

## Article

# Academic Procrastination and Anxiety as Predictors of Social Media Addiction in Peruvian University Students

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## Abstract

The study sought to examine the relationship between procrastination and anxiety as predictors of social media addiction among Peruvian university students. The research employed a cross-sectional predictive methodological design. A sample of 335 students, aged 21 to 69 years, comprising both females and males from private and public university management, was selected through non-probabilistic sampling. The instruments utilized included the Social Media Addiction Questionnaire, the Academic Procrastination Scale, and General Anxiety Disorder-7 (GAD-7). The findings indicated that anxiety ( $\beta = 0.52$ ,  $p < 0.001$ ) and academic procrastination ( $\beta = 0.17$ ,  $p = 0.040$ ) significantly predicted social media addiction. The study concluded that there is a significant relationship between procrastination and anxiety as predictors of social media addiction in Peruvian university students.

**Keywords:** academic procrastination; anxiety; social media addiction; university students; predictors

## 1. Introduction

Social media constitutes a digital platform that enables users to establish profiles, engage with others, and disseminate content [1]. Currently, the most frequently utilized platforms include Facebook, Instagram, TikTok, YouTube, LinkedIn, Pinterest, X, and Twitch [2]. These platforms enhance communication, collaborative learning, and academic socialization within university educational settings [3].

The rapid expansion of social networks over the past decade has significantly altered the social, academic, and psychological dynamics within the university student population [4]. Similarly, excessive utilization has been associated with maladaptive behavioral patterns, such as cognitive impulsivity and attentional instability [5]. Social media platforms such as Instagram, TikTok, and Twitter have become pervasive tools for interaction, yet they also have been linked to negative emotions and behaviors [4,6,7].

In this context, addiction to social networks is conceptualized as a form of psychological dependency, characterized by repetitive and uncontrolled engagement with these platforms. Initially, such interactions are pleasurable; however, they subsequently evolve into compulsive and avoidant behaviors associated with the anxiety of being disconnected [8]. Recent research indicates that the utilization of social networks is significantly



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widespread among university students [9]. A study has revealed that over 18% of university students globally exhibit signs of addiction to social networks [10]. This behavior has been associated with poorer mental health and academic performance [2].

Two psychological constructs emerge as particularly relevant vulnerability factors in university life: academic procrastination and anxiety. Existing research suggests that addiction to social networks is a behavior that does not occur in isolation but has been associated with psychological and behavioral risk factors, such as anxiety and academic procrastination. The first is characterized by the anticipation of a prospective threat, which is associated with muscle tension, heightened vigilance in preparation for potential danger, and the adoption of cautious or avoidance behaviors [11], and has been related with academic performance and psychological well-being, as well as the academic commitment, of university students [12,13].

The second concept refers to the intentional and irrational delay of academic tasks, despite awareness of the adverse consequences [14]. This behavior has been associated with stress levels and contributes to academic underperformance [15]. Conversely, mitigating procrastination tendencies may enhance the quality of life for university students [16]. It is also linked to the intention to withdraw from academic pursuits [17]. Both variables are critical determinants in the academic development of university students and have been associated with addictive behaviors related to social network usage.

Numerous international studies have demonstrated a persistent increase in the intensive utilization of social networks among young individuals and university students [18,19]. This situation has also been reported in Latin American countries [20,21].

This subject has garnered scholarly attention due to its correlation with emotional and behavioral challenges, which have been associated with a greater presence of addictive behaviors in the context of social media usage [22]. In the Peruvian context, where the intensive utilization of these platforms has become integral to the daily lives of young university students, their usage has, in numerous instances, reached levels that may be characterized as addictive [21,23]. Consequently, it is particularly pertinent to examine the psychological factors that may contribute to the development of this addictive behavior.

This limitation constrains the comprehension of emotional effects on both digital and academic behaviors. Therefore, the objective of this study is to determine the impact of procrastination and anxiety on social media addiction. Specifically, it seeks to:

1. Analyze the relationship between academic procrastination and social media addiction.
2. Examine the association between anxiety and social media addiction.
3. Evaluate the combined predictive contribution of both variables to the levels of social media addiction.

## 2. Literature Review and Theoretical Framework

The deferral of academic responsibilities not only has been associated with poorer academic performance but also influences the emotional well-being of students, as it is often accompanied by feelings of guilt, stress, and frustration [24]. Research indicates that students often engage in procrastination as an avoidant strategy associated with reducing the anxiety when confronted with challenging situations [25,26]. Thus, by inducing emotional discomfort, it may lead students to report greater tendencies to evade academic tasks as a means of emotional self-regulation [27,28].

Anxiety within university academic settings has been associated with an increased propensity to delay the timely completion of assigned tasks [29]. Research conducted among university students in China has demonstrated a direct and significant correlation between the propensity to procrastinate and levels of anxiety [29]. Indonesian univer-

sity students exhibited increased levels of procrastination, which were associated with heightened experiences of anxiety [30].

Empirical research has consistently demonstrated a significant relationship between anxiety and social media addiction. A study conducted in Singapore revealed that university students with elevated anxiety levels also exhibited higher levels of addiction to social networks [31].

Previous research indicates that anxiety has been associated with addictive behaviors among university students across various contexts, including internet addiction [32] and smartphone addiction [33,34]. Nevertheless, the examination of anxiety's impact on social media addiction has been minimally explored. During the pandemic, anxiety related to the coronavirus was found to be associated with social media addiction [35]. A study conducted among American college students identified anxiety as a significant positive predictor of Facebook addiction [36]. Elexithymia, an anxiety-causing personality trait, predicted Instagram addiction [37].

According to [38], anxiety constitutes an emotional response to situations perceived as threatening, often leading to avoidance behaviors and the pursuit of distractions, such as excessive engagement with social media. Within the university setting, students encounter academic, social, and personal demands that may engender a sense of threat, particularly concerning the potential for failure or disapproval, which can subsequently be associated with anxiety reactions [39,40]. From this perspective, the utilization of social media may function as a maladaptive coping mechanism for anxiety, providing temporary alleviation of emotional distress [41].

This dynamic can be analyzed through the lens of the Control-Value Theory of Achievement Emotions (CVT) [42]. Negative emotions and academic behaviors, such as anxiety and procrastination, tend to arise when students perceive a lack of control over their academic activities while simultaneously attributing significant value to the anticipated outcomes, such as academic success.

Anxiety and academic procrastination have been associated with an increased dependency on social networks by altering individuals' perceptions of control and value regarding academic tasks. This shift often results in a pursuit of immediate gratification within digital environments, potentially culminating in addiction [43].

Previous studies have investigated the impact of anxiety on addiction to specific social networks. However, these investigations have not considered social media addiction as a comprehensive variable, nor have they examined its relationship with detrimental academic behaviors such as procrastination.

### 3. Materials and Methods

#### 3.1. Design and Participants

The research had a cross-sectional predictive design. This research allowed us to know the predictors of social media addiction in Peruvian university students based on statistical analyses [44].

A non-probabilistic convenience sampling method was employed, involving the voluntary participation of 335 university students. Table 1 illustrates the sociodemographic attributes associated with this particular group of participants. The data were collected through university institutional groups (social networks and academic communication channels) and personal contacts of the authors using means such as email and WhatsApp. The mean age of the participants was approximately 21.69 years, with a moderate variability indicated by a standard deviation of 3.79 years. Regarding gender distribution, the sample is relatively balanced, with a slight predominance of male participants, who constitute 55.22% of the total, while female participants account for 44.78%.

**Table 1.** Sample description.

|                           |              | Frequency | %     |
|---------------------------|--------------|-----------|-------|
| Age (M:21.69; DE: 3.79)   |              |           |       |
| Sex                       | Male         | 185       | 55.22 |
|                           | Female       | 150       | 44.78 |
| Institutional affiliation | Public       | 157       | 46.87 |
|                           | Private      | 178       | 53.13 |
| Nationality               | Foreigner    | 9         | 2.69  |
|                           | Peruvian     | 326       | 97.31 |
|                           | Online       | 1         | 0.30  |
| Mode of study             | Blended      | 9         | 2.69  |
|                           | Face-to-face | 325       | 97.01 |

In relation to the university management, the majority of participants are affiliated with private institutions, comprising 53.13% of the sample, whereas 46.87% are associated with public universities. Concerning nationality, the predominant portion of participants is of Peruvian origin, accounting for 97.31% of the total, in contrast to a minor segment of foreign participants, who represent the remaining 2.69%. With respect to the mode of study, a substantial majority of participants (97.01%) engage in face-to-face learning, while a significantly smaller fraction participates in blended (2.69%) or distance learning (0.30%). See Table 1.

### 3.2. Instruments

The instruments used were as follows:

Academic Procrastination Scale (APS): Created by [45], translated and validated in Spanish language by [46] and validated in Peruvian university students by [47] Dominguez Lara et al. (2014). The instrument consists of 12 items, which are divided into two dimensions: academic self-regulation and the postponement of activities. Each item is assessed using a 5-point Likert-type scale (1 = never, 2 = rarely, 3 = sometimes, 4 = almost always and 5 = always). It reports adequate reliability with values of  $\alpha$  and  $\omega$  above 0.75. It has demonstrated adequate psychometric properties that support the bifactorial structure (CFI = 1.00, GFI = 0.97, RMSEA = 0.078).

Questionnaire of Social Networking Addiction (SNA): Designed and validated in Peruvian university students by [8]. The instrument consists of 24 items, which are categorized into three dimensions: obsession, control, and use of social networks. It employs a five-point response scale (0 = never, 1 = rarely, 2 = sometimes, 3 = almost always, and 4 = always). The scale has demonstrated reliability, with Cronbach's alpha indices of  $\alpha$  and above 0.85, and it exhibits satisfactory psychometric properties (GFI = 0.92, RMR = 0.06, RMSEA = 0.04).

General Anxiety Disorder-7 (GAD-7): It is a scale designed by [48] and validated in the Peruvian context by [49]. The instrument comprises seven items with a unifactorial structure and employs a four-point Likert scale (0 = not at all, 1 = several days, 2 = more than half the day, 3 = nearly every day). The data demonstrate high reliability, with  $\omega$  = 0.90 and  $\alpha$  = 0.93, alongside satisfactory psychometric properties, as indicated by CFI = 0.994, TLI = 0.991, RMSEA = 0.068, and WRMR = 1.567.

In the present sample, internal consistency was evaluated using both Cronbach's alpha and McDonald's omega coefficients. The Social Media Addiction scale showed excellent reliability ( $\alpha$  = 0.90;  $\omega$  = 0.90), while the GAD-7 demonstrated adequate reliability ( $\alpha$  = 0.77;  $\omega$  = 0.80). In contrast, the Academic Procrastination Scale showed marginal reliability ( $\alpha$  = 0.67;  $\omega$  = 0.68).

### 3.3. Procedure

The data collection process conformed to the guidelines established by the Declaration of Helsinki and received approval from the research ethics committee of the university affiliated with the authors (Reference 2023-CE-EPG-00166), thereby ensuring adherence to ethical and data protection standards. An online form was developed using Google Forms, which initially included a request for informed consent, and was disseminated through social networks, email, and WhatsApp.

This informed participants about the altruistic nature of their involvement, the study's objectives, the procedures, and the questionnaires to be completed. Emphasis was placed on the ethical use of data, the voluntary nature of participation, confidentiality, anonymity, the exclusive use of data for research purposes, the right to withdraw at any time, and the protection of data and access to results, in accordance with the ethical standards required for conducting research. Following the informed consent, the form included sections pertaining to sociodemographic data and the data collection instruments.

### 3.4. Data Analysis

Statistical analyses were performed using R version 4.4.3 (R Foundation for Statistical Computing, Vienna, Austria) [50]. Prior to the main analyses, data were screened for missing values and outliers. All items were scored in the same direction according to the original instruments. Total scores for each scale were computed as the sum of item responses, following the procedures established in their respective validation studies. The 'psych' package [51] (Revelle, 2024) was employed for the computation of descriptive statistics, while the 'moments' package [52] facilitated the estimation of skewness and kurtosis. Initially, assessments of missing values, outliers, and fundamental assumptions were conducted. Subsequently, calculations of means, standard deviations, skewness ( $g_1$ ), and kurtosis ( $g_2$ ) were undertaken. Normality was interpreted with flexibility, adhering to the widely accepted criterion of  $g_1 \pm 2$  and  $g_2 \pm 2$  in applied research [53]. This methodological approach enabled the determination that the variables under study exhibited distributions appropriate for parametric analyses.

The total sample consisted of 335 participants. Descriptive and correlational analyses were conducted using the available valid responses for each variable. For the regression models, five participants with missing values in at least one of the variables included in the model were excluded through listwise deletion; therefore, the analytic sample for the regression analyses was 330 participants.

In the subsequent phase, Pearson correlation coefficients were calculated utilizing the Hmisc package [54] to investigate the linear relationships among social media addiction, anxiety, and academic procrastination, with the strength of these correlations interpreted in accordance with Cohen [55]. Subsequently, a multiple linear regression model was constructed using the `lm()` function from the stats package, following the verification of assumptions related to collinearity, linearity, normality of residuals, and homoscedasticity, as per the methodological guidelines outlined by [56].

## 4. Results

For the descriptive analysis, the total scores of the scales were computed, and their mean and standard deviation were established. Table 2 presents an analysis detailing the distribution and shape of each variable's data. Regarding social media addiction, the mean score was 45.57, with a standard deviation of 22.78. The skewness value was positive ( $g_1 = 0.43$ ), indicating a slightly right-skewed distribution, with a greater concentration of scores at the lower end of the scale. The kurtosis value was negative ( $g_2 = -0.72$ ), suggesting a relatively flat distribution.

**Table 2.** Descriptive statistics.

|                                            | M     | DE    | g1    | g2    |
|--------------------------------------------|-------|-------|-------|-------|
| Social media addiction                     | 45.57 | 22.78 | 0.43  | −0.72 |
| Obsession with social media                | 16.91 | 9.93  | 0.66  | −0.63 |
| Lack of control in the use of social media | 12.36 | 6.01  | 0.07  | −0.92 |
| Excessive use of social media              | 16.3  | 7.81  | 0.23  | −0.78 |
| Anxiety                                    | 10.29 | 6.13  | 0.05  | −1.05 |
| Academic procrastination                   | 57.13 | 10.57 | −0.48 | 0.53  |

Participants exhibit a mean score of 16.91 regarding their obsession with social networks, accompanied by a standard deviation of 9.93. The skewness (g1) is positive (0.66), indicating a right-skewed distribution, with a greater concentration of values at the lower end of the scale. The kurtosis (g2) is negative (−0.63), suggesting a relatively flat and dispersed distribution, akin to patterns observed in social media addiction.

Regarding anxiety, the mean score was recorded at 10.29, with a standard deviation of 6.13. The skewness (g1) is slightly positive at 0.05, indicating a distribution that is marginally skewed to the right, yet remains nearly symmetrical. The kurtosis (g2) is negative at −1.05, which suggests a distribution that is relatively flat and sparse, with a less pronounced concentration of data around the mean.

In the context of academic procrastination, participants exhibit a mean score of 57.13, with a standard deviation of 10.57. The skewness (g1) is negative (−0.48), indicating a slight leftward skew in the distribution. The kurtosis (g2) is positive (0.53), suggesting a distribution that is more peaked and concentrated around the mean compared to variables associated with social media and anxiety.

The analysis highlighted meaningful associations among the study variables, underscoring their relevance to academic outcomes.

Table 3 presents significant associations among variables pertaining to social media use, anxiety, and academic procrastination. The findings indicate that social media addiction is positively correlated with anxiety ( $r = 0.53, p < 0.001$ ) and academic procrastination ( $r = 0.35, p < 0.001$ ). Furthermore, significant positive correlations are observed between obsession with social networks and anxiety ( $r = 0.50, p < 0.001$ ), as well as with academic procrastination ( $r = 0.37, p < 0.001$ ). A lack of control over social media use also demonstrates significant positive associations with anxiety ( $r = 0.52, p < 0.001$ ) and academic procrastination ( $r = 0.33, p < 0.001$ ). Excessive use of social media is positively correlated with anxiety ( $r = 0.52, p < 0.001$ ) and academic procrastination ( $r = 0.30, p < 0.001$ ). The relation between academic procrastination and anxiety was positive and significant ( $r = 0.16, p < 0.01$ ).

**Table 3.** Correlations for the variables.

|                                            | Academic Procrastination | Anxiety  |
|--------------------------------------------|--------------------------|----------|
| Social media addiction                     | 0.35 ***                 | 0.53 *** |
| Obsession with social media                | 0.37 ***                 | 0.50 *** |
| Lack of control in the use of social media | 0.33 ***                 | 0.52 *** |
| Excessive use of social media              | 0.30 ***                 | 0.52 *** |
| Academic procrastination                   | -                        | 0.16 **  |

\*\*\*  $p < 0.001$ , \*\*  $p < 0.05$ .

The multiple regression analysis demonstrated that both anxiety and academic procrastination significantly predicted social media addiction. In Table 4, the unadjusted model, anxiety emerged as the strongest predictor, with a robust, statistically significant positive

effect. This indicates that increases in anxiety are associated with substantial increases in social media addiction scores. Academic procrastination also showed a significant, albeit smaller, positive effect, suggesting that delays in academic tasks contribute modestly to problematic social media use. The model explained a considerable proportion of variance in social media addiction ( $R^2 = 0.313$ ), indicating that these psychological variables play a meaningful role in understanding this behavior.

**Table 4.** Regression analysis of anxiety and procrastination as predictors of social media addiction.

| Predictor                | B    | SE   | $\beta$ | t    | p      | 95% CI         |
|--------------------------|------|------|---------|------|--------|----------------|
| Intercept                | 5.74 | 3.12 | —       | 1.84 | 0.067  | [−0.41, 11.89] |
| Anxiety                  | 1.74 | 0.32 | 0.52    | 5.48 | <0.001 | [1.11, 2.37]   |
| Academic procrastination | 0.38 | 0.18 | 0.17    | 2.07 | 0.040  | [0.02, 0.74]   |

Note. Model fit:  $F(2, 327) = 74.56$ ,  $p < 0.001$ ;  $R^2 = 0.313$ , adjusted  $R^2 = 0.309$ .

Multicollinearity diagnostics indicated low multicollinearity among the predictors, with VIF values of 1.12. Therefore, the regression estimates were not substantially affected by collinearity problems.

In Table 5, the adjusted model, controlling for age, sex, institutional affiliation, and study modality, the results remained consistent. Anxiety remained the most influential predictor, while academic procrastination retained a weaker but still significant effect. None of the sociodemographic variables showed significant associations, suggesting that the predictive effects of anxiety and procrastination are relatively stable across different subgroups.

**Table 5.** Adjusted model with covariates.

| Predictor                           | B     | SE   | $\beta$ | t     | p      | 95% CI         |
|-------------------------------------|-------|------|---------|-------|--------|----------------|
| Intercept                           | 4.98  | 4.21 | —       | 1.18  | 0.239  | [−3.30, 13.26] |
| Anxiety                             | 1.71  | 0.33 | 0.51    | 5.22  | <0.001 | [1.06, 2.36]   |
| Academic procrastination            | 0.36  | 0.18 | 0.16    | 1.98  | 0.049  | [0.00, 0.72]   |
| Age                                 | 0.05  | 0.07 | 0.04    | 0.71  | 0.478  | [−0.09, 0.19]  |
| Sex (female)                        | −0.82 | 1.12 | −0.04   | −0.73 | 0.467  | [−3.02, 1.38]  |
| Institutional affiliation (private) | 0.64  | 1.15 | 0.03    | 0.56  | 0.575  | [−1.62, 2.90]  |
| Mode of study (non face to face)    | −1.21 | 2.98 | −0.02   | −0.41 | 0.682  | [−7.06, 4.64]  |

Note. Model fit:  $F(6, 323) = 26.41$ ,  $p < 0.001$ ;  $R^2 = 0.329$ , adjusted  $R^2 = 0.317$ ; B = unstandardized coefficients; SE = standard error;  $\beta$  = standardized coefficient; CI = confidence interval. Sex was coded as 0 = male, 1 = female. Institutional affiliation was coded as 0 = public, 1 = private. The mode of study was coded as 0 = face-to-face, 1 = non-face-to-face (online and blended).

## 5. Discussion

The present study aimed to examine the association between academic procrastination and anxiety on social media addiction among Peruvian university students. The findings provide empirical support for the proposed model, indicating that both variables were significantly associated with social media addiction, with anxiety showing the strongest predictor.

Ref. [57] have identified procrastination and anxiety as prevalent phenomena among university students, which are recognized as risk factors for the development of social media addiction. Nevertheless, the precise relationship between these factors and social media addiction remains inadequately understood. Consequently, examining the association between procrastination, anxiety, and social media addiction may provide evidence for understanding the relationship between these variables in university students.

The primary aim of this study was to examine the predictive relationship between procrastination, anxiety, and social media addiction among Peruvian university students. This research is situated within a context where, as noted by [58–60], social media usage has become pervasive, and its impact on students' mental health and academic performance is increasingly apparent.

The proposed statistical model suggests that both procrastination and anxiety serve as significant predictors associated with social media addiction within this student demographic. Prior research suggests that academic procrastination and anxiety are factors contributing to the development and exacerbation of addiction to social networks and the internet [58,61]. This model aimed not only to investigate the predictive associations of procrastination and anxiety with social media addiction but also to explore possible relationships among these variables. The study considered the possibility of significant correlations between procrastination and anxiety, as well as the relationship of social media addiction in the relationship between procrastination and anxiety.

Ref. [59] has identified the integration of procrastination and anxiety in relation to social media addiction as a noteworthy advancement in research. While prior studies have explored these factors independently, there is a paucity of research examining their interrelationship within the specific context of Peruvian university students. The findings of this study indicate that both procrastination and anxiety were significantly associated with higher levels of social media addiction among this demographic.

In the development of this statistical model, the objective was to enhance the understanding of how anxiety and academic procrastination predict social media addiction among Peruvian university students. As noted by [59], this understanding could facilitate more effective interventions to address this increasingly pertinent and concerning issue within the academic community. Consequently, the present study also aims to stimulate future research that delves into intricate interactions among procrastination, anxiety, and social media addiction. According to [60], conducting more rigorous longitudinal or experimental studies could deepen the comprehension of these relationships and aid in the development of more effective strategies to prevent and treat social media addiction in university students.

In this context, the analysis of the variables under investigation revealed significant associations among variables related to social media use, anxiety, and academic procrastination. The findings indicate that social media addiction is positively correlated with anxiety ( $r = 0.53, p < 0.001$ ) and academic procrastination ( $r = 0.35, p < 0.001$ ). Furthermore, significant positive correlations were identified between social media obsession and anxiety ( $r = 0.50, p < 0.001$ ), as well as with academic procrastination ( $r = 0.37, p < 0.001$ ). A lack of control in social media use also demonstrates significant positive associations with anxiety ( $r = 0.52, p < 0.001$ ) and academic procrastination ( $r = 0.33, p < 0.001$ ). Excessive use of social media is positively correlated with anxiety ( $r = 0.52, p < 0.001$ ) and academic procrastination ( $r = 0.30, p < 0.001$ ). Ref. [62] reported that 15.9% of university students in a region of Peru exhibit a high level of procrastination, which aligns with the findings of the present study.

It is also important to note that the observed relationship between academic procrastination, anxiety, and social media addiction may be interpreted within a theoretical framework of possible associational pathways. Several studies suggest that anxiety is associated with academic procrastination behaviors, which are in turn associated with a greater search for immediate gratification in digital environments, and higher levels of problematic social media use [63,64]. From this perspective, anxiety may be indirectly associated with social media addiction through its relationship with academic procrastination, or both variables may function as interrelated variables associated with social media addiction within the same statistical model. Recent research has indicated that

emotional and self-regulatory factors may be linked through interconnected associations with problematic digital behaviors [43,58].

From a psychometric perspective, the results revealed important differences in the reliability and internal structure of the instruments used. The Social Media Addiction scale and the GAD-7 demonstrated adequate to excellent internal consistency, as evidenced by both Cronbach's alpha and McDonald's omega coefficients, supporting their use in predictive analyses [58,65]. In contrast, the Academic Procrastination Scale showed lower internal consistency in the present sample. As noted in the literature, procrastination is a multifaceted construct involving cognitive, emotional, and behavioral components, including self-regulation deficits, avoidance tendencies, and impulsivity [65].

### 5.1. Limitations

Despite the findings obtained in this study, it is essential to recognize several limitations that may have influenced the results and that present opportunities for more in-depth and refined future research. Primarily, the adoption of a cross-sectional design in this study provided a snapshot of the relationship between procrastination, anxiety, and social media addiction at a specific point in time. According to [66], while this design facilitates the exploration of these relationships, it does not permit the establishment of definitive causal relationships between the variables examined. Ref. [14] highlights that the employment of non-probability convenience sampling constrains the generalizability of the findings to the broader population of Peruvian university students. Despite efforts to recruit a diverse and representative sample, certain student subgroups may be underrepresented in the data. Another limitation to consider is the potential for bias in the self-reported data collected in this study. It is also necessary to recognize that this study was limited to correlational and regression analyses, so the results should be interpreted in this non-causal sense. Despite assurances of confidentiality and anonymity for participants, it remains possible that some responses were influenced by social desirability or self-deception. Although statistically significant, its lower reliability suggests that the magnitude of its association with social media addiction may be attenuated or influenced by measurement limitations [67].

### 5.2. Future Research

#### 5.2.1. Future Theoretical Research

For a more comprehensive understanding, future research could consider employing longitudinal designs, which would allow for the examination of how these variables evolve over time and whether there are changes in their interrelationships. Other future research is advisable to implement more rigorous and representative sampling strategies to enhance the external validity of the results.

Ref. [68] emphasizes the importance of recognizing that social media addiction is a multifaceted phenomenon influenced by various factors. While their study concentrated on procrastination and anxiety, other determinants, such as self-esteem, social support, and personality, may significantly contribute to social media addiction. Consequently, future research should investigate these additional variables to achieve a more comprehensive understanding of social media addiction among Peruvian university students. Furthermore, it is important, after careful reflection, to anticipate that future research will advance this study and develop effective interventions to address this increasingly relevant and concerning issue. Ref. [56] suggests that it may be advantageous to combine self-reported data collection methods with objective measurements or observational data for better control of self-reported bias.

Given that this study was limited to correlational and regression analyses, it is recommended that future studies employ mediation models or pathway analyses to more

accurately examine the direct and indirect relationships between anxiety, academic procrastination, and social media addiction in university students.

### 5.2.2. Future Practical Research

In practical terms, future studies are recommended to explore intervention programs and their effects on reducing academic procrastination and anxiety among university students, particularly through psychoeducational strategies, anxiety coping strategies, and time management training. Universities could implement preventative programs in guidance services or student welfare departments to reduce the risk of problematic social media use. Furthermore, future research could examine the effectiveness of digital well-being interventions designed to promote healthier social media use patterns among the university population. Also, they are encouraged to further examine the factorial structure of this scale and consider alternative modeling approaches, such as multidimensional or bifactor models, to better capture the complexity of procrastination [69].

## 6. Conclusions

The findings of the present study indicate that significant correlations between procrastination and anxiety were significantly associated with social media addiction among Peruvian university students. Consequently, increased levels of procrastination and anxiety among university students are associated with a heightened propensity for social media addiction. Based on this premise, it is imperative for university psychoeducational departments to develop programs that facilitate effective time management among students, enabling them to complete their tasks punctually and manage their anxiety, thereby mitigating social media addiction.

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