




Emerging Adults in a Digitalized World: Influence of Gender on the Domains of Problematic Internet Use

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ABSTRACT

Numerous researchers have investigated the importance of exploring the factors associated with issues of problematic Internet use among emerging adults. This study aimed to explore the interaction between problematic Internet use and gender differences within the domains of problematic Internet use, namely obsession, neglect, and control disorder. Problematic Internet use was assessed using the Problematic Internet Use Questionnaire (PIUQ). 386 emerging adults from University of Lagos (50.5% males and 49.5% females) were purposively selected to participate in a survey. Prevalence of problematic Internet use was found to be 80.8%, and females (51.9%) demonstrated higher problematic Internet use compared to males (48.1%), [$t(384) = -2.142, p < .05$]. On the domains, however, multivariate regression analyses revealed gender differences within domains of problematic Internet use: females displayed a higher level of obsession [$F(1, 384) = 3.864, p = .050, R^2 = .010$] compared to males, and were more likely to struggle with controlling Internet use [$F(1, 384) = 7.719, p < .05, R^2 = .020$]. The findings from this study suggest a persistent rise in problematic Internet use among emerging adults. Preliminary evidence highlights the effectiveness and efficacy of gender-specific intervention strategies in addressing Internet addiction. Furthermore, the study recommended advocacy efforts and evidence-based parenting techniques that encourage alternative offline engagements. These interventions aim to minimise adolescents' screen time while promoting positive attributes such as self-control and self-esteem, which research has shown to be helpful in preventing problematic Internet use. Lastly, the research will add to the existing knowledge on gender and internet use.

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INTRODUCTION

The Internet can be conceptualised as a broad phenomenon that encompasses diverse online activities and categories such as social media platforms (e.g., Facebook, Instagram, Snapchat, and Tiktok), instant messaging apps (e.g., WhatsApp, Telegram), interactive online multiplayer games (e.g., Call of Duty, MobileOps, online chess, etc.), online shopping, and much more. The multidimensional nature of the Internet has consequently occasioned several studies and research efforts that have sought to explore its impact and various aspects. One such study investigated the potential negative and positive impact of social Internet use (that is, the adoption of the Internet for the purpose of socialization and communication with friends, family, and other people) among adolescents.¹ Some notable positive uses include its role in keeping individuals connected and strengthening

¹ Melissa Pujazon-Zazik and M. Jane Park, "To Tweet, or Not to Tweet: Gender Differences and Potential Positive and Negative Health Outcomes of Adolescents' Social Internet Use," *American Journal of Men's Health* 4, no. 1 (March 16, 2010): 77–85, <https://doi.org/10.1177/1557988309360819>.

existing offline relationships with friends within their social circle.² Furthermore, the Internet can serve as a medium for adolescents to hone interpersonal skills and exercise decision-making capabilities, both of which are integral to the optimal development of their self-identity.³ However, social Internet use also carries negative consequences such as the risk of cyberbullying, exposure to inappropriate sexual content, and harassment, among others. These challenges have serious physical, social, moral, and psychological ramifications.⁴ One significant concern is the potential for Internet addiction, which has been identified as a major contributor to mental health issues among adolescents.⁵ In addition to these, other Internet-related issues have emerged, such as a dramatic increase in the risky sexual behaviour of adolescents, as well as online gambling and gaming.⁶

This study employs the term Problematic Internet Use (PIU) to refer to the inordinate and addictive use of the Internet, although various terms such as *excessive Internet use*, *pathological Internet use*, and *Internet addiction* have alternatively been used in literature to roughly convey the same idea. These terms capture the uncontrolled, unrestrained, and inappropriate use of the Internet in any or all of its various capacities. PIU is simply explained as Internet addiction.⁷ Other researchers propose that problematic Internet use is a broader term that extends beyond the dependency, lack of self-control, and withdrawal dimensions typical of addiction.⁸ Furthermore, PIU is characterized as such resulting in challenges that span across the social, professional, academic, and psychological aspects of human functioning.⁹ Expanding its conceptual scope, some hallmark attributes of PIU include: risky use, impulsive and immoderate adoption that invariably leads to serious negative consequences, and impairment in physical, social, emotional, and psychological development; in short, impulsivity, dependency, and riskiness.

Excessive Internet use, as conceptualized by Young, may induce heightened levels of psychological excitement which, in turn, leads to impaired sleep, prolonged periods of distraction from eating, and limited physical activity, and can potentially contribute to the user experiencing physical and mental health problems such as depression, Obsessive Compulsive Disorder (OCD), dysfunctional family relationships, and anxiety.¹⁰ The term “pathological Internet use” is similarly used to describe problematic, compulsive use of the Internet. Davis suggested that problematic Internet use is when an individual’s poorly regulated use of the Internet results in challenges in their psychological, social, educational, or professional life.¹¹ Morahan-Martin and Schumacher in developing the PIU Scale, defined it as such use of the Internet that includes symptoms such as craving, guilt, withdrawal, mood-altering use of the Internet, and so on.¹² Investigations into problematic and compulsive Internet use have constantly highlighted edits capacity to impair mental development.¹³ Furthermore, it has been

² Kaveri Subrahmanyam and Patricia Greenfield, “Online Communication and Adolescent Relationships,” *The Future of Children*, 2008, 119–46.

³ Ilene R Berson, Michael J Berson, and John M Ferron, “Emerging Risks of Violence in the Digital Age: Lessons for Educators from an Online Study of Adolescent Girls in the United States,” *Journal of School Violence* 1, no. 2 (2002): 51–71.

⁴ Emma Louise Anderson, Eloisa Steen, and Vasileios Stavropoulos, “Internet Use and Problematic Internet Use: A Systematic Review of Longitudinal Research Trends in Adolescence and Emergent Adulthood,” *International Journal of Adolescence and Youth* 22, no. 4 (October 2, 2017): 430–54, <https://doi.org/10.1080/02673843.2016.1227716>; Hyera Ryu et al., “The Relationship between Impulsivity and Internet Gaming Disorder in Young Adults: Mediating Effects of Interpersonal Relationships and Depression,” *International Journal of Environmental Research and Public Health* 15, no. 3 (March 6, 2018): 458, <https://doi.org/10.3390/ijerph15030458>.

⁵ Silvana Karacic and Stjepan Oreskovic, “Internet Addiction And Mental Health Status Of Adolescents In Croatia And Germany,” *Psychiatria Danubina* 29, no. 3 (September 21, 2017): 313–21, <https://doi.org/10.24869/psyd.2017.313>; Anita Restrepo et al., “Problematic Internet Use in Children and Adolescents: Associations with Psychiatric Disorders and Impairment,” *BMC Psychiatry* 20, no. 1 (December 27, 2020): 252, <https://doi.org/10.1186/s12888-020-02640-x>.

⁶ Lucy A. Ingram et al., “Sexual Behaviors, Mobile Technology Use, and Sexting Among College Students in the American South,” *American Journal of Health Promotion* 33, no. 1 (January 3, 2019): 87–96, <https://doi.org/10.1177/0890117118779008>; Astrid Müller et al., “Problematic Online Buying-Shopping: Is It Time to Considering the Concept of an Online Subtype of Compulsive Buying-Shopping Disorder or a Specific Internet-Use Disorder?,” *Current Addiction Reports* 8, no. 4 (December 27, 2021): 494–99, <https://doi.org/10.1007/s40429-021-00395-3>.

⁷ Kimberly S Young and Cristiano Nabuco De Abreu, *Internet Addiction: A Handbook and Guide to Evaluation and Treatment* (John Wiley & Sons, 2010).

⁸ NA Fineberg et al., “Manifesto for a European Research Network into Problematic Usage of the Internet,” *European Neuropsychopharmacology* 28, no. 11 (November 2018): 1232–46, <https://doi.org/10.1016/j.euroneuro.2018.08.004>.

⁹ Keith W. Beard and Eve M. Wolf, “Modification in the Proposed Diagnostic Criteria for Internet Addiction,” *CyberPsychology & Behavior* 4, no. 3 (June 2001): 377–83, <https://doi.org/10.1089/109493101300210286>.

¹⁰ Kimberly S Young, *Caught in the Net: How to Recognize the Signs of Internet Addiction--and a Winning Strategy for Recovery* (John Wiley & Sons, 1998).

¹¹ R.A. Davis, “A Cognitive-Behavioral Model of Pathological Internet Use,” *Computers in Human Behavior* 17, no. 2 (March 2001): 187–95, [https://doi.org/10.1016/S0747-5632\(00\)00041-8](https://doi.org/10.1016/S0747-5632(00)00041-8).

¹² Janet Morahan-Martin and Phyllis Schumacher, “Incidence and Correlates of Pathological Internet Use among College Students,” *Computers in Human Behavior* 16, no. 1 (2000): 13–29.

¹³ Bhavna Arora, “Exploring and Analyzing Internet Crimes and Their Behaviours,” *Perspectives in Science* 8 (September 2016): 540–42, <https://doi.org/10.1016/j.pisc.2016.06.014>; Cheng-Min Chao, Kai-Yun Kao, and Tai-Kuei Yu, “Reactions to Problematic Internet

shown to be strongly associated with negative lifestyles and depressive risk factors, particularly among young people, which have been identified as the population most vulnerable to problematic Internet use (PIU).¹⁴ Additionally, problematic Internet use has been found to have high comorbidity rates with several psychiatric disorders.¹⁵ Research unequivocally indicates that problematic Internet use (PIU) is especially prevalent among young adults,¹⁶ and has become a global public health challenge.¹⁷

This study, therefore, attempts to provide more insight into possibly overlooked connections between gender and the problematic internet use, and the far-reaching implications these may have in such a radically volatile era as the 21st century. Hence, the following objectives were stated followed by the hypothesis; (i) to establish if there will be a significant difference in the level of problematic internet use of male and female emerging adults and (ii) to determine if there will be a significant relationship between gender and the domains of problematic internet use (obsession, neglect, and control disorder) among emerging adults. Hypothesis; (i) there will be a significant difference in the level of Problematic Internet Use of male and female emerging adults, and (ii) there will be a significant relationship between gender and the domains of problematic internet use (obsession, neglect, and control disorder) among emerging.

LITERATURE REVIEW

Females appear to be less susceptible to PIU; a study revealed that a good portion of its female respondents reported using the Internet for safer purposes such as seeking out helpful information and connecting with friends although such use harbours the potential to be excessive.¹⁸ Another study found differences in preference for online activities amidst problematic use: female adolescents were more inclined to use social networking sites, while males preferred online gaming.¹⁹ A study that examined about 4,000 college students in Quebec, Canada, found that males generally used the Internet frequently more than females.

THEORETICAL REVIEW

Self-determination Theory

Some of the Internet's superpowers are its speed, access to vast amounts of information, affordability, and stupendous versatility. A text message can get travel thousands of miles in one second, one can learn about the British royal family from the comfort of his/her bedroom, and online activities can range from online gaming to shopping, tabloid surfing, freelancing, advertising, and keeping in touch with family and friends on social networks. These positive features, incidentally, also catalyse obsessive and addictive tendencies.²⁰ The self-determination theory attempts to explain human behaviour as a function of motivation and self-determination. Ryan and Deci grouped human needs into three types: autonomy, competence, and relatedness (or connection).²¹

Use Among Adolescents: Inappropriate Physical and Mental Health Perspectives," *Frontiers in Psychology* 11 (July 31, 2020), <https://doi.org/10.3389/fpsyg.2020.01782>.

¹⁴ Abdulbari Bener and Dinesh Bhugra, "Lifestyle and Depressive Risk Factors Associated With Problematic Internet Use in Adolescents in an Arabian Gulf Culture," *Journal of Addiction Medicine* 7, no. 4 (July 2013): 236–42, <https://doi.org/10.1097/ADM.0b013e3182926b1f>; Roselyn J. Lee-Won, Leo Herzog, and Sung Gwan Park, "Hooked on Facebook: The Role of Social Anxiety and Need for Social Assurance in Problematic Use of Facebook," *Cyberpsychology, Behavior, and Social Networking* 18, no. 10 (October 2015): 567–74, <https://doi.org/10.1089/cyber.2015.0002>; Ebru Öztürk and Suna Kaymak Özmen, "The Relationship of Self-Perception, Personality and High School Type with the Level of Problematic Internet Use in Adolescents," *Computers in Human Behavior* 65 (December 2016): 501–7, <https://doi.org/10.1016/j.chb.2016.09.016>.

¹⁵ Marcantonio M. Spada, "An Overview of Problematic Internet Use," *Addictive Behaviors* 39, no. 1 (January 2014): 3–6, <https://doi.org/10.1016/j.addbeh.2013.09.007>.

¹⁶ Chao, Kao, and Yu, "Reactions to Problematic Internet Use Among Adolescents: Inappropriate Physical and Mental Health Perspectives."

¹⁷ Francisco T.T. Lai and Joyce L.Y. Kwan, "Socioeconomic Influence on Adolescent Problematic Internet Use through School-Related Psychosocial Factors and Pattern of Internet Use," *Computers in Human Behavior* 68 (March 2017): 121–36, <https://doi.org/10.1016/j.chb.2016.11.021>.

¹⁸ Xuan Liu, Min Sun, and Jia Li, "Research on Gender Differences in Online Health Communities," *International Journal of Medical Informatics* 111 (March 2018): 172–81, <https://doi.org/10.1016/j.ijmedinf.2017.12.019>; Bing Sun, Hongying Mao, and Chengshun Yin, "Male and Female Users' Differences in Online Technology Community Based on Text Mining," *Frontiers in Psychology* 11 (May 26, 2020), <https://doi.org/10.3389/fpsyg.2020.00806>.

¹⁹ Cecilie Schou Andreassen et al., "The Relationship between Addictive Use of Social Media and Video Games and Symptoms of Psychiatric Disorders: A Large-Scale Cross-Sectional Study," *Psychology of Addictive Behaviors* 30, no. 2 (March 2016): 252–62, <https://doi.org/10.1037/adb0000160>; Magali Dufour et al., "Gender Difference in Internet Use and Internet Problems among Quebec High School Students," *The Canadian Journal of Psychiatry* 61, no. 10 (October 10, 2016): 663–68, <https://doi.org/10.1177/0706743716640755>.

²⁰ Ting Yat Wong, Kenneth S. L. Yuen, and Wang On Li, "A Basic Need Theory Approach to Problematic Internet Use and the Mediating Effect of Psychological Distress," *Frontiers in Psychology* 5 (January 14, 2015), <https://doi.org/10.3389/fpsyg.2014.01562>.

²¹ Richard M. Ryan and Edward L. Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist* 55, no. 1 (2000): 68–78, <https://doi.org/10.1037/0003-066X.55.1.68>.

They conceptualised autonomy as the need for a sense of independence and self-sufficiency people have that drives them to make decisions consistent with their personal beliefs; competence indicates a desire for growth, skill, and mastery, and relatedness denotes the need for attachment and a sense of belonging. According to this model, people engage in activities that cater to these needs, with those activities becoming reinforced over time.²² A number of empirical studies have been conducted to investigate PIU through the lenses of the self-determination model²³ and found it to be useful in understanding individuals' motivation for using the Internet and how frequently resorting to Internet use can transform into PIU.²⁴ Research has shown that unsatisfied psychological needs and subpar life satisfaction tend to a maladaptive use of the Internet.²⁵ Social media use provides for connection and belongingness needs.²⁶ Research has identified online gaming as a significant channel through which all three needs can be simultaneously satisfied.²⁷ Online games often feature a range of gameplay pathways and choices, as well as avatar designs and customization options, all of which cater to the autonomy needs of gamers;²⁸ relatedness needs are provided for by multiplayer game options and other in-game features that allow for collaboration and team-play.²⁹ Competence needs are gratified usually through a combination of intrinsic and extrinsic mechanisms, such as in-game awards, rankings, achievements, and badges, which gamers obtain after successfully completing competitive challenges and tasks.³⁰

In a nutshell, when basic psychological needs are inadequately or insufficiently fulfilled, the Internet can quickly emerge as an ad-hoc solution to problems which were previously resolved through offline, in-person mechanisms. Other attributes, such as anonymity, also influence the transition of normal Internet use to PIU.

Caplan's Preference for Online Social Interaction Theory

This model of problematic or excessive Internet use conceptualises PIU as a consequence of an individual's maladaptive or problematic psychological and social condition. According to Caplan, individuals facing psychosocial health challenges such as depression, loneliness, and social anxiety are predisposed to developing a preference for Internet-mediated social interactions rather than face-to-face or other offline contexts.³¹ People experiencing loneliness and depression often hold negative beliefs and perceptions about themselves, particularly in terms of their social competence. This internal struggle drives them to seek safer and less threatening alternatives, which the Internet readily provides. Caplan argues that their Internet usage often becomes compulsive and problematic and, in turn, results in exacerbated psychological distress.³² Further

²² Wong, Yuen, and Li, "A Basic Need Theory Approach to Problematic Internet Use and the Mediating Effect of Psychological Distress."

²³ Xuequn Wang, "How Do People Participate in Social Network Sites After Crises? A Self-Determination Perspective," *Social Science Computer Review* 32, no. 5 (October 30, 2014): 662–77, <https://doi.org/10.1177/0894439314525116>; Ling Zhao et al., "What Makes Them Happy and Curious Online? An Empirical Study on High School Students' Internet Use from a Self-Determination Theory Perspective," *Computers & Education* 56, no. 2 (February 2011): 346–56, <https://doi.org/10.1016/j.compedu.2010.08.006>.

²⁴ Hayeon Song et al., "Does Facebook Make You Lonely?: A Meta Analysis," *Computers in Human Behavior* 36 (July 2014): 446–52, <https://doi.org/10.1016/j.chb.2014.04.011>.

²⁵ Sinan Okur and Mustafa Ozekes, "Relationship between Basic Psychological Needs and Problematic Internet Use of Adolescents: The Mediating Role of Life Satisfaction," *ADDICTA: The Turkish Journal on Addictions* 7, no. 4 (January 12, 2021): 214–22, <https://doi.org/10.5152/ADDICTA.2020.20041>.

²⁶ Douglas Smith, Trinity Leonis, and S. Anandavalli, "Belonging and Loneliness in Cyberspace: Impacts of Social Media on Adolescents' Well-Being," *Australian Journal of Psychology* 73, no. 1 (January 2, 2021): 12–23, <https://doi.org/10.1080/00049530.2021.1898914>; Philippe Verduyn et al., "Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review," *Social Issues and Policy Review* 11, no. 1 (January 13, 2017): 274–302, <https://doi.org/10.1111/sipr.12033>; Wang, "How Do People Participate in Social Network Sites After Crises? A Self-Determination Perspective."

²⁷ Ahmet Uysal and Irem Gokce Yildirim, "Self-Determination Theory in Digital Games," in *Gamer Psychology and Behavior*, ed. B. Bostan (Springer International Publishing AG, 2016), 123–35, https://doi.org/10.1007/978-3-319-29904-4_8.

²⁸ Wei Peng et al., "Need Satisfaction Supportive Game Features as Motivational Determinants: An Experimental Study of a Self-Determination Theory Guided Exergame," *Media Psychology* 15, no. 2 (May 18, 2012): 175–96, <https://doi.org/10.1080/15213269.2012.673850>.

²⁹ Shang Hwa Hsu, Ming-Hui Wen, and Muh-Cherng Wu, "Exploring User Experiences as Predictors of MMORPG Addiction," *Computers & Education* 53, no. 3 (November 2009): 990–99, <https://doi.org/10.1016/j.compedu.2009.05.016>.

³⁰ Carlos Cruz, Michael D. Hanus, and Jesse Fox, "The Need to Achieve: Players' Perceptions and Uses of Extrinsic Meta-Game Reward Systems for Video Game Consoles," *Computers in Human Behavior* 71 (June 2017): 516–24, <https://doi.org/10.1016/j.chb.2015.08.017>.

³¹ Scott E. Caplan, "A Social Skill Account of Problematic Internet Use," *Journal of Communication* 55, no. 4 (December 1, 2005): 721–36, <https://doi.org/10.1111/j.1460-2466.2005.tb03019.x>.

³² Marie Hattingh et al., "Factors Mediating Social Media-Induced Fear of Missing out (FoMO) and Social Media Fatigue: A Comparative Study among Instagram and Snapchat Users," *Technological Forecasting and Social Change* 185 (December 2022): 122099, <https://doi.org/10.1016/j.techfore.2022.122099>.

research corroborated his earlier claims, as his subsequent study revealed that individuals with actual social skills deficits were more likely to develop PIU.³³

Although PIU has received massive attention from the research community in recent years,³⁴ it has yet to be consensually defined and measured.³⁵ While there is a preponderance of studies that have explored the prevalence,³⁶ risk factors,³⁷ and negative consequences of problematic Internet use,³⁸ especially among younger populations,³⁹ further inquiry is necessary to buttress and consolidate pre-existing knowledge on the relationship between problematic Internet use and adolescent delinquency, as very few studies have explored the connection between both constructs.

METHODOLOGY

For the purpose of this study, the University of Lagos was selected as the major research location which accounted for the vast number of locations boasting a bountiful proportion of the researchers' target population. This study adopted a cross-sectional design which availed the researcher the opportunity to investigate gender and problematic internet use which involved a total of 386 emerging adults. Participants included 191 males (49.5%) and 195 females (50.5%) ranging from 16-27 years, who were predominantly students. Participants' consent was sought and participation was voluntary, and anonymous, and no form of compensation was offered to the participants who chose to participate.

Participants in this study were selected through the purposive sampling technique. This technique saw the researcher make subjective, pre-determined choices about specific locations and settings in which the sample to be examined in this study was to be recruited. Questionnaire administration took place at various faculties and locations within the University to the students. Part of the process of obtaining approval included providing specifics regarding the study—such as the purpose of the study, who it concerns, and who it benefits—and assuring respondents, of strict adherence to confidentiality and anonymity guidelines. Participants' consent was also obtained after a detailed explanation of the survey process. Consenting respondents followed through the process and were encouraged to ask questions when they encountered any form of challenge in understanding the questionnaire items or recording their responses. Participants were also encouraged to be maximally honest in their responses, having been reassured of the anonymity of their responses. Four hundred (400) questionnaires were administered in total; 390 were retrieved and four were rejected because they were not properly filled, bringing the total to 386 (a return rate of 96.5%) which were then analysed for statistical relationships.

Respondents' data were collected using a structured questionnaire consisting of a *demographics* section and other sections comprising standardized psychological scales. The following section is a more detailed outline of the content of the questionnaire.

³³ Caplan, "A Social Skill Account of Problematic Internet Use."

³⁴ David Dunbar, Michael Proeve, and Rachel Roberts, "Problematic Internet Usage Self-Regulation Dilemmas: Effects of Presentation Format on Perceived Value of Behavior," *Computers in Human Behavior* 70 (May 2017): 453–59, <https://doi.org/10.1016/j.chb.2017.01.015>; Lutz Wartberg et al., "Adolescent Problematic Internet Use: Is a Parental Rating Suitable to Estimate Prevalence and Identify Familial Correlates?," *Computers in Human Behavior* 67 (February 2017): 233–39, <https://doi.org/10.1016/j.chb.2016.10.029>.

³⁵ Chih-Hung Ko et al., "Proposed Diagnostic Criteria of Internet Addiction for Adolescents," *The Journal of Nervous and Mental Disease* 193, no. 11 (November 2005): 728–33, <https://doi.org/10.1097/01.nmd.0000185891.13719.54>; Nathan A. Shapira et al., "Problematic Internet Use: Proposed Classification and Diagnostic Criteria," *Depression and Anxiety* 17, no. 4 (2003): 207–16, <https://doi.org/10.1002/da.10094>; Aviv Weinstein and Michel Lejoyeux, "Internet Addiction or Excessive Internet Use," *The American Journal of Drug and Alcohol Abuse* 36, no. 5 (August 1, 2010): 277–83, <https://doi.org/10.3109/00952990.2010.491880>.

³⁶ Aanuoluwapo A Afolabi, Olayinka S Ilesanmi, and Ayodeji M Adebayo, "Prevalence and Pattern of Internet Addiction Among Adolescents in Ibadan, Nigeria: A Cross-Sectional Study," *Cureus*, February 16, 2022, <https://doi.org/10.7759/cureus.22293>; Yatan Pal Singh Balhara et al., "Problematic Internet Use and Its Correlates Among Students from Three Medical Schools Across Three Countries," *Academic Psychiatry* 39, no. 6 (December 1, 2015): 634–38, <https://doi.org/10.1007/s40596-015-0379-9>; Olayinka Stephen Ilesanmi, Aanuoluwapo Adeyinka Afolabi, and Ayodeji Matthew Adebayo, "Problematic Internet Use (PIU) Among Adolescents during COVID-19 Lockdown: A Study of High School Students in Ibadan, Nigeria," *The African Journal of Information and Communication* 27 (2021), <https://doi.org/10.23962/10539/31373>.

³⁷ Yaron Sela et al., "Family Environment and Problematic Internet Use among Adolescents: The Mediating Roles of Depression and Fear of Missing Out," *Computers in Human Behavior* 106 (May 2020): 106226, <https://doi.org/10.1016/j.chb.2019.106226>; Wartberg et al., "Adolescent Problematic Internet Use: Is a Parental Rating Suitable to Estimate Prevalence and Identify Familial Correlates?"

³⁸ Vivian Ozoemena Onukwuli et al., "Internet Addiction during the COVID-19 Pandemic among Adolescents in Southeast Nigeria and Implications for Adolescent Care in the Post-Pandemic Era: A Cross-Sectional Study," *SAGE Open Medicine* 11 (January 25, 2023): 205031212311527, <https://doi.org/10.1177/20503121231152763>; O Y Oshodi, A R Erinfolami, and A A Akinbode, "Problematic Internet Usage Among Students In a Medical School In Lagos, Nigeria.," *Nigerian Journal of Psychiatry* 10, no. 1 (2012): 48–55.

³⁹ Marta Kozybska et al., "Problematic Internet Use, Health Behaviors, Depression and Eating Disorders: A Cross-Sectional Study among Polish Medical School Students," *Annals of General Psychiatry* 21, no. 1 (December 11, 2022): 5, <https://doi.org/10.1186/s12991-022-00384-4>; Öztürk and Özmen, "The Relationship of Self-Perception, Personality and High School Type with the Level of Problematic Internet Use in Adolescents."

Section A of this questionnaire was designed to collect the demographic information of participants. It included age, gender, education level, family structure, and neighbourhood type.

Section B consisted of the Problematic Internet Use Questionnaire (PIUQ) developed by Demetrovics and his colleagues, and was used in this study to measure excessive or problematic Internet use among the participants.⁴⁰ The PIUQ is a self-report instrument that consists of 18 items, all of which are subdivided into three six-item subscales: *obsession*—for example, “How often do you fantasize about the Internet, or think about what it would be like to be online when you are not on the Internet?”; *neglect*—for example, “How often do you neglect household chores to spend more time online?”; and *control disorder*—for example, “How often do you feel that you should decrease the amount of time spent online?” Participants were to rate each item on a 5-point scale: 1–Never, 2–Rarely, 3–Sometimes, 4–Often, and 5–Always. Cronbach’s α of the entire PIUQ is .87, and of the subscales are .85, .74, and .76, respectively. The PIUQ has a test–retest correlation score of .90 and has been widely adopted in studies exploring Internet addiction some of which were conducted in Nigerian settings, with Nigerian participants.⁴¹ It has also been proven to be a reliable assessment tool for determining the impact of poorly controlled Internet use.⁴² The PIUQ demonstrated satisfactory construct validity, with its subscales correlating significantly with various indices of physical and psychological health. In this study, the 18-item PIUQ had a Cronbach’s α of .872. Higher scores indicate possible PIU. Mazhari, following the recommendation of the developers of the PIUQ, used a cut-off point of 41 to distinguish between average Internet users (18–41) and PIUs (42–90).⁴³

PRESENTATION OF RESULTS

Table 1: Showing the descriptive statistics of the demographic profile of participants

Variables	Levels	Frequency	Percent	Valid Percent
Age	16-19	172	44.6	44.6
	20–27	214	55.4	55.4
Gender	Male	191	49.5	49.5
	Female	195	50.5	50.5
Household Income Level (Monthly)	Below ₦150,000	138	35.8	36.8
	Above ₦150,000	237	61.4	63.2
Family Type/Structure	Nuclear	340	88.1	88.8
	Extended	43	11.1	11.2

Table 1 results show demographic characteristics of the study participants. The above results show that the 386 participants were evenly distributed between both genders, 195 were female (50.5%) and 191 were male (49.5%), and they comprised 172 adolescents aged 16–19 (44.6%) and 214 persons aged 20–27 (55.4%). Other data collected included monthly household income, which showed that 61.4% of participants were in households earning above ₦150,000 while 35.8% earned below ₦150,000, and 2.8% didn’t indicate. 88.1% were from nuclear families, while 11.1% were in extended family settings, and .8% didn’t indicate their family type.

Hypothesis 1: There will be a significant difference in the level of problematic internet use of male and female emerging adults.

⁴⁰ Zsolt Demetrovics, Beatrix Szeredi, and Sándor Rózsa, “The Three-Factor Model of Internet Addiction: The Development of the Problematic Internet Use Questionnaire,” *Behavior Research Methods* 40, no. 2 (May 2008): 563–74, <https://doi.org/10.3758/BRM.40.2.563>.

⁴¹ O. F., Adebowale and M. A. Omoyemiju, “Exploring Problematic Use of Mobile Internet in a Nigerian University,” *Journal of Education and Practice*, February 2023, <https://doi.org/10.7176/JEP/14-6-09>.

⁴² Beatrix Koronczai et al., “Confirmation of the Three-Factor Model of Problematic Internet Use on Off-Line Adolescent and Adult Samples,” *Cyberpsychology, Behavior, and Social Networking* 14, no. 11 (November 2011): 657–64, <https://doi.org/10.1089/cyber.2010.0345>; Kevin J. Kelley and Elon M. Gruber, “Psychometric Properties of the Problematic Internet Use Questionnaire,” *Computers in Human Behavior* 26, no. 6 (November 2010): 1838–45, <https://doi.org/10.1016/j.chb.2010.07.018>.

⁴³ Shahrzad Mazhari, “The Prevalence of Problematic Internet Use and the Related Factors in Medical Students, Kerman, Iran,” *Addiction & Health* 4, no. 3–4 (2012): 87.

Table 2: An Independent Sample T-test for Gender Differences in Problematic Internet Use

Gender		N	M	SD	t	df	P
PIU Score	Male	191	50.48	11.556	-2.142	384	<.05
	Female	195	53.10	12.492			

Dependent Variable: PIU

Results from an independent-sample test indicated that there was a significant difference between the problematic internet use (PIU) scores of male (M = 50.48, SD = 11.556) and female (M = 53.10, SD = 12.492) emerging adults, ($t(384) = -2.142, p < .05$). Results revealed that female adolescents have higher levels of problematic Internet use than males. In line with this result, the hypothesis that there would be a significant difference in PIU of males and females was accepted.

Hypothesis 2: There will be a significant relationship between gender and at least one of the domains of PIU (i.e. obsession, neglect, and control disorder).

Table 3: Multivariate Regression Analysis for the Relationship(s) between Gender and the Domains of PIU

	Gender	N	M	SD	R ²	F	Sig
Obsession	Male	191	15.80	5.389	.010	3.864	<.05
	Female	195	16.89	5.497			
	Total	386	16.35	5.464			
Neglect	Male	191	16.98	4.747	.006	2.397	>.05
	Female	195	17.74	4.903			
	Total	386	17.37	4.835			
Control Disorder	Male	191	17.36	4.313	.020	7.719	<.05
	Female	195	18.63	4.655			
	Total	386	18.00	4.528			

The table above shows that there were significant relationships between gender and two of the three different domains of Problematic Internet use; in Obsession, males' scores (M = 15.80, SD = 5.389) was significantly different from females' scores (M = 16.89, SD = 5.497), ((F(1, 384) = 3.864, $p < .05$, $R^2 = .010$)); in Control Disorder, males' scores (M = 17.36, SD = 4.313) differed significantly from females' scores (M = 18.63, SD = 4.655), (F(1, 384) = 7.719, $p < .05$, $R^2 = .020$), while no significant relationship was found in Neglect for males (M = 16.98, SD = 4.835) and females (M = 17.74, SD = 4.903), ((F(1, 384) = 2.397, $p > .05$, $R^2 = .006$). These results revealed that female adolescents are likely to be more obsessive and have challenges controlling their Internet use than male adolescents. In view of this, the hypothesis that there would be a significant relationship between gender and at least one of the domains of problematic internet use (PIU) was accepted.

DISCUSSION

Problematic Internet Use was found to be present in 80.8% of the participants in this study. This figure is strikingly similar to figures from a recent study conducted by Onukwuli and colleagues,⁴⁴ which found the prevalence of Internet addiction in the southeastern part of Nigeria to be 88.1%. Another study carried out in Ibadan, a southwestern state of Nigeria, revealed a more modest figure of 50% Internet addiction among secondary school students.⁴⁵ A plausible explanation for this level of PIU could be the ever-increasing accessibility and ubiquity of smartphones and other Internet-enabled devices, as well as the penetrative integration of the Internet in arguably every aspect of the life of adolescents, from school settings for tests, course presentations, preparation for examinations, and other academic activities, especially in the post-COVID era, as noted by Onukwuli and colleagues, coupled with a myriad of options for entertainment and recreation which youth appear to enormously enjoy, and are seemingly resorting to more than ever since the Internet

⁴⁴ Onukwuli et al., "Internet Addiction during the COVID-19 Pandemic among Adolescents in Southeast Nigeria and Implications for Adolescent Care in the Post-Pandemic Era: A Cross-Sectional Study."

⁴⁵ Afolabi, Ilesanmi, and Adebayo, "Prevalence and Pattern of Internet Addiction Among Adolescents in Ibadan, Nigeria: A Cross-Sectional Study."

arrived.⁴⁶ This intensifying use, and need for, the Internet, if left unregulated and unchecked, may engender heightened PIU among emerging adults.⁴⁷

Regarding the first hypothesis in the study, it was found that male adolescents had a significantly different PIU score from females and that females generally scored higher on PIU than males. This finding contradicts a considerable number of past findings, for only a relatively few past studies arrived at a similar conclusion.⁴⁸ To illustrate, Adiele and Olatokun found that males were three times more likely to have Internet addiction than females.⁴⁹ Omoyemiju and Popoola⁵⁰ also tread the path of the aforementioned, and found Internet addiction to be more prevalent in male adolescents compared to females, as did some other studies.⁵¹ Another interesting study conducted to investigate the impact of the COVID-19 pandemic on adolescents' susceptibility to PIU found that male participants were twice as likely to exhibit PIU characteristics as females before the pandemic, but found no significant differences in the levels of PIU between both genders after the pandemic.⁵² This might possibly explain the findings of this present study, as it suggests that female emerging adults have caught up with, and overtaken, male counterparts with respect to PIU, as is observed in this case. The unprecedented trajectory of female problematic Internet use calls for serious concern.

Further, a significant relationship was established between gender and at least one of the three domains of PIU, namely obsession, neglect, and control disorder. Kelley and Gruber (2010) reasoned that obsession is an intemperate preoccupation with Internet activities; neglect implies forgoing non-Internet activities, and control disorder entails the inability to discontinue Internet use at will. It was determined in this study that there were indeed gender differences, and females overtook the males in two categories: obsession and control disorder, harmonizing with Demetrovics et al.'s findings from their pilot study that sex differences existed within the obsession and neglect dimensions.⁵³ Although both males and females use the Internet for vastly different purposes—for example, female adolescents have been found to be more likely to visit social networking sites and use social media, while males prefer online gaming a great portion of literature purports that male adolescents are more obsessed with Internet use and, consequently, more susceptible to Problematic Internet Use.⁵⁴ Demetrovics et al., in validating a short-form version of the PIUQ, highlighted considerable differences in the neglect dimension between at-risk and no-risk adolescents but didn't report any gender differences.⁵⁵ This is quite similar to Koronczai et al.'s discovery of heightened levels of obsession in at-risk adolescents than their counterparts, excluding other dimensions.⁵⁶ Another validation study undertaken in Japan showed that adult females scored significantly higher in the control disorder dimension than males,⁵⁷ well in keeping with the findings of this research. Liu et al.'s observation convincingly buttresses the foregoing points.⁵⁸ They noted that adolescent females were more likely to report feeling helpless about controlling the urge to use the Internet, had serial failed attempts to monitor Internet use patterns, and had family and friends complain

⁴⁶ Onukwuli et al., "Internet Addiction during the COVID-19 Pandemic among Adolescents in Southeast Nigeria and Implications for Adolescent Care in the Post-Pandemic Era: A Cross-Sectional Study."

⁴⁷ Min-Pei Lin, "Prevalence of Internet Addiction during the COVID-19 Outbreak and Its Risk Factors among Junior High School Students in Taiwan," *International Journal of Environmental Research and Public Health* 17, no. 22 (November 18, 2020): 8547, <https://doi.org/10.3390/ijerph17228547>; Merten Reglitz, "The Socio-Economic Argument for the Human Right to Internet Access," *Politics, Philosophy & Economics* 22, no. 4 (November 7, 2023): 441–69, <https://doi.org/10.1177/1470594X231167597>; Julius Burkauskas et al., "Prevalence of Problematic Internet Use during the Coronavirus Disease 2019 Pandemic," *Current Opinion in Behavioral Sciences* 46 (August 2022): 101179, <https://doi.org/10.1016/j.cobeha.2022.101179>.

⁴⁸ Mingming Lin and Yoshiharu Kim, "The Reliability and Validity of the 18-Item Long Form and Two Short Forms of the Problematic Internet Use Questionnaire in Three Japanese Samples," *Addictive Behaviors* 101 (February 2020): 105961, <https://doi.org/10.1016/j.addbeh.2019.04.019>; Stéphanie Laconi et al., "Cross-Cultural Study of Problematic Internet Use in Nine European Countries," *Computers in Human Behavior* 84 (July 2018): 430–40, <https://doi.org/10.1016/j.chb.2018.03.020>.

⁴⁹ Ikenna Adiele and Wole Olatokun, "Prevalence and Determinants of Internet Addiction among Adolescents," *Computers in Human Behavior* 31 (February 2014): 100–110, <https://doi.org/10.1016/j.chb.2013.10.028>.

⁵⁰ Michael Adeniyi Omoyemiju and Bayode Isaiah Popoola, "Prevalence of Internet Addiction among University Students in Nigeria," *British Journal of Guidance & Counselling* 49, no. 1 (January 2, 2021): 132–39, <https://doi.org/10.1080/03069885.2020.1729339>.

⁵¹ Balhara et al., "Problematic Internet Use and Its Correlates Among Students from Three Medical Schools Across Three Countries."

⁵² Afolabi, Ilesanmi, and Adebayo, "Prevalence and Pattern of Internet Addiction Among Adolescents in Ibadan, Nigeria: A Cross-Sectional Study."

⁵³ Kelley and Gruber, "Psychometric Properties of the Problematic Internet Use Questionnaire."

⁵⁴ Andreassen et al., "The Relationship between Addictive Use of Social Media and Video Games and Symptoms of Psychiatric Disorders: A Large-Scale Cross-Sectional Study.;" Dufour et al., "Gender Difference in Internet Use and Internet Problems among Quebec High School Students."

⁵⁵ Demetrovics, Szeredi, and Rózsa, "The Three-Factor Model of Internet Addiction: The Development of the Problematic Internet Use Questionnaire."

⁵⁶ Koronczai et al., "Confirmation of the Three-Factor Model of Problematic Internet Use on Off-Line Adolescent and Adult Samples."

⁵⁷ Lin and Kim, "The Reliability and Validity of the 18-Item Long Form and Two Short Forms of the Problematic Internet Use Questionnaire in Three Japanese Samples."

⁵⁸ Liu, Sun, and Li, "Research on Gender Differences in Online Health Communities."

about how much time they spend online. Paying close attention to these effects of gender differences will help devise more effective (gender-specific, where necessary) intervention strategies to combat the manifest symptoms of PIU in adolescents, as well as sensitize parents and guardians on more efficacious, evidence-based parenting strategies, offering teenagers a wider range of exciting offline attractions and alternatives.

RECOMMENDATIONS

The Internet has come to stay; combating its pervasiveness or completely restricting its usage in this time and age would be impractical. However, there are measures that can be taken to effectively manage Internet usage and reduce the prevalence of PIU. One such measure is the implementation of educational campaigns targeted at emerging adults and their parents regarding the adverse effects of PIU, featuring evidence-based, data-driven findings on its implications and other offline alternatives for online attractions.

Another measure of the aforementioned findings is that female young adults may have to be given slightly more careful attention, seeing that they are also more susceptible to the negative effects of PIU, such as depression and low self-esteem, which explains why they might express greater obsessive tendencies. They may need help regulating screen time, understanding themselves better, and determining what exact adaptive functions the Internet distinctly serves for them, as research has revealed that attributes like high self-esteem⁵⁹ and self-control are associated with less problematic Internet use.⁶⁰

CONCLUSION

Problematic Internet Use in Nigeria appears to be rising over time and can be tentatively linked to the impact of the COVID pandemic, which occasioned unprecedented levels of Internet usage. Gender differences persisted in relation to PIU, with female participants reporting a higher occurrence of symptoms than their male counterparts. Additionally, females showed a greater tendency towards obsession with Internet-related activity and a lack of self-regulation in Internet use. Various recommendations have been suggested and if implemented by stakeholders will minimise adolescents' screen time while promoting positive attributes such as self-control and self-esteem. This will result in the holistic development of teenagers in Nigeria.

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