Attention Control among Internet Users: A Comparative Study between Internet Users and Non-Users

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Abstract

The study studied Inattention and Attention Control among heavy Internet Users by comparing Internet Users and non-users of Mizo Adolescents. 100 adolescents, heavy Internet users and 100 non-users having well-matched demographic variables from Mizoram, ages ranging between 16 to 24 years of age, were selected by multi-stage random sampling to serve as sample. The study used the Internet Addiction Test (IAT)/ Kimberly S. Young (1998) and the Attentional Control Scale (ACS; Derryberry & Reed, 2002) for the collection of data. Results revealed that internet-heavy users showed lower attention and higher in-attention control than non-Internet users among the samples. The attention and inattention control had a negative relationship. The results suggested the need of psychological care for heavy internet users as it destroys attention span.

Keywords: attention, inattention, internet user, adolescent

Introduction : With the advancement of the Internet and digital technologies, society is becoming more linked. In 1969, the first version of the Net was created and interconnected 15 academic institutions, including Stanford University and the University of California, Los Angeles (Wu, 2017). People are rapidly adopting information and communications technology (ICT) to exchange ideas, connect with one another, buy things, and acquire data from internet sources due to the rapid growth and pervasiveness of ICT (Cheung et al., 2013; Wong et al., 2018). The widespread usage of the internet by the younger generation is having negative impacts on their ability to perform in social, intellectual, and psychological domains. Web users, especially students, engage in a wide range of online activities that could cause them to neglect their crucial daily duties. Digital gadgets like computers, tablets, and smart

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phones are great tools in academic settings that improve the level of instruction and learning in the classrooms (Chen et al., 2014; Aagaard, 2015), but they can cause disruptions amongst class-going students (Akbulut et al., 2017; Seemiller, 2017; Wu et al., 2018). About one-third (35.3%) of Americans, post - secondary students were taking at least one remote learning course as of 2018, with 16.6% enrolling only in online courses (Distance Learning, 2019).

The World Health Organization announced a pandemic in March 2020 after the outbreak of a virus known as coronavirus disease 2019 (COVID-19) spread from Wuhan, China, by December 2019 (Ghebreyesus, 2020). Since then, it has resulted in a significant disruption to American higher education. Well over 1,100 schools and universities across all fifty states have already switched to online classes or cancelled on-campus programs as of March 6, starting with the University of Washington (Smalley, 2020). Similar issues were detected in India across different states including Mizoram. Unless a viable vaccine could be produced and made available to medical experts, it is realistic to assume that a significant number of educational institutes will remain in operation exclusively online in order to safeguard students and staffs. Regardless of the knowledge of how widespread COVID-19 is in the community as a whole, the Centers for Disease Control and Prevention (CDC) expressly advises online classes in the presence of even one reported case on campuses (Interim Guidance for Administrators of US Institutions of Higher Education, 2020). If a student hasn't ever taken a distance learning course before, it may be difficult for them to jump to one suddenly. Students might not have access to household amenities that support productive study routines, like a quiet space away from outside interruptions. An increase in members of the family who work from home or are unemployed might make this situation worse (Brynjolfsson et al., 2020). Students must deal with their own digital device habit in addition to disruptions from members of the family when studying at home without such guidance of professors to assist them to stay on track. Self-discipline is essential for success at college since students are often going through a critical phase of learning and development and are no more underneath the harsh control or monitoring of their parents or lecturers at school. The Online world has almost permeated every element of modern living and is distinguished by its involvement, promptness, popularity, and openness. As a result, young people and students' scholastic and life choices are significantly influenced by the Internet. Today's digital systems' promise of fast communication has resulted in digital temptations that harm work efficiency and undermine organizational discipline (Rigby, 2006; PR Newswire, 2013). The socio-economic growth of a nation depends in large part on its educational system, which must be functional and productive in order to meet the objectives set forth in the resources available (Cornali, 2012).

Internet Addiction

Kimberly Young (1996) reported the first account of a patient exhibiting signs of Internet addiction although it is still debatable as to the degree that the Internet serves as a centre for addiction or encourages addictive behaviour. Internet-gaming disorder, one particular type of Internet addiction, has previously been added to section III of the Diagnostic and Statistical Manual (DSM-5) (APA, 2013), emphasizing that it is most likely that this disorder has clinical implications though additional studies are required to guarantee its clinical significance and the precise phenomenology. Kimberly Young, PhD, made the initial suggestion for Text Revision in her groundbreaking 1996 work when she realised the concept that problematic computer use fulfills the criteria for an addiction and suggested that it should be added in the Diagnostic and Statistical Manual of Mental Disorders (DSM), 4th edition, when it is revised. The term internet addiction, problematic internet use and internet use disorder has been used interchangeably used in previous researches and also in consistence with the nomenclature of the DSM-5 and the ICD-11, however, we will use the term 'problematic internet use' more except when it is more precise to use the term 'internet addiction'.

Internet use and cognitive failures

Previous investigation has identified mobile phone addiction as a primary cause of cognitive problems (Hadlington, 2015). Cognitive failures can be defined by a person's incapacity to carry out appropriate cognitive processes or to finish basic activities that they are typically capable of doing (Clark et al., 2012). An individual's psychological resources are finite, thus in order to prevent exhaustion of mental resources, one must pay continuous attention to the performance task for optimal outcomes, according to cognitive resource theory (Head & Helton, 2014). Cognitive failure could result from the exhaustion of mental resources (Head & Helton, 2014).

Review of literature:

A number of studies have found a link between both higher problematic mobile phone use and excessive internet use on self-reported cognitive failures in daily life. Problematic internet use is highly correlated to higher scores on the cognitive failures questionnaire alongside a similar strong positive correlation between cognitive failure and problematic mobile phone usage (Hadlington, 2015). Phubbing (using a mobile or device to ignore someone) has been linked to issues with attention shifting and distractibility, frequent attention lapses, unintentional and intentional mind wandering, and failures in cognition that were attention-related. Perceived daily attention failures are more strongly related to and capable of predicting phubbing behaviour than various

social and psychological traits (Sansevere & Ward, 2021). Also, high levels of smartphone addictions were found to be positively correlated with cognitive failures by both rumination and mindfulness, as demonstrated by structural equation modelling and multiple mediation analysis. The association between cognitive failures and cell phone addiction was somewhat moderated by rumination and mindfulness. Furthermore, low mindfulness was indicated by increased ruminating. The association between cell phone addiction and cognitive impairments was mediated successively by rumination and mindfulness practises (Zhang et al., 2021). Students with higher levels of internet use are more likely to experience cognitive failures, which can significantly impair their academic achievement (Ali & Nisa, 2013). Among high school students, internet addiction and online gaming is the main causes of attention deficiencies causing academic disruption (Yýlmaz et al., 2015). Problematic internet use is connected with depression, impulsiveness, cognitive failures, etc. Even low-level users reported less optimum efficiency (Devine, D et al., 2022).

Statement of the Problem

According to Crawford (2015),"Distractibility appears to show that we are sceptical on the topic of what is worth paying attention to; that is, what to value". According to the distraction hypothesis, distraction is caused by an inability to pay attention, a drop in interest in the main job or item, and/or a desire to focus on anything other than the object of attention. Distractions can also arise from both external (such as social media connections, music, texts, and phone calls) and internal (such as hunger, exhaustion, sickness, and daydreaming) (Union of International Associations, 2020). Students' motivation to learn has been discovered to be affected by psychological and social factors (Froiland, Oros, Smith, & Hirchert, 2012). As a result, it is possible that these psychological characteristics, rather than PIU itself, will play a part in influencing the impact of PIU on learning motivation. Given that it is uncertain if PIU affects learning motivation directly or indirectly, a secondary goal of the study was to explore the relationship between PIU and learning motivation is mediated by psycho-social states.

Since the widespread use of digital technology, its impact on users' cognitive processes has received little attention, and only a few researches have been undertaken on the topic. Despite the data suggesting a potential relationship between internet use and a loss in attention during the day, it is still unclear which mechanism is to blame for this condition. Individuals with problematic internet use had increased impulse control issues, attention deficiency, and forgetfulness in their daily lives, according to a few researches. Since there have been a number of studies done on adolescents, there is significant neglect or lack of information regarding problematic internet use,

its predictors and its effects on young adults in Mizoram as youths have become more indulged on the Internet as we live in the era of smartphones and social media. Increased reports have been observed regarding attention, concentration and distraction issues during their academic lives. Therefore, this study will aim to elucidate the levels of problematic internet use among Mizoram college and University students and find out its effects on individual's attention problems during the day.

Objectives: The study set forth objectives based on the literature available as under:

1) To examine the applicability of *the Attentional Control Scale (Derryberry & Reed, 2002) in adolescent* samples in Aizawl.
2) To examine any significant difference in attention and in-attention control between *heavy Internet Users and non-users of Mizo Adolescents* samples.
3) To examine any significant relationship between attention and in-attention control variables.

Hypothesis: In relation to the objectives of the study the following hypotheses were framed for the present study:

1) The *Attentional Control Scale (Derryberry & Reed, 2002) will have applicability among the adolescent* samples in Aizawl.
2) It was expected that the heavy internet users would score lower in attention and higher score inattention control than *non-internet users of Mizo Adolescents* samples.
3) There will be a negative significant relationship between attention and inattention control variables.

Methodology

Sample- The sample of the study consisted of 200 participants. Efforts were made to equalize representations of male and female participants. The participants were University/College students studying in Mizoram. Multi-stage random sampling was employed to select the final samples. At first stage, Colleges were selected from the pool of different schools/colleges/University in Mizoram. Then, the stream was selected randomly and the invitations were sent to all the students of that stream through different possible mediums. Permission was taken from the authorities, informed consents were obtained from the participants.

Inclusion criteria:

1) Students (e"10years)
2) Students currently continuing education with adequate knowledge on English language.
3) Students who have access to the Internet.

Exclusion Criteria

For increased generalization of the study we have not taken any exclusion criteria.

Psychological tools used:

1) Internet Addiction Test (IAT2): Developed by Kimberly Young,1998).
2) Attentional control: switching (Carriere et al., 2013).
3) Socio-demographic profile (Lalduhsaka, E, 2022)
4) Informed Consent form (Lalduhsaka, E,2022)

***Design of the study*:** The study will be 2x2 factorial design which consists of 200 College students {100 males (50 Heavy internet users and 50 Non heavy internet users) and 100 Females (50 Heavy internet users and 50 Non heavy internet users)} samples

Ethics: We obtained written informed consent from all the participants clearly explaining the voluntary nature of participation, their anonymity, and their option to withdraw at any time without the need to give reasons was also explained. The study protocol was presented and ethical clearance was obtained from the Institute Human Ethics Committee of Mizoram University.

Results

The raw data was checked for missing details and outliers which can influence the results, then, further analysis was done to meet the objectives of the study; and presented sequentially as under:

Objective-1: To examine the applicability of *the Attentional Control Scale (ACS; Derryberry & Reed, 2002) adolescent* samples in Aizawl.

Table -1shows the Psychometric Properties of the attention and inattention control of the sub-scales of *the Attentional Control Scale (ACS; Derryberry & Reed, 2002)* for the targeted population.

Table-1: showed Mean, SD, Skewness, Kurtosis, reliability and homogeneity for the *heavy Internet Users and non-users*

Adolescents	Statistics	Dependent Variables	
		Attention	Inattention
Internet heavy users	Mean	16.14	13.16
	SD	2.48	2.27
	Kurtosis	0.91	0.75
	Skewness	-0.69	-0.92
Internet non-users	Mean	12.48	16.82
	SD	2.12	2.32
	Kurtosis	-0.88	0.77
	Skewness	0.89	0.83
Reliability (Alpha)		0.73	0.71
Test of Homogeneity of Variances		0.32	0.37

The results provided that skewness values and Kurtosis values were less than 1.0 (+/-) which conveyed that the data had a normality. Alpha Reliability result showed high reliability as attention (á= 73) and inattention (á = 71). Homogeneity of variance was also checked on attention (.32), and inattention (.37). The overall results showed the applicability of the tests in the targeted population and also highlighted the appropriateness of parametric statistics. The result accepted hypothesis no -1.

Furthermore, recent research on the relationship between media multitasking and task-switching abilities has been unclear (Alzahabi & Becker, 2013; Minear et al., 2013; Sanbonmatsu et al., 2013), the study explored the relationship between media multitasking and subjective judgements of task switching ability and self-reported distractibility. To address this, we incorporated a subjective report measure of attentional switching (AC-S; Carriere et al., 2013) and distractibility (AC-D; Carriere et al., 2013), both of which were based on modified versions of Derryberry and Reed's (2002) original attentional control scales. Participants on the attentional switching scale reacted to items such as ''After being stopped, I have a difficult time transferring my attention back to what I was doing before." High scores on this scale indicated that it was more difficult to shift attention between tasks. Participants on the distractibility measure replied to phrases such as ''while I am concentrating hard on something, I still get distracted by happenings around me," with higher scores indicating more feelings of distractibility. It should be noted that these scales are measures of perceived shifting and distractibility, not objectively measured skills (Alzahabi & Becker, 2013; Minear et al., 2013; Ophir et al., 2009).

Objective-2: To examine any significant difference in attention and inattention control between *heavy Internet Users and non-users of Mizo Adolescents* samples.

Table-2 showing the mean and significant difference (t-test) between Heavy and non heavy internet users.

Adolescent groups	Attention	Inattention
Heavy internet users	16.14	13.16
Non-heavy Internet users	12.48	16.82
Total	14.31	14.99
t-test (between heavy internet users and non heavy internet users)	21.94*	14.31*

The result in Table-2 displayed that Internet-heavy users scored higher than Non-Internet users on attention control (M=16.14; 12.48; t=21.94; p>.01) and inattention control (M=13.16; 16.82; t=14.31; p>.01) and Anxiety (M=18.18; 11.89; t=21.29; p>.01) at significant .01 level. The result has accepted hypothesis no -2. In a few studies, the use of a mobile phone has been linked to inattention. One possible reason for this link is that the brain is more susceptible to electromagnetic radiation from mobile phones than any other area of the body. Furthermore, people appear to participate in media multitasking because they believe they are well-equipped to do so (Sanbonmatsu et al., 2013) or because it meets particular emotional demands (Wang and Tchernev, 2012).

Objective-3: To examine any significant relationship between attention and inattention variables.

Table- 3: Showing the significant relationship between the dependent variables among the samples'

Dependent Variables	1	2
Attention	1	-.57**
Inattention		1

** significant at the 0.01 level (2 tailed)

The results showed a negative significant correlation between attention and inattention (r= -.57**) which accepted hypothesis no 3 of the study.

Conclusion: From the above results, we can conclude that the Psychometric Properties of the attention and inattention control of the sub-scales of *the Attentional Control Scale (ACS; Derryberry & Reed, 2002)* for the targeted population shows significance, and the obtained overall results showed the applicability of the tests in the targeted population and also highlighted the appropriateness of parametric statistics proving our first hypothesis. We also found that individuals who were exposed to higher levels of internet use reported frequent loss of attention control while performing activities during the day which was not reported by normal non-internet users proving our second hypothesis.

The reliability coefficients emerged to be strong indicating the dependability of the test scales for measurement purposes in the project population (Mizo). Pearson Correlation results show significant negative correlation between attention and inattention meaning when attention decreases, inattention will increase thus proving our third hypothesis.

Limitations

Although, the present study was intended and designed to be a systematic and an authentic research, the present study is not free from limitations. Possible limitation of the study is that since self-report questionnaires were used, participant's social desirability could have influenced their reporting. Another possible limitation of the study is that the study was conducted on middle school to university students, which raise some methodological issues concerning the external validity of the findings for the general population.

Suggestions for further research- It would be worthwhile to test the present findings of the study, generalizing to different groups of the same population and other populations. Further, extended studies by incorporating larger sample size and more repetitive measures of the psychological variables are desirable to be replicated in support of the findings.

Implications of research

The study will provide insight into the levels of problematic internet use and their negative effects among college and university students of Mizoram. The results obtained from this research will contribute to the growing literature of Internet addiction and its related consequences.

The study's findings will have some practical applications and will encourage one to consider focalized solutions. Many students nowadays face a slew of academic

issues as a result of their procrastination and internet-related ideas, feelings, and actions. Many students admit to being aware of their procrastination and say they aim to reduce its frequency in their everyday lives.

The findings obtained in this study can be used to develop training at the individual and group level, developing intervention programmes and arranging workshops for controlling procrastination, internet usage, effective time management, academic motivation, and task-oriented coping techniques.

Significance of the study

The study highlighted the different levels and comorbidity of internet addiction and its effect on attention lapse among college/university students of Mizoram. It also shows that higher levels of internet users experienced more frequent involuntary loss of attention during activities and in the course of their lives.

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