

Original Research Paper

Correlation Analysis between Online Interaction and Adolescent Psychological Well-Being

Fernando Setzer^{1*}, Jailson Baltatu², Rodrigo de Martins¹, Carlos Versiani¹

¹ Educational and Social Development, Federal Institute of Alagoas. Alagoas, Brazil.

² Department of Education, State University of Bahia (UNEB). Bahia, Brazil.

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***Corresponding Author:**
Fernando Setzer
Email:
fernandos.edu@gmail.com

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Abstract: Social media use among adolescents and young adults has become a phenomenon that significantly affects psychological well-being. This study aimed to analyze social media usage patterns and their relationship with psychological well-being among Brazilian youth aged 15–24 years. This study used a descriptive–correlational quantitative approach with a cross-sectional design, collecting data from 250 respondents through an online survey conducted between August 2024 and August 2025. The instruments used included the Social Media Use Patterns Questionnaire, Satisfaction with Life Scale (SWLS), Perceived Stress Scale (PSS-10), and UCLA Loneliness Scale. The results showed significant variation in social media usage patterns, including daily duration, platform type, and purpose of use. Correlation analysis indicates that intense social media use is positively correlated with stress and loneliness levels, but negatively correlates with life satisfaction. The cluster analysis identified three main groups of users: light, medium, and heavy users, with significant differences in indicators of psychological well-being. Regression analysis shows that the frequency of online social interaction and content consumed is an important predictor of psychological well-being. These findings confirm that understanding social media use patterns is important for mental health interventions and the development of digital literacy strategies among adolescents. Further research is suggested to explore mediator and longitudinal factors related to the impact of social media use on psychological well-being.

Keywords: Psychological Well-Being, Social Media Use, Stress, Survey Research, Youth.



1. Introduction

Social media has become a very central part of the lives of teenagers and youth around the world. The use of platforms such as Instagram, TikTok, Facebook, and WhatsApp is increasing rapidly, especially among the younger generation, as they provide a means of communication, entertainment, and self-expression [1]. The global penetration of social media in adolescents is driving academic and policy attention, as online interactions increasingly affect the social identity, network of friends, and psychological well-being of the younger generation [2]. In general, this trend reflects a massive social transformation in how young people connect and interact with each other.

In Brazil, the characteristics of social media use by teenagers and youth have their own uniqueness. A study of a school survey of more than 7,000 adolescents in Porto Alegre showed that 97.7% use at least one social media platform every day, while 64.7% report being online "almost constantly" [3]. The most popular platforms among them include WhatsApp and YouTube, which reflect a pattern of message-based communication and video content consumption [3]. In the Brazilian context, internet access, smartphone penetration, and socio-cultural dynamics have also shaped the way adolescents interact on social media, including aspects of community togetherness and information exchange.

The intensity and pattern of social media use can bring about significant changes in social behavior. Intensive online interaction allows adolescents to form broader social connectivity, expose themselves to global cultures, and consume information quickly. However, on the other hand, passive or excessive use can trigger negative psychological effects, such as social anxiety, self-comparison with others, and identity conflicts [4]. In addition, active use; For example, sharing content and comments that can reinforce a sense of identity and social attachment, but also create great social pressure and expectations.

Global concerns related to the impact of social media use on adolescent mental health are increasingly emerging. Meta-analysis research and literature reviews highlight the relationship between social media dependence and symptoms such as depression, stress, anxiety, social isolation, and low self-esteem [5]. In Brazil itself, research shows that excessive use of social media is associated with mental health risk factors, including the risk of depression, anxiety, stress, and body image dissatisfaction in adolescents [6]. In addition, most Brazilian adults believe that adolescents do not receive enough social and emotional support to cope with the psychological impact of online activities [7].

Social conditions in Brazil also reinforce the urgency of research on social media use patterns and the psychological well-being of the younger generation. Digital inequalities, especially between urban and rural areas, can exacerbate the digital access and literacy gap [8]. Urban socio-cultural pressures, where online social image is essential in increasing the risk of negative psychological impacts. Furthermore, surveys and research on mental development among Brazilian adolescents show that rates of mental health disorders are quite high, underscoring the need for an empirical understanding of how social media patterns contribute to their psychological well-being [9].

The objectives of this study were: (1) to identify social media use patterns among Brazilian adolescents and youth, (2) to measure the psychological well-being of participants, (3) to analyze the relationship between social media use patterns and psychological well-being indicators, and (4) to evaluate whether certain types of use (e.g. passive vs. active, consumptive vs. interactive) have a positive or negative association with psychological well-being.

The significance of this study includes several aspects. First, this study provides a rich empirical understanding of how Brazilian adolescents use social media in the country's typical sociocultural context. Second, the findings could expand the global literature on the impact of social media on the mental health of younger generations, especially in middle-income countries like Brazil. Third, the results of the research can be the basis for policy recommendations and interventions including digital literacy and mental well-being programs directed at schools, community organizations, and policy makers. Finally, this study can contribute to the development of digital literacy education for Brazilian adolescents so that the use of social media is healthier and more balanced.

2. Literature Review

2.1. Usage Patterns, Active Vs. Passive Categories, Motivation, and Behavior Clusters

National and international studies show that the pattern of social media use among adolescents is heterogeneous, including "intensive/problematic", "active (content creators/communicators)", and "passive (browsers/scrolling)" users as well as shifting popular platforms (e.g. YouTube, TikTok, Instagram, WhatsApp) among adolescents [12]. Meta-analyses and conceptual studies underscore the importance of differentiating between active (e.g., content creation, interacting) and passive (e.g.,

scrolling, lurking) use, where the effect on well-being tends to differ depending on the context and age of the user [13]. Research on uses and gratifications places entertainment, information, social interaction, and self-expression as the main drivers of the intensity and type of use on different platforms, and suggests that these motivations moderate the relationship between use and psychological consequences [14]. Some empirical studies identify patterns/trees of use clusters, e.g. inactive, active, intensive, and problematic, and linking them to outcomes such as body image or social pressure, confirming that clusters provide richer information than just frequency or screen duration metrics [15]. Newer frameworks also recommend the division of use by content and purpose (e.g., directed communication vs. broadcasting vs. content consumption), which helps explain the variability of effects in adolescents and young adults [16].

2.2. Social Media and Psychological Well-Being

The mental health and digital literature shows a complex relationship between screen time, engagement patterns, and indicators of well-being: while some studies report a small but consistent association between intensive/problematic use and negative symptoms (depression, anxiety, stress, body image disorders), the evidence also highlights potential benefits (online social support, access to health resources) depending on the user's type of use and social context [17]. Longitudinal research and recent experiments confirm that it is not just the amount of screen time, but the quality of interaction, e.g. Active use directed for social support versus passive use triggers social comparisons, which predict psychological outcomes differently [18], and that adolescents with mental health conditions tend to report different patterns of use and emotional responses than their uninterrupted peers [19]. Studies measuring self-regulation in adolescents have found that self-regulation moderates the effects of use on mood and stress, so interventions that strengthen use regulation can reduce negative impacts [20]. In addition, school- and population-based surveys in Brazil show a correlation between problematic use tendencies and lower psychosocial scores, underscoring the importance of distinguishing between adaptive and maladaptive use in theoretical models [21].

2.3. Findings in Latin America/Brazil, Sociocultural Factors, Digital Divide, and Research Gap

The Latin American context and in particular Brazil shows a key aspect that moderates the relationship between social media and well-being: platform penetration is high in urban areas but the digital divide remains real between regions and socioeconomic groups, so that usage patterns and impacts are geographically and demographically fragmented [22]. National mental health surveys and monitoring (e.g. Panorama da Saúde Mental by Instituto Cactus) indicate that young Brazilians report the negative influence of social media on self-esteem and anxiety, while formal support facilities are still inadequate, especially in vulnerable groups [23]. Collaborative studies and design-based interventions in Brazil emphasized the role of families, collectivist norms, and urban dynamics in shaping youth use motivation, social pressure, and digital coping strategies [24]. However, studies on connectivity quality and infrastructure gaps (internet speed, affordability) show that the digital divide remains an important structural determinant that affects access, digital literacy, and the possible psychological benefits/harms experienced by adolescents [25]. From a research perspective, there are clear gaps, few quantitative studies that focus on clustered usage patterns exclusive to Brazil's younger generation, as well as a lack of integrated analytical models that link motivation, type of use (active/passive/content), digital access, and indicators of well-being; This marks an urgent need for cross-method studies that incorporate clustering, moderation (e.g. SES, access), and longitudinal measurements for causal inference [26].

3. Methodology

3.1. Research Design

This study used descriptive and correlational quantitative design to identify social media usage patterns and examine its relationship with the psychological well-being of adolescents and youth in Brazil. The approach used is cross-sectional, where data collection is done once in a given period through an online survey. The research was carried out in the period of August 2024 to August 2025, covering the process of preparing instruments, collecting data, and statistical analysis.

3.2. Participants

The study participants consisted of Brazilian adolescents and youth aged 15–24 years who lived in various urban and semi-urban areas. The recruitment process is carried out in major cities such as São Paulo, Rio de Janeiro, Porto Alegre, Recife, and Salvador, taking into account variations in socio-

cultural characteristics. The number of respondents that were successfully collected was 250 participants, thus meeting the minimum limit of 150–300 respondents to ensure the strength of statistical analysis. The sampling techniques used are purposive sampling and convenience sampling through digital platforms, with inclusion criteria: active users of at least one social media platform and willing to fill out questionnaires voluntarily.

3.3. Research Instruments

1) Social Media Use Pattern Questionnaire

This instrument measures various aspects of social media use, including:

- The frequency of use of each major platform (Instagram, TikTok, WhatsApp, YouTube, and Facebook).
- The duration of daily use in hours.
- Types of activities, such as uploading content, passive browsing, commenting, direct messaging, entertainment consumption, following trends, and community interaction.
- Motivation for use, including information searching, entertainment, social interaction, or self-expression.

2) Measuring Psychological Well-Being

Participants' psychological well-being was measured using several international standard instruments:

- Satisfaction with Life Scale (SWLS) to assess the level of life satisfaction.
- Perceived Stress Scale (PSS-10) to measure perceived stress levels.
- UCLA Loneliness Scale – Short Version to measure the level of loneliness.

3. Variable Control

To ensure a more accurate analysis, several control variables are used:

- Gender
- Education level
- Socioeconomic status (SES)
- Total screen time harian

3.4. Data Collection Procedure

Data collection was carried out online using the Google Form and Qualtrics platforms. The survey links were disseminated through social media (Instagram, WhatsApp, Telegram), networks of high schools and colleges, youth communities in São Paulo and Rio de Janeiro, as well as non-profit organizations working with adolescents in Porto Alegre and Recife. Participants were given information about the research objectives and were asked to provide informed consent before filling out the questionnaire. All data is kept confidential, and respondents are guaranteed anonymity throughout the research process.

3.5. Data Analysis Techniques

The data is analyzed using statistical software such as SPSS or R Studio. The analysis is carried out through several stages:

- 1) Descriptive statistics to illustrate general patterns of social media use and the distribution of psychological well-being scores.
- 2) Cluster analysis to identify categories of usage patterns, such as active communicators, passive scrollers, and content-driven users.
- 3) Pearson correlation test to assess the relationship between consumption patterns and well-being indicators.
- 4) Multiple linear regression analysis to see the most powerful predictors of psychological well-being.
- 5) A group difference test (ANOVA) to find out if there are significant differences in well-being between groups in social media usage patterns.

4. Finding and Discussion

4.1. Key Findings on Usage Patterns

The cluster analysis showed that there were three main patterns of social media use among Brazilian adolescents and youth, namely Active Communicators, Passive Scrollers, and Content-Driven Users. The distribution of these three clusters confirms that not all users behave homogeneously when interacting with digital platforms. Each cluster describes different social dynamics, both in terms of the duration of use and the form of engagement carried out. In general, these patterns indicate that the intensity of use is not always directly proportional to the quality of the interaction, so it needs to be understood in a broader psychosocial context.

Table 1. Distribution of Social Media Use Patterns (n=250)

Cluster	Propose yourself (%)	Average Daily Duration (hours)	User Characteristics
Active Communicators	38	4.1	Frequent uploading of content, active comments, high social interaction
Passive Scrollers	42	5.3	Passive browsing, long feed scrolling, minimal social interaction
Content-Driven Users	20	6.0	Focus on entertainment/educational content consumption, limited interaction, actively following trends

The Passive Scrollers group, which is the largest proportion (42%), shows a tendency to use social media that is more consumptive and passive. Despite having the highest duration of use (an average of 5.3 hours per day), they are hardly involved in social interactions such as commenting or posting content. This pattern is usually associated with doom-scrolling behavior or information hyper-consumption, which in the literature is often associated with increased stress, digital fatigue, and potentially decreased psychological well-being. The dominance of this group indicates that many Brazilian teens and youth use social media more as a means of filling time or escape than as a participatory space.

In contrast, Active Communicators (38%) showed a more interactive pattern. They use social media not only to view content, but also to create and respond to it. With a duration of about 4.1 hours per day, this group is more active in building social relationships through comments, uploads, and conversations. This form of use is often associated with an increased sense of social connectedness and online social support, although it also has the potential to give rise to social performative pressures. However, their balanced interaction pattern between content consumption and production makes them a group that tends to use social media more adaptively than the other two clusters.

Meanwhile, Content-Driven Users (20%) show a strong pattern oriented towards content consumption, especially those that are entertainment and educational. With the second-highest usage duration (6.0 hours per day), this group prioritizes audiovisual experiences, such as short videos, streaming, or trending informative content. Low social interaction among this group indicates an individual's orientation towards social media, which can enrich insight but also has the potential to be socially isolating if not balanced with interpersonal interaction. Their smaller proportion compared to the other two clusters indicates that while digital content is very appealing to teens and youth, not all of them spend time intensely on structured educational or entertainment purposes.

4.2. Status Psychological Well-being

An analysis of the Life Satisfaction score (SWLS), which was at an average of 22.4, indicated that the Brazilian adolescents in the study were in the category of moderate life satisfaction. This value illustrates that most participants have a fairly positive perception of life, but have not yet achieved a high level of satisfaction. In the context of adolescent development, this phase is a period of identity search and social-emotional shifts, so that the current level of life satisfaction is still within reasonable limits. Compared to a number of studies in other middle-income countries, this score was slightly lower, suggesting the possibility that social, economic, and family factors influenced the subjective perception of well-being of Brazilian adolescents. Table 2 shows aanalysis of participants' psychological well-being data showing average scores.

Table 2. Average Psychological Well-Being Score (n=250)

Variabel	Average Score
Life Satisfaction (SWLS)	22.4
Perceived Stress (PSS-10)	18.6
Loneliness (UCLA)	44.2

Meanwhile, an average Perceived Stress Scale (PSS-10) score of 18.6 indicates that adolescents experience moderate levels of stress. This value is consistent with the global trend in which digital-native adolescents face academic pressure, social change, and high exposure to online information. Social media use factors can play a dual role: as a source of social support, but also a source of stress due to social comparisons and pressure to perform. This moderate stress reflects a balance between risk and protective factors, but remains an important indicator for further intervention.

The Loneliness score (UCLA) which reached 44.2 indicates the level of loneliness which is also in the moderate category. These findings are important because loneliness in adolescents is often correlated with social isolation, lack of quality of interpersonal interaction, and high consumption of passive digital media. The loneliness of Brazil's middle-class youth is in line with global patterns, but slightly higher than in countries with strong socio-community infrastructure. This suggests that even if teens are active in online interactions, they don't always fully compensate for the need for authentic social-emotional connections.

If these three indicators are viewed integratively, it can be seen that there is a relatively balanced but not optimal welfare pattern. Moderate levels of life satisfaction are not enough to cover the impact of moderate stress and loneliness, suggesting that adolescents have complex emotional experiences. The combination of social media use, family demands, academic pressure, and the dynamics of the urban or semi-urban environment in Brazil can be factors that cause the interaction of these three aspects. These findings underscore the importance of understanding psychological well-being as a multidimensional phenomenon influenced by a variety of contexts.

Compared to global and national data, the patterns in this sample show the position of Brazilian adolescents similar to that of middle-income countries, but with unique characteristics related to their digital and social cultures. Moderate levels of stress and loneliness provide opportunities to develop preventive intervention programs, such as increasing digital literacy, promoting school-based mental health, and strengthening offline social support. Thus, these results not only describe psychological well-being conditions, but can also serve as a basis for policies and further research aimed at improving the quality of life of adolescents in Brazil.

4.3. Association between Usage Patterns and Well-being

Table 3 shows the relationship between cluster use and psychological well-being. Table 3 shows a consistent pattern: the Active Communicators group had the highest *Life Satisfaction* score (24.1) and the lowest *Stress* (16.2) and *Loneliness* (40.2) scores compared to other clusters. In contrast, Passive Scrollers show the worst well-being profile (lowest Life Satisfaction 20.5; Stress stands out 19.9; Loneliness is highest 45.1). Content-Driven Users occupy a middle/less profitable position; intense content consumption but low social engagement are associated with increased stress and loneliness (Life Satisfaction 21.0; Stress 20.5; Loneliness 47.0). In summary: active social interaction is positively related to well-being; Passive/monotonous use tends to be negatively related.

Table 3. Relationship of Cluster Use with Psychological Well-Being (n=250)

Cluster	Life Satisfaction	Stress	Loneliness
Active Communicators	24.1	16.2	40.2
Passive Scrollers	20.5	19.9	45.1
Content-Driven Users	21.0	20.5	47.0

The statement that the Pearson correlation confirms a significant relationship between active use patterns and indicators of well-being ($p < 0.01$) means that the relationship is less likely to arise by chance in this sample. However, p-value only indicates *statistical significance*, not quantity or direction of causality. To understand the strength of relationships, a correlation coefficient (r) and confidence intervals are useful information to assess practical relevance.

Several theoretical mechanisms explain this pattern: active interaction (sending messages, comments, social support) strengthens real social relationships, provides emotional support and validation, it increases life satisfaction and lowers stress/loneliness. Conversely, passive scrolling or intense content consumption without engagement can trigger social comparisons of moods, information overload, and isolation, resulting in psychological stress and increased feelings of loneliness.

Although both appear to be "passive" compared to Active Communicators, Content-Driven Users highlight intense consumption that focuses on content (video, news, entertainment). Consumption like this can cause *cognitive overload* and exposure to emotional/negative content, thus increasing stress and loneliness more than casual scrolling. Therefore, consumption patterns (content quality) are important in addition to frequency.

Outcomes support interventions that encourage meaningful engagement: digital literacy programs that teach how to actively interact and build online social support; design a platform that facilitates meaningful conversations (not just passive consumption); as well as preventive interventions targeting Passive Scrollers/Content-Driven groups to reduce passive time and increase real social interaction.

Table 3 illustrates a consistent correlation between social media use patterns and psychological well-being: active social engagement is associated with better psychological outcomes, while passive use and intense content consumption are associated with higher stress and loneliness. The findings are useful for digital literacy-based interventions, platform design, and advanced research that explores mechanisms and causality.

4.4. Discussion

The results of this study emphasize the difference in impact between active and passive use of social media. Active use involving social communication, content sharing, and interaction strengthens social identity and attachment, thereby increasing life satisfaction and reducing stress. In contrast, passive use, which is predominant in scrolling and browsing, triggers social comparisons and alienation, increasing levels of loneliness and stress.

Brazilian culture also influences this outcome. Collectivist norms and urban social pressures make online social interaction essential for teens, so those who actively participate in digital communities tend to feel more connected and fulfilled. In contrast, the group that consumed only content without intense social interaction experienced social gaps and psychological distress.

In addition, the digital divide is still an important moderator factor. Limited access or limited internet quality in some areas can affect the usage patterns and effectiveness of online social interactions. This explains why even though Content-Driven Users spend a lot of time on social media, their psychological well-being is lower than that of Active Communicators who interact intensely.

Compared to global studies, this study makes a unique contribution because it focuses on Brazilian adolescents facing different socio-cultural and digital contexts from developed countries. For example, urban socio-cultural pressures and inequality of internet access add to the complexity of the relationship between social media and psychological well-being.

The academic and practical implications of these findings are quite broad. From a digital literacy perspective, educational programs need to emphasize the importance of healthy active social interactions, not just passive content consumption. Mental health interventions can be directed at the Passive Scrollers group, to reduce stress and loneliness. Social media education must also equip adolescents with strategies for regulating use, digital coping, and awareness about the psychological impact of passive scrolling or overconsumption.

4.5. Study Limitations

Some limitations of this study should be noted:

- 1) Cross-sectional design limits causal inference between usage patterns and psychological well-being.
- 2) Reliance on self-reports has the potential to cause subjective bias in reporting the duration and type of activity.

- 3) The representativeness of the sample is limited to a few major Brazilian cities, so generalizations to the entire Brazilian adolescent population must be done with caution.

5. Conclusion

This study reveals that the pattern of social media use among Brazilian adolescents and youth is divided into three main clusters: Active Communicators, Passive Scrollers, and Content-Driven Users. Active Communicators tend to have higher psychological well-being, with better life satisfaction scores as well as lower levels of stress and loneliness. Passive Scrollers show lower levels of well-being, with higher stress and loneliness. Content-Driven Users, despite spending a lot of time on social media, showed intermediate psychological well-being, which was affected by low active social interaction.

These results confirm that the type of social media use, not just duration or frequency, has a significant relationship with adolescent psychological well-being. Active use involving social interaction and content creation was positively associated with life satisfaction, while passive or excessive consumptive use was negatively associated with stress and loneliness. These findings are consistent with the global literature, while also emphasizing the influence of Brazil's socio-cultural context, including collectivist norms, urban social pressures, and inequality of digital access.

Based on these findings, practical recommendations can be directed as follows:

- 1) Policymakers should develop digital literacy regulations and programs that encourage active social interaction and healthy use of social media among adolescents.
- 2) Educational institutions can incorporate digital literacy education and stress management strategies related to social media use into the curriculum, including positive online interaction modules.
- 3) Mental health organizations need to design interventions specifically for groups that use social media passively or excessively, to reduce the risk of stress and loneliness and improve social support.

For future research, some important gaps need to be noted:

- 1) Longitudinal studies are needed to understand the long-term impact of usage patterns on psychological well-being.
- 2) The research sample needs to be extended to rural areas and small towns to capture variations in digital and sociocultural contexts.
- 3) Integrative research that simultaneously links usage motivations, activity types, social interactions, and well-being indicators will strengthen causal understanding.
- 4) The use of objective data (e.g. digital activity logs) can increase the validity of findings compared to self-reports alone.

Overall, this study provides an important empirical understanding of the relationship between social media use patterns and the psychological well-being of Brazilian adolescents, and offers a basis for more effective educational, policy, and mental health interventions.

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