Variable: Multidimensional Scale of Perceived Social Support (MSPSS)

1. Availability of someone specifically for support when needed.

2. Ability to share joys and sorrows with someone special.
3. Perception of family efforts to provide assistance.
4. Acceptance of emotional support and help from family.
5. Presence of someone who is a source of comfort.
6. Efforts made by friends to offer help.
7. Reliability of friends during difficult times.
8. Freedom to discuss family issues.
9. Sharing joys and sorrows with friends.
10. Having someone who shows concern for one's feelings.
11. Family's willingness to assist in decision-making.
12. Comfort in discussing issues with friends.

Population and Sample

This study involves the Gen-Z population in Batam City, which, according to data from the Maranatha Management Journal in 2023, numbers 324,457 individuals. Using the Disproportional Random Cluster Sampling method, a sample of 384 respondents was drawn, with a 95% confidence level and a 5% margin of error. The Gen-Z population in Batam is divided into three main clusters: students, college students, and workers. Each cluster received an equal sample allocation of 128 respondents, although the population size within each cluster varies. This approach allows the researchers to obtain a representative picture from each group, despite the disproportionate sample allocation.

Instrument

The research instrument used in this study is a structured questionnaire developed based on the operationalized research variables. This questionnaire consists of a series of questions designed to measure the characteristics, perceptions, and behaviors of respondents in each cluster (students, college students, workers) related to the research topic. The questions were developed based on relevant literature and theories and have been tested for validity and reliability through a pilot test before being used in this study.

Data Collection

Data collection was carried out using a survey method. The structured questionnaire was distributed to respondents from each cluster both directly and through online platforms to reach those who were difficult to contact physically. Each respondent was provided with an explanation of the research purpose and assured that their data would be kept confidential and used solely for research purposes. Data collection was conducted within a specified time frame until the target sample size for each cluster was achieved, which is 128 respondents for each cluster (students, college students, workers). The collected data was then compiled and securely stored for further analysis.

Research Ethics

This research was conducted with adherence to applicable ethical principles. Before starting data collection, the researchers obtained approval to conduct this study as part of an academic assignment. Respondents were given a detailed explanation of the research purpose and were assured that their participation was completely voluntary and anonymous. Respondents also had the right to withdraw from the study at any time without any consequences. The collected data was kept confidential and used only for academic purposes in accordance with the initial consent.

RESULT

The survey data was distributed via Instagram with an initial target of 300 samples but successfully gathered 380 responses from individuals aged 12 to 19. Analysis of respondent characteristics showed that the majority were aged between 17 and 19 years (141 participants, 35.3%), primarily students. Additionally, there were 134 participants (33.4%) who were workers aged 19 years and above, and 120 participants (32.3%) were students aged 12 to 15 years. Descriptive analysis revealed that 76.8% of respondents (307 participants) reported spending more time on YouTube than intended, which negatively affected their time for other activities and social relationships. Despite this, the high scores on perceived social support among most respondents indicate that support from family and friends may mitigate some of the negative impacts of excessive social media use.

Validity Test

The validity test results indicate that all variables measured in this study are valid. For the Internet Addiction Test (IAT), which measures YouTube addiction, the instrument is valid with values above 0.5, showing that items covering usage duration, impact on daily life, and negative feelings related to the inability to reduce usage are reliable for measuring YouTube addiction. The LieBowltz Social Anxiety Scale (LSAS), which assesses social anxiety through common social situations, also shows validity with values above 0.5, indicating that this tool is reliable for measuring social anxiety in various contexts. Parasocial Interaction (PSI), which evaluates closeness and familiarity with favorite YouTubers, shows good validity with values above 0.5, proving that this tool is reliable for measuring parasocial interaction. Finally, the Multidimensional Scale of Perceived Social Support (MSPSS), which measures perceived social support from friends, family, and close others, is also valid with values above 0.5, showing its reliability in measuring social support. These results ensure that all variables used in this study are reliable for further analysis.

Reliability Test

The four variables used in this study have been tested for reliability, and the results show that the instruments are highly reliable. The Cronbach's alpha values for each variable are as follows: Internet Addiction Test (IAT) 0.71, LieBowltz Social Anxiety Scale (LSAS) 0.74, Parasocial Interaction (PSI) 0.78, and Multidimensional Scale of Perceived Social Support (MSPSS) 0.69. According to reliability theory by George and Mallery (2003), Cronbach’s alpha value above 0.7 is considered adequate for psychological instruments. Therefore, these variables show good internal consistency and are reliable for further analysis. Values above 0.7 indicate that the instruments used in this study have good reliability, while the slightly lower MSPSS value (0.69) indicates marginal but acceptable reliability.

R^2 Test

The R^2 test results show an R^2 value of 0.845, indicating that 84.5% of the variability in the Internet Addiction Test (IAT) can be explained by the three independent variables analyzed: LieBowltz Social Anxiety Scale (LSAS), Parasocial Interaction (PSI), and Multidimensional Scale of Perceived Social Support (MSPSS). This means that 84.5% of the variation in YouTube addiction scores can be predicted based on variations in the scores of these three variables. Thus, the regression model used in this study can explain most of the variability in YouTube addiction, although 15.5% of the variation might be influenced by other factors not included in the model.

F Test

The F test results show a significant value of 0.0000, which is less than 0.05, and the F value obtained is 681.862. This indicates that independent variables have a significant impact on the dependent variable. Therefore, it can be concluded that all the independent variables—LieBowltz Social Anxiety Scale (LSAS), Parasocial Interaction (PSI), and Multidimensional Scale of Perceived Social Support (MSPSS)—have a significant effect on the dependent variable, Internet Addiction Test (IAT).

t Test

The results of the t test can be seen in the table below:

Table 1. First Results for Dependent Variable: IAT

Variable	B	t	sig
PSI	0.707	6.642	0.000
LSAS	0.609	11.623	0.000
MSPSS	0.067	0.893	0.372

The t test results aim to determine the significant impact of the independent variables on the dependent variable in the regression model. In the first t test, Parasocial Interaction (PSI) and LieBowltz Social Anxiety Scale (LSAS) showed a significant effect on Internet Addiction Test (IAT) with significance values below 0.05 (PSI: sig = 0.000; LSAS: sig = 0.000), while Multidimensional Scale of Perceived Social Support (MSPSS) did not show a significant effect (sig = 0.372). In the second t test, LSAS had a significant effect on PSI with a significant value below 0.05 (sig = 0.000). Thus, the t test results indicate that social anxiety and parasocial interaction significantly affect YouTube addiction, while social support does not have a significant effect, and social anxiety also affects parasocial interaction.

Table 2. Second Results for Dependent Variable: PSI

Variable	B	t	sig
LSAS	.893	38.667	.000

The results show that the LSAS variable has a significant value below 0.05. Therefore, it can be concluded that the LieBowltz Social Anxiety Scale (LSAS) has a significant effect on the Parasocial Interaction (PSI) variable.

Normality Test

The normality test is demonstrated by the P-P normal residual plot, which shows that the data points are distributed around the diagonal line, representing the expected normal distribution. The points being closer to the diagonal line indicate that the residuals follow a normal distribution. Therefore, the assumption of normality of residuals is met in this regression model.

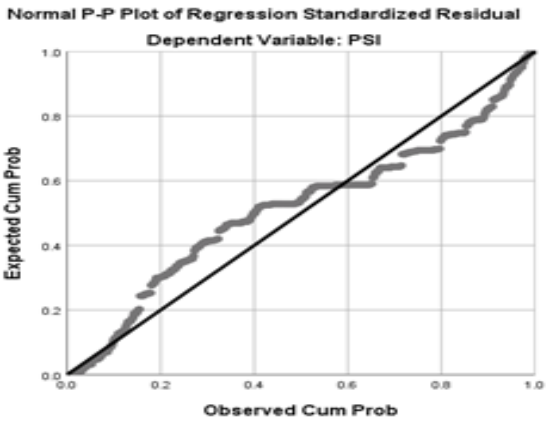


Figure 2. Normal P-P Plot for PSI

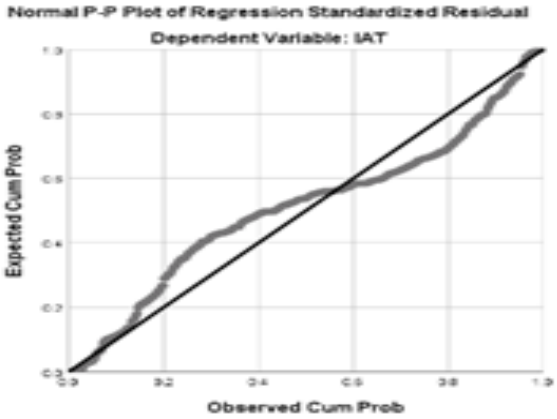


Figure 3. Normal P-P Plot for IAT

Multicollinearity Test

The multicollinearity test results for the three independent variables show that the overall VIF values are less than 10.000 and the tolerance values are above 0.01. For the LSAS variable, the VIF value is less than 10.000 and the tolerance value is above 0.01. No multicollinearity was found in the regression model.

Heteroskedasticity Test

There is no heteroskedasticity, as indicated by the heteroskedasticity test results shown in the scatterplot below. The scatterplot displays a spread of points without any clear pattern, with the points scattered across the entire area. This dispersed distribution of points indicates that the residual variation is consistent across the range of predicted values, fulfilling the assumption of homoscedasticity in the regression model.

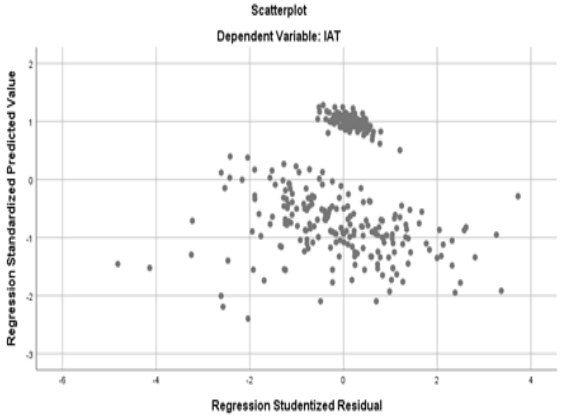


Figure 5. Scatterplot for IAT

Autocorrelation Test

Based on the autocorrelation test, the Durbin-Watson value was determined in three analyses, with the lower bound at 1.7382 and the upper bound at 1.7990. The Durbin-Watson value lies between dU (1.7990) and 4 – dU (2.2010). This indicates that there is no significant autocorrelation present in the regression model.

Statistical Analysis with Multiple Regression Model

Based on the equation above, Internet Addiction has a default value of -2.151 when all independent variables are set to zero. With each increase of one scalar unit, the variables increase by 0.609, 0.707, and 0.067, respectively. This implies that LieBowltz Social Anxiety, Parasocial Interaction, and Multidimensional Scale of Perceived Social Support (MSPSS) have significant impacts on Internet Addiction.

PSI = -2.715 +0.517*LSAS

In the case of Parasocial Interaction (PSI) above, it has a default value of -2.715 when the variable is zero. With each increase of one scalar unit, the LieBowltz Social

Anxiety Scale (LSAS) increases by 0.517. Therefore, it can be concluded that the LieBowltz Social Anxiety Scale significantly influences Parasocial Interaction.

Mediation Test with PROCESS Regression

Summary Model

Table 3. Summary Model

Outcome Variable	R	R-Squared	MSE	F-Statistic	df-1	df-2	p-value
PSI	0.8934	0.7982	12.11221	1495.1052	1.0000	378.0000	.0000
IAT	0.9189	0.8444	35.3779	1022.9451	2.0000	377.0000	.0000

Model Coefficient

Table 4. Model Coefficient

Outcome Variabel	Variabel	Coef	se	t-value	p-value	LLCI	ULCI
PSI	Constant	-2.7148	1.0129	-2.6802	.0077	-4.7064	-.7232
PSI	LSAS	.5167	.0134	38.6666	.0000	.4904	.5429
IAT	Constant	-1.6825	1.7468	-0.9632	0.3361	-5.1171	1.7521
IAT	LSAS	0.6205	0.0508	12.2112	0.0000	0.5206	0.7204
IAT	PSI	0.7605	0.0879	8.6550	0.0000	0.5877	0.9333

Table 4 shows that both regression models (for PSI and IAT) have high statistical significance, with high R-squared values. This indicates that the independent variables explain most of the variability in the dependent variables. The very small p-values ($p < 0.0001$) suggest that these results are highly statistically significant, allowing us to conclude that there is a strong relationship between the variables analyzed.

The regression analysis results show that the LieBowltz Social Anxiety Scale (LSAS) has a significant effect on Parasocial Interaction (PSI) and the Internet Addiction Test (IAT). In the first model, with PSI as the dependent variable, LSAS significantly predicts PSI with a coefficient of 0.5167 (SE = 0.0134, t = 38.6666, $p < 0.0001$). The intercept for this model is -2.7148 (SE = 1.0129, t = -2.6802, p = 0.0077), indicating that when LSAS is zero, the initial value of PSI is -2.7148. The 95% confidence interval for the LSAS coefficient is [0.4904, 0.5429], which does not include zero, indicating that this effect is statistically significant.

In the second model, with IAT as the dependent variable, results show that both LSAS and PSI significantly predict IAT. The coefficient for LSAS is 0.6205 (SE = 0.0508, t = 12.2112, $p < 0.0001$) and the coefficient for PSI is 0.7605 (SE = 0.0879, t = 8.6550, $p < 0.0001$). The intercept for this model is -1.6825 (SE = 1.7468, t = -0.9632, p = 0.3361), which is not statistically significant. The 95% confidence interval for the LSAS coefficient is [0.5206, 0.7204], and for the PSI coefficient is [0.5877, 0.9333], both of which do not include zero, indicating that these effects are statistically significant.

Direct and Indirect Effect

Table 5. Direct and Indirect Effect

Effect Type	Variable	Effect	SE	p-Value	LLCI	ULCI
Direct Effect	LSAS	0.6205	0.0508	0.0000	0.5206	0.7204
Indirect Effect	LSAS -> PSI -> IAT	0.3929	0.0830	-	0.2433	0.5687

Direct Effect: The LieBowltz Social Anxiety Scale (LSAS) has a significant direct effect on Internet Addiction (IAT) with a coefficient of 0.6205 (SE = 0.0508, $p < 0.0001$). This means that each one-unit increase in LSAS is associated with a 0.6205 unit increase in IAT, when the mediating effect through PSI is not considered. The very small p-value ($p < 0.0001$) indicates that this effect is statistically significant. The 95% confidence interval for the direct effect is [0.5206, 0.7204], which does not include zero, indicating that this effect is consistent and significant.

Indirect Effect: The coefficient is 0.3929 (SE = 0.0830). The 95% bootstrap confidence interval for the indirect effect is [0.2433, 0.5687], which also does not include zero. This suggests that PSI significantly mediates the relationship between LSAS and IAT, indicating that an increase in LSAS is associated with an increase in PSI, which in turn increases IAT.

Based on the regression results, the LieBowltz Social Anxiety Scale (LSAS) shows a coefficient of 0.6205 for the Internet Addiction Test (IAT) with a t-value of 12.2112 and $p < 0.0001$. This indicates that anxiety (measured by LSAS) has a clear positive effect on YouTube addiction. Therefore, H10 is accepted and H1a is rejected. Based on the regression results, Parasocial Interaction (PSI) shows a coefficient of 0.7605 for the Internet Addiction Test (IAT) with a t-value of 8.6550 and $p < 0.0001$. This indicates that the strength of parasocial relationships with favorite YouTubers has a clear positive association with YouTube addiction. Therefore, H20 is accepted and H2a is rejected. Based on the regression results, the LieBowltz Social Anxiety Scale (LSAS) shows a coefficient of 0.5167 for Parasocial Interaction (PSI) with a t-value of 38.6666 and $p < 0.0001$. This indicates that social anxiety has a significant positive association with the parasocial relationship with favorite YouTubers. Therefore, H30 is accepted and H3a is rejected.

Based on the regression analysis with the PROCESS model, it was found that the LieBowltz Social Anxiety Scale (LSAS) has a significant direct effect on the Internet Addiction Test (IAT), with a coefficient of 0.6205 (SE = 0.0508, $p < 0.0001$), indicating that an increase in social anxiety is associated with an increase in YouTube addiction. Additionally, there is a significant mediating effect of social anxiety on YouTube addiction through Parasocial Interaction (PSI), with an indirect coefficient of 0.3929 (SE = 0.0830, $p < 0.0001$), indicating that PSI mediates the relationship between LSAS and IAT. Therefore, hypothesis H4a, which states that PSI mediates the relationship between LSAS and IAT, is accepted, while hypothesis H0, which states that there is no mediating effect, is rejected. These findings confirm that social anxiety directly affects YouTube addiction, and that PSI plays an important role in bridging this relationship. Social Support (MSPSS) does not show a significant effect on IAT, indicating that in this context, social support does not mediate the relationship

between social anxiety and YouTube addiction.

DISCUSSION

This study finds that social anxiety has a significant association with YouTube addiction among Gen-Z in Batam City. The regression analysis shows that respondents with higher levels of social anxiety tend to be more addicted to YouTube, with an LSAS coefficient of 0.6205, indicating a strong direct effect. Additionally, parasocial interaction with favorite YouTubers also plays an important role, where the indirect coefficient of 0.3929 suggests that parasocial relationships mediate the link between social anxiety and YouTube addiction. These findings indicate that social anxiety not only directly affects YouTube addiction but also influences it through parasocial relationships with favorite YouTubers.

These results are consistent with previous research, such as that conducted by Fitriah *et al*., (2023), and Sri Yuhana and Mariyati (2023), which also found that social media has a negative impact on the mental health of adolescents. This study reinforces the understanding of how excessive social media use, particularly among Gen-Z, can exacerbate mental health issues. Moreover, this study emphasizes that strong parasocial relationships with social media figures can amplify the negative effects of social anxiety on YouTube addiction.

Several factors may contribute to these findings, including the high level of exposure of Gen-Z to social media and their tendency to develop intense parasocial relationships with social media personalities. Other contributing factors include social pressure and the need for recognition within online communities, which may drive them to spend more time on platforms like YouTube.

However, this study has both strengths and weaknesses. A major strength is the use of Cluster Disproportional Random Sampling, which allows for a broader representation of the Gen-Z population in Batam City. Nonetheless, the study also has limitations, such as potential respondent bias in reporting their behavior and limitations in measuring parasocial relationships that may not be fully captured by the questionnaires used. Another limitation is that the generalization of the results may be restricted to the population within Batam City and may not extend to a broader population outside of this area.

CONCLUSION AND SUGGESTION

Social Anxiety, as measured by the LieBowltz Social Anxiety Scale (LSAS), has a significant positive association with YouTube addiction. This indicates that individuals with Social Anxiety are more likely to be addicted to YouTube. The strength of parasocial relationships with favorite YouTubers, measured by Parasocial Interaction (PSI), also has a clear positive association with YouTube addiction. This means that individuals who have a strong parasocial relationship with their favorite YouTubers are more likely to be addicted to using YouTube. Social Anxiety has a significant positive link with the parasocial relationship with favorite YouTubers, indicating that individuals with Social Anxiety are more likely to develop parasocial relationships with their favorite YouTubers. Parasocial relationships with favorite YouTubers mediate the relationship between social anxiety and YouTube addiction, meaning that social anxiety not only has a direct effect on YouTube addiction but also an indirect effect through parasocial relationships.

Based on the results of this study, several important steps are recommended.

First, it is crucial to raise awareness among users, especially Gen-Z in Batam, about the negative impact of excessive YouTube use on mental health. Therefore, interventions focusing on reducing social anxiety among Gen-Z are advised. Further research should involve a larger sample to confirm these findings and explore other factors that may influence social media addiction, particularly YouTube. Future studies should also expand the scope by including various locations and age groups to gain a more comprehensive understanding of the impact of social media on mental health. The limitations of this study, such as the sample being confined to a single location and specific age range, highlight the need for additional research with broader and more representative methods to address these limitations and provide deeper insights into the effects of social media on mental health.

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AUTHOR CONTRIBUTION

Author Kelvin Tang assisted in data collection, Chelsea Hilton was responsible for sentence structure and grammar, Risna Yunita was responsible for sourcing needed references, Riyaldi Walvinson was responsible for data analysis and revisions, and Paerin was responsible for data analysis and revisions.

CONFLICT OF INTEREST

The authors declare there is no conflict of interest.

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