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Fear of Missing Out (FoMO) and Learning Disengagement in College Students

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Abstract

Intensive smartphone use driven by fear of missing out (FoMO) is an early indicator of a student's learning disengagement. Learning disengagement refers to students' lack of engagement in the learning process due to distractions caused by smartphone use in the classroom. This research aimed to examine the relationship between FoMO and students' learning disengagement. The sampling techniques used were multi-stage cluster sampling and disproportionate stratified random sampling, yielding a sample of 351 students (76 male and 275 female) from several public and private universities in Banda Aceh. Data were collected online and offline using the Learning Disengagement Scale and Online-Fear of Missing Out (ON-FoMO) Scale. Data analysis was conducted using Pearson's product-moment correlation test. The findings indicate a positive relationship between FoMO and learning disengagement in students (r=.606; p=.000, p<.05), suggesting that higher FoMO is associated with higher learning disengagement. The study indicates the need for strategic policies that require higher education institutions to implement smartphone use rules in class. This policy is important because it can improve students' digital literacy, enabling them to distinguish between information relevant to academic activities.

Disengagement is the biggest challenge that teachers face in the classroom daily, and it has attracted the attention of researchers (Bergdahl et al., 2019). Among them, (Fredricks et al., 2004) found that students from elementary to high school who experience disengagement see education as boring and meaningless. Students also experience disengagement in higher education (Chipchase et al., 2017). It is easy to identify disengaged students in the classroom by their behavior (Earl et al., 2017). For example, teachers often find that students are not paying adequate attention or participating in class (Duffy & Elwood, 2013). Balwant (2018) also found that students exhibit closed and inexpressive behavior. In addition, students do not prepare in advance of class, read the material, or complete assigned work (Chipchase et al., 2017).

A pilot survey of students at a university in Banda Aceh found that during class, approximately 79% used their smartphones for non-academic purposes, e.g., checking social media. This tends to make students less engaged in the learning process and more focused on activities that are not relevant to the lecture material. In line with previous research, Puspitasari (2022) said that students who are not engaged in classroom activities might not acquire sufficient knowledge. Disengagement in learning will negatively impact learning outcomes (Troy et al., 2015). In addition, the survey showed that 19% of students agreed that smartphone use could disrupt the learning process in class. This is supported by Shafi (2019), who stated that the impact of disengagement would be felt not only by the students themselves but also by their classmates and teachers.

Fredricks et al. (2004) stated that disengagement is a dynamic concept that involves many factors (Diehl, 2019). This was also asserted by Farisi and Puryanto (2024), who found that disengagement is influenced by a combination of individual, social, and contextual learning factors. Individually, psychological factors, e.g., self-regulation, attention control, and learning motivation, play an important role in determining the extent to which students can maintain their engagement in academic activities (Akar, 2024). From a social perspective,

students who experience peer rejection (Weyns et al., 2018) or receive negative responses from teachers because the students do not seem active or bright in class (Bond & Bergdahl, 2023) also experience disengagement. In addition, digital technology contributes to disengagement (Chipchase et al., 2017). Although digital technology can boost student engagement in learning, Kearney and Maakrun (2020) found that it can also cause students to become disengaged from their learning. In this case, smartphone use is an example of how digital technology influences student disengagement (Alexander, 2015).

Students who use smartphones are more prone to disengagement than those who use laptops or tablets (Heflin et al., 2017). The ease of access to activities on smartphones makes it difficult for students not to use them (Sari et al., 2020). A survey showed that 93.02% of students are active smartphone users (Kementerian Komunikasi dan Informatika Republik Indonesia, 2017). Therefore, students might find it difficult to limit their smartphone use in classroom learning (Gerow et al., 2010). Students might be distracted by irrelevant matters through their internet-connected smartphones, even though they intend to participate in class (Alexander, 2015).

Riani (2016) noted that smartphones offer many features and applications that can provide enjoyment and satisfaction, leading students to focus on them rather than on the lecturer in the classroom (Daeng et al., 2017). On smartphones, students can send messages, make phone calls, or access social media (Alosaimi et al., 2016). Social media has become a place for students to showcase and express themselves (Yang & Brown, 2016), e.g., by interacting with peers online, updating statuses, posting photos and videos, or simply expressing opinions in comment sections (Saputra, 2019). These highly engaging activities make it difficult for students to put down their smartphones (Abel & Buff, 2016).

The desire to always be close to one's smartphone can lead to fear of missing out (FoMO) in students (Servidio, 2021). FoMO is a construct based on self-determination theory (SDT) (Przybylski et al., 2013). According to SDT, individuals should fulfill their needs for autonomy, competence, and relatedness for psychological growth (Ryan & Deci, 2000). Through the lens of SDT, FoMO is not only a technology-use behavior but also a manifestation of the failure to fulfill one's needs for autonomy, competence, and relatedness. FoMO can lead individuals to experience negative emotions (Przybylski et al., 2013), discomfort (Abel & Buff, 2016), and social anxiety (Kaloeti et al., 2021) when they feel socially disconnected. It involves two main processes: the perception of missing out, followed by compulsive behavior to maintain social connections (Gupta & Sharma, 2021). In social terms, FoMO can be considered a form of relatedness, which refers to the need to establish strong, stable interpersonal relationships (Guardia & Patrick, 2008).

Smartphones have become the device of choice for students to connect online (Azka et al., 2018). This complexity can lead students to use smartphones anytime, anywhere (Putri et al., 2019). Dossey (2014) said that students use smartphones before going to sleep, upon waking up, while eating, and so on, because they do not want to feel left behind in what is happening on social media. Because FoMO can encourage students to stay connected online (Przybylski et al., 2013), it is very possible that students will use smartphones in class (Carrier, 2018). This creates cognitive distraction (Wu et al., 2025), in which the desire to constantly monitor social media activity overrides the intention to engage in learning (Alt, 2015). Furthermore, Carrier (2018) stated that students will multitask by using smartphones for non-academic purposes during learning, as they know learning information is available online and can be accessed at other times. Thus, FoMO is seen as the main trigger of disengagement behavior in the classroom.

Students with high levels of FoMO often experience cognitive interference, such as difficulty concentrating and reduced curiosity, which diminishes the time and quality of their studies (Groccia, 2018; Kibona & Mgaya, 2015; May & Elder, 2018). This condition is exacerbated by impulsive smartphone use in the classroom, creating a disruptive cycle that significantly decreases students' overall involvement in the learning process (Limniou et al., 2020; Samaha & Hawi, 2016). (Bergdahl et al., 2020) noted that students who are not engaged in the learning process are at risk of withdrawn behavior, increased truancy, and dropping out of school, which can lead to serious problems in the future. Although these impacts have been identified, a research gap remains in understanding how digitally-based psychological drives trigger this disengagement.

Among the various factors described, this study highlighted FoMO as one of the psychological mechanisms that help explain the relationship between digital technology use and learning disengagement. Compared with other factors, e.g., motivation and self-regulation, that have been extensively studied, FoMO offers a specific perspective on social drives and the need for connection that arise in the context of social media and smartphone use (Przybylski et al., 2013; Servidio, 2021). This aligns with the findings of Al-Furaih and Al-Awidi (2020), who concluded that high levels of FoMO make it difficult for students to refrain from using smartphones during classroom learning because they do not want to miss anything happening on social media.

Based on this explanation, the researchers wanted to re-examine the FoMO phenomenon in relation to student learning disengagement in Banda Aceh, given its contextual relevance in understanding the dynamics of the current learning environment. This study differs in terms of the instruments used: the ON-FoMO Scale developed by Sette et al. (2020) and the Learning Disengagement Scale developed by the researcher. This approach is expected to paint a more accurate picture of the level of student disengagement in classroom learning.

Method

The sample in this study consisted of 351 students in Banda Aceh. The sampling techniques used were multistage cluster random sampling and disproportionate stratified random sampling. The multistage cluster random sampling technique was used because the study population comprised several sub-districts and universities that varied demographically. Meanwhile, a disproportionate stratified random sampling method was used to select the sample at each university, without accounting for the university's population size. The samples were active students at public and private universities in Banda Aceh who used smartphones and had active social media accounts. This study involved students who had at least one active social media account that they used every day, with no maximum limit on the number of accounts they could have. A social media account was considered active if the individual engaged in interactions there, e.g., liking posts, commenting on posts, sending messages, and interacting with other users (Verduyn et al., 2017).

The measuring instruments used in this study were the Learning Disengagement Scale to measure learning disengagement and the Online-Fear of Missing Out (ON-FoMO) Scale to measure FoMO. The ON-FoMO Scale was translated into Indonesian with permission from the original developers, Sette et al. (2020), in accordance with research ethics procedures.

The principal researcher developed the Learning Disengagement Scale based on the dimensions of disengagement described by Fredricks et al. (2004), namely behavioral, emotional, and cognitive disengagement. This measurement tool consists of 18 items measured on a 5-point Likert scale ranging from 1 (Not applicable) to 5 (Very applicable). The Cronbach's alpha coefficient for this scale is 0.924.

The ON-FoMO Scale was developed by Sette et al. (2020). This scale consists of 20 items with four dimensions: need to belong, need for popularity, anxiety, and addiction. The ON-FoMO Scale is measured on a 4-point Likert scale ranging from 1 (Strongly disagree) to 4 (Strongly agree). In Sette et al. (2020) research, the Cronbach's alpha coefficient for the scale was .924.

Procedure

This quantitative study employed the correlational research method, with FoMO as the independent variable and learning disengagement as the dependent variable. The present study received approval from the Nusantara Scientific Psychology Consortium (KPIN) with ethical approval letter number 057/2023 Ethics/KPIN.

The initial stage of the study involved preparing the measuring instruments. For the ON-FoMO Scale, the principal researcher contacted the original test developers for permission to use the scale, which was done as part of the ethical procedures for preparing the research measurement tool (Research Guides, 2023). The next process was translation, in which the principal researcher translated the original items from English into Indonesian (forward translation) and then back into English (backward translation) to verify each item's accuracy. Then, the principal researcher consulted with the thesis advisors (co-authors) to align the language, construct, and relevance between the original and translated scales. The principal researcher first conducted a content validity ratio (CVR) test on the Learning Disengagement Scale.

Both research instruments were tested for content validity. The validity testing process for the ON-FoMO Scale involved a panel of examiners, who met to reconfirm the content and translation. Meanwhile, the validity testing process in the development of the Learning Disengagement Scale involved seven experts. A CVR assessment was conducted to rate agreement among subject matter experts (SMEs), with items considered relevant if they accurately represented the measurement objectives (Azwar, 2016). In the initial stage of the CVR process, the principal researcher worked on the CVR design and sent it to seven experts, who rated each item. Based on the assessment, 29 items achieved a CVR score of 1 because all experts rated them as 3 or 4 on the assessment sheet. One item obtained a CVR score of .7 because one expert rated it as 2. Next, the principal researcher reviewed the wording of the items that had a CVR score of .7. This was done because, according to Lawshe (1975) table, CVR assessment involving seven experts should have a minimum CVR value of .99.

After assessing the CVR scores for each item on the Learning Disengagement Scale, the next step was to calculate the content validity index (CVI). CVI is an indicator of test validity and is assessed by calculating the average CVR across all items (Azwar, 2016). The scale's CVI was .99, exceeding the recommended .78 threshold (Lynn, 1986) and indicating that each item on the Learning Disengagement Scale has strong content validity.

To ensure reliability, the researcher conducted internal consistency tests using Cronbach's alpha for both scales. Both the ON-FoMO Scale (α=.902) and the Learning Disengagement Scale (α=.924) demonstrated good reliability.

Data Analysis

In this study, assumption and hypothesis testing were conducted. Assumption testing is a prerequisite for hypothesis testing, comprising normality and linearity tests. The normality test was the one-sample Kolmogorov-Smirnov test, while ANOVA was conducted to test linearity. The research hypothesis testing was conducted using the parametric Pearson's product-moment correlation test. The research data were processed using Statistical Product and Service Solution (SPSS) version 25.0 for Windows. See Table 1

Results

Demographic Data

This study involved 351 students aged 17-26 years from public and private universities in Banda Aceh. Overall, the sample was dominated by female students (78.3%),

Table 1
Measurement Scale of Learning Disengagement

Dimension	Behavioral Indicators	Item Description
Behavioral Disengagement	Absenteeism	Not attending or being absent from class
	Truancy	Leaving class for certain periods without authorization
	Disruptive Behavior	Displaying inappropriate behaviors during classroom learning activities
Emotional Disengagement	Boredom	Exhibiting behaviors that indicate boredom during classroom learning activities
	Anxiety	Feeling uneasy, worried, or restless during classroom learning activities
Cognitive Disengagement	Indifference	Showing a lack of concern or an indifferent attitude toward classroom learning
	Low Attention	Being unable to focus on classroom learning activities
	Low Concentration	Being unable to sustain attention for extended periods during classroom learning activities

while male students accounted for 21.7%. The 20-year-old sample group, which accounted for 27.6% of the total sample, was the largest in this study. Samples from Aceh also dominated, accounting for 94.9%, while those from outside Aceh accounted for 5.1%. The data also showed that 40.7% of the sample came from Syiah Kuala University. In addition, the sample in this study comprised 176 social science students (50.1%) and 175 natural science students (49.9%), resulting in a nearly equal distribution across the two academic fields. See Table 2

Table 2 contains information about smartphone use among study participants. According to this table, most participants in the study had one smartphone (80.6%). Most participants (54.1%) reported using their smartphones for more than eight hours a day. The majority of the research sample (70.9%) had three or four social media accounts. In addition, the most accessed social media platform was WhatsApp (52.7%), followed by TikTok (21.9%).

Figure 1 illustrates students' perceptions of the disruptive nature of smartphone use during lectures. The data show that most participants perceived smartphone use as a significant distraction, with 132 students reporting it as quite disruptive and 126 finding it very disruptive. See Table 3

Table 3 presents the descriptive analysis of learning disengagement (M=36.40; SD=15.023) and FoMO (M=41.41; SD=11.535). Based on the descriptive data, the mean value for each variable, namely FoMO and learning disengagement, is nearly half of the overall value.

Assumption Testing

Assumption testing comprised normality and linearity tests. For the normality assessment, the researchers used the Kolmogorov-Smirnov test, enhanced with the Monte Carlo method. This approach was adopted to obtain a more robust and accurate significance value (p-value), particularly when the data distribution does not strictly adhere to normality assumptions. The results indicated that the data were normally distributed (p=0.051; p>0.05).

The linearity test results, obtained using ANOVA, showed linearity between FoMO and learning disengagement in this study (p=0.000; p<0.05).

Hypothesis Testing

The research hypothesis was tested using Pearson's product-moment correlation technique. The hypothesis proposed in this study was that there is a positive relationship between FoMO (fear of missing out) and students' learning disengagement. The results of the hypothesis testing showed a significant relationship between FoMO and learning disengagement among students (r=.606; p=.000, p<.05). Thus, the hypothesis was accepted.

The correlation coefficient of .606 also indicates a strong relationship between the two variables, as it falls within the range of .600–.799 (Sugiyono, 2018). A positive correlation coefficient indicates a direct relationship: If one variable produces a high score, the other will also show a high score. Conversely, if one variable produces a low score, the other variable will also produce a low score.

In addition, the analysis showed that FoMO has a 37% influence (R^2=.367) on learning disengagement, while the remaining 63% is influenced by variables not examined in this study.

Discussion

This study examined the relationship between fear of missing out (FoMO) and learning disengagement among university students. Based on the data analysis, the research hypothesis was accepted, indicating a significant relationship between FoMO and learning disengagement among students. Furthermore, the positive relationship between the two variables indicates that the higher the FoMO, the higher the learning disengagement among students. Conversely, the lower the FoMO, the lower the learning disengagement among students.

Table 2
Smartphone Use of Participants

Description	Frequency (N)	Percentage (%)
Number of Smartphones Owned		
1	283	80.6
2	60	17.1
3	7	2.0
4	1	0.3
Daily Smartphone Use Duration*		
1–3 hours/day	8	2.3
4–5 hours/day	46	13.1
6–8 hours/day	107	30.5
More than 8 hours/day	190	54.1
Number of Social Media Accounts Owned		
$\leq$ 2 Social Media Platforms	44	12.5
3–4 Social Media Platforms	249	70.9
5–6 Social Media Platforms	58	16.5
Most Frequently Accessed Social Media Platform		
Instagram	76	21.7
WhatsApp	185	52.7
Twitter	9	2.6
TikTok	77	21.9
Facebook	4	1.1

Table 3
Descriptive Data on Learning Disengagement and FoMO

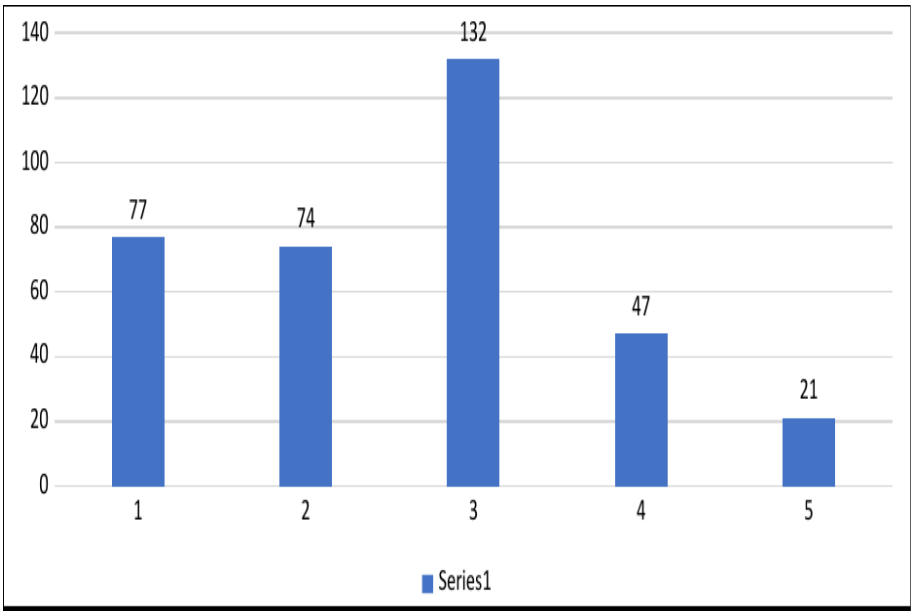
Variables	N	Minimum	Maximum	Mean	*SD*
Learning Disengagement	351	18	84	39.40	15.023
Fear of Missing Out (FoMO)	351	20	77	41.41	11.535

The results of this study support those of Al-Furaih and Al-Awidi (2020), who found that FoMO is associated with learning disengagement among university students. Furthermore, the results of this study are consistent with previous studies, which stated that disengagement in the classroom can occur when students use digital technology for purposes unrelated to learning. Alexander (2015) found that students can deliberately switch to their smartphones rather than focus on the main task at hand. Furthermore, Wammes et al. (2019) noted that smartphone use in the classroom is common and a form of distraction, leading to student disengagement. Wingren and Helmstad (2020) noted a similar pattern, stating that disengaged students typically use their smartphones for purposes unrelated to learning, e.g., sending messages to friends and playing games.

Essentially, FoMO is associated with the emergence of social anxiety related to uncertainty about interesting things that one might miss or overlook online (Kaloeti et al., 2021). Smartphones become a means for users to avoid missing out (Al-Furaih & Al-Awidi, 2020). The characteristics of smartphones, i.e., their portability (Daeng et al., 2017), as well as internet access and various features, prompt students to use them (Syahputra & Erwinda, 2020). In addition, FoMO encourages students to use their smartphones regardless of time or place (Putri et al., 2019). Some students reported that they no longer hide their smartphones in class (Carrier, 2018). This phenomenon illustrates students' desire to stay connected online even in situations that should be dedicated to learning.

This study found that age influences FoMO. Such results align with previous research. JWT Intelligence (2012) stated that an individual's age range influences the emergence of FoMO. The younger generation, which has been using digital technology from an early age, is accustomed to continuous exposure to online activities, such as sending text messages or interacting with others on social media (Bloemen & De Coninck, 2020). Abel and Buff (2016) also noted that younger individuals are more prone to FoMO than those aged 24 or older. This can be explained by the different psychological needs at various stages of development. Younger individuals tend to have a greater desire for social validation and to feel accepted by peers, both of which are often mediated by online interactions (Situmorang & Hayati, 2023). Additionally, the role of social media in shaping self-identity is more significant among younger individuals, who are still in the process of finding themselves (Kanda & Oktaviani, 2023). Thus, age plays an important role in determining

Figure 1
Student Perceptions Regarding Smartphone Use in the Classroom



an individual's tendency to experience FoMO.

The findings from this study indicate a strong relationship between FoMO and learning disengagement, based on the correlation values obtained. These strong correlation results may be related to data showing that all study participants had internet-connected smartphones, enabling use during class. This means that unregulated smartphone use will affect student engagement in class. In this regard, Morris and Sarapin (2020) stated that some researchers view smartphones as a distraction rather than a learning tool. Distracted students will pay less attention to lessons (Stephens & Pantoja, 2016). Therefore, Tindell and Bohlander (2012) stated that classroom rules must be implemented to minimize distractions caused by smartphone use.

In the descriptive data, nearly half of the participants exhibited moderate to high levels of FoMO and learning disengagement, indicating that students tend to stay connected via their smartphones. This aligns with the findings of Przybylski et al. (2013) that a tendency toward FoMO usually manifests as excessive internet use across different applications on one's smartphone, upon waking up, during meals, before going to sleep, and even while driving. Furthermore, the anxiety or fear experienced by students who have FoMO can result in a decrease in productivity, emotional well-being, academic achievement, and learning motivation, potentially disrupting the learning process (Samaha & Hawi, 2016).

This study found that half of the participants believed that their smartphone use did not interfere with daily activities. This might be related to students' positive perceptions of smartphones, which can support learning by, e.g., enabling access to information sources, enhancing communication and collaboration, and recording or taking notes digitally (Ahmad, 2020). However, the data also showed that some students considered their smartphone use to interfere with their learning. Smartphones can be disruptive if students use them for purposes unrelated to learning (Alanoğlu & Karabatak, 2020). Therefore, disruptive smartphone use can distract students in the classroom (Hwang & Wu, 2014).

The gap in the two sets of data above indicates that several factors, e.g., a lack of digital literacy, play an important role in how they perceive technology use (Smith & Storrs, 2023). In addition, lecturers' approaches to implementing engaging, structured teaching methods can significantly influence students' perceptions (Zogheib & Daniela, 2022). An academic culture that promotes a balanced approach to technology can also improve students' views of smartphones as learning tools (Zogheib & Daniela, 2022). Possible efforts include educating students about the negative impacts of inappropriate smartphone use and how to use smartphones positively to support learning (Anshari et al., 2017). Furthermore, Anshari et al. (2017) advised instructors to integrate technology into their teaching methods, e.g., using learning applications or interactive digital platforms, to enhance students' interest and reduce smartphone use for non-academic purposes.

Limitations

While this study provides significant insights into the relationship between FoMO and learning disengagement, several limitations should be acknowledged. First, the correlational design used in this study identifies associations between variables but cannot establish definitive causality. Second, the data collection relied solely on self-report measures, which may be susceptible to subjectivity and social desirability bias among respondents. Lastly, the scope of this study was limited to specific student characteristics; thus, the exploration of demographic factors—

such as gender, age, and academic disciplines—remains at an initial stage and requires further in-depth investigation.

Conclusion

This study aimed to determine the relationship between fear of missing out (FoMO) and learning disengagement among university students. Based on the results of the hypothesis test, FoMO is associated with learning disengagement among students. This implies that students who desire continuous connection and fear missing the latest information on social media, as indicated by intensive smartphone use, might be at risk of disengagement during classroom learning.

Implications

This study indicates that to increase student engagement and learning effectiveness, lecturers should develop more interactive teaching methods that use technology in a positive way. In addition, training sessions and workshops can help lecturers learn about the best ways to use technology in teaching (Pappas, 2024). Students should also receive education about digital literacy so that they can use technology wisely (Smith & Storrs, 2023). Furthermore, educational institutions should consider policies to filter internet access or implement security measures for campus Wi-Fi networks (O'Brien et al., 2022). This aims to ensure that students using campus Wi-Fi can access only websites and applications that support academic activities, thereby reducing distractions from non-academic internet use. Such steps can help create a more productive and balanced learning environment and improve student learning outcomes.

Recommendation

Based on the research findings, several suggestions are proposed for both practitioners and future researchers. Academic institutions are encouraged to provide education and socialization regarding self-regulation strategies for smartphone usage to minimize academic interference and enhance student concentration. For future researchers, it is recommended to employ experimental designs or regression analysis to examine the causal impact of FoMO on academic engagement more deeply. Moreover, expanding the research context to broader scopes, such as secondary education, teaching perspectives, and classroom social interactions, would be highly beneficial. Finally, incorporating additional variables, such as smartphone cyberloafing or self-regulation, is suggested to provide a more holistic understanding of the factors influencing learning disengagement.

Declarations

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Author Contributions

RR designed the study, analyzed the data, and edited the manuscript. SF contributed to the validation of the manuscript as an international collaborator. AF, EDA, AS, and ZA read, edited, and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there are no conflicts of interest in the research, writing, and/or publication of this article.

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