Research Paper

Structural relationships of internet tendency with temperament and character, diurnal preferences, and identity styles as mediated by anxiety

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Abstract

Aim: This study aimed to investigate internet tendency based on temperament and character, diurnal preferences, and identity styles mediated by anxiety among students in Isfahan, Iran. The research population comprised students of Islamic Azad University, Khomeini Shahr Branch, Isfahan. A sample of 384 students was selected via cluster sampling and responded to the Internet Addiction Test (IAT), the Temperament and Character Inventory (TCI), the Morningness-Eveningness Questionnaire, the Identity Style Inventory (ISI), and the Beck Anxiety Inventory. The results showed that self-directedness, normative identity style, diffuse-avoidant identity and novelty-seeking affect internet tendency. Anxiety mediated the relationship of harm avoidance, diffuse-avoidant identity, diurnal preference, and cooperation with internet tendency.

Keywords: Anxiety; Diurnal Preference; Identity Styles; Temperament and Character; Internet Tendency

Introduction

The youth constitute the main users of social networks on the internet and their lifestyles have been greatly influenced by the cyberspace (Xuan & Amat, 2020). The prevalence of internet tendency among teenagers and university students is reported as 0.9% to 33% (Devine et al., 2022). Studies have shown that personality traits play a role in internet tendency (Gervasi et al., 2017). Cloninger's neurobiological model (1987) takes the genotypic aspects of personality as the basis of individual differences in self-regulation cognitive processes (Moreira et al., 2021). Individual differences in the circadian rhythm are determined by the individual's biological clock and specific preferences (Khaleghipour et al., 2014). Based on literature, diurnal preference is associated with internet addiction mediated by depression (Kang et al. 2015). Chou and Lee (2017) noted that users' personality and identity characteristics are associated with how they use the internet. The role of identity and attachment has been stressed in the addiction to online games and social networks (Monacis et al., 2017). According to research, internet tendency increases as anxiety grows (Przepiorka, Blachnio & Cudo, 2021). In their study, Bai et al. (2022) showed that internet addiction is associated with mental health disorders and quality of life. Soulioti et al. (2018) reported that younger internet users have addictive behaviors toward this technology, and there is a moderate relationship between anxiety symptoms and internet addiction. As the excessive use of the cyberspace can lead to psychological and academic problems, it is crucial to examine the antecedents of excessive internet use. Therefore, this study was conducted to respond to the question of whether anxiety mediates the relationship of internet tendency with temperament and character, diurnal preferences, and identity styles.

Methodology

This was descriptive research using structural equation modeling (SEM). The statistical population comprised the students of Islamic Azad University, Khomeinishahr Branch, Isfahan, Iran, in 2021, selected by multi-stage cluster sampling based on an infinite population of 384 people. The research instruments were:

The Internet Addiction Test (IAT)
The 20-item IAT was developed by Young (1996) and is scored on a Likert scale (0 to 4). Total scores range from 0 to 80. The validity and reliability of IAT were reported as 0.88 and 0.72, respectively.

The Temperament and Character Inventory (TCI)
This 125-item inventory was developed by Cloninger (1994) and includes four dimensions for temperament and three dimensions for character. Items are scored 0 or 1. The reliability of its dimensions has been reported with Cronbach's alpha more than 0.68.

The Morningness-Eveningness Questionnaire (MEQ)
This 19-item questionnaire was developed by Horne and Östberg (1976) and consists of three sub-scales, determining the respondents' diurnal preference. Scores range from 16 to 86, with higher scores indicating morningness and lower scores indicating eveningness. Chelminski et al. reported the reliability of MEQ with Cronbach's alpha of 0.78.

The Identity Style Inventory (ISI)
Developed by Berzonsky (1992), ISI is a 40-item inventory evaluating three identity styles. Scores range from 40 to 200 and items are scored from 1 (uncharacteristic) to 5 (characteristic). Its reliability has been reported with Cronbach's alpha above 0.62 for all the three styles.

The Beck Anxiety Inventory (BAI)
This inventory was developed by Beck (1990). It comprises 21 items measuring the severity of anxiety. Scores range from 0 to 63 on BAI. Its test-retest reliability over a one-week interval was reported as 0.75.

Results

The findings on the variables' data distribution showed that the significance level is above 0.05 for anxiety, diurnal preference, and internet tendency, while this assumption was rejected for the other variables; therefore, the data on the variables do not follow a normal distribution. Given that the normality test was not confirmed for most of the variables, SmartPLS software was used for testing the research hypotheses. Variance-based SEM was used to test the main research hypothesis.

Table 1. Regression coefficients of the variables of the model

Description	Effect size	t-statistic	Sig. level
Harm avoidance → anxiety	0.220	2.54	0.011
Harm avoidance → internet tendency	0.146	1.86	0.092
Diffuse-avoidant style → anxiety	0.235	2.38	0.018
Diffuse-avoidant style → internet tendency	0.166	2.88	0.050

Anxiety → internet tendency	0.369	4.31	0.050
Informational identity style → anxiety	0.102	0.89	0.370
Informational identity style → internet tendency	0.06	0.78	0.432
Diurnal preference → anxiety	-0.114	2.00	0.030
Diurnal preference → internet tendency	-0.005	0.50	0.959
Self-directedness → anxiety	-0.163	2.53	0.050
Self-directedness → internet tendency	-0.184	3.73	0.044
Self-transcendence → anxiety	0.075	0.78	0.433
Self-transcendence → internet tendency	0.014	0.14	0.880
Novelty seeking → anxiety	0.029	0.28	0.878
Novelty seeking → internet tendency	0.146	2.47	0.042
Cooperation → anxiety	-0.286	2.24	0.014
Cooperation → internet tendency	-0.154	1.41	0.158
Normative identity style → anxiety	-0.125	1.06	0.278
Normative identity style → internet tendency	-0.174	2.15	0.032
Reward dependence → anxiety	-0.002	0.01	0.985
Reward dependence → internet tendency	-0.078	0.83	0.403
Persistence → anxiety	-0.021	0.20	0.840
Persistence → internet tendency	-0.046	0.56	0.575

According to Table 1, the standardized regression coefficient is 0.220 for the effect of harm avoidance on anxiety, 0.235 for diffuse-avoidant identity style on anxiety, 0.166 for diffuse-avoidant identity style on internet tendency, 0.389 for anxiety on internet tendency, 0.114 for diurnal preference on anxiety, 0.163 for self-directedness on anxiety, 0.184 for self-directedness on internet tendency, 0.146 for novelty seeking on internet tendency, 0.286 for cooperation on anxiety, and 0.174 for normative style on anxiety.

Table 2. The indirect effects of the independent variables on internet tendency mediated by anxiety

Description	Standardized effect size	t-statistic	Sig. level
Harm avoidance → anxiety → internet tendency	0.186	2.097	0.037
Diffuse-avoidant → anxiety → internet tendency	0.191	2.729	0.044
Informational → anxiety → internet tendency	0.040	0.766	0.444

Diurnal preference → anxiety → internet tendency	0.144	2.872	0.034
Self-directedness → anxiety → internet tendency	-0.325	2.485	0.048
Self-transcendence → anxiety → internet tendency	0.029	0.702	0.483
Novelty seeking → anxiety → internet tendency	0.011	0.247	0.805
Cooperation → anxiety → internet tendency	-0.111	2.073	0.039
Normative → anxiety → internet tendency	0.049	0.096	0.333
Reward dependence → anxiety → internet tendency	-0.001	0.017	0.986
Persistence → anxiety → internet tendency	-0.008	0.189	0.850

The mediatory role of anxiety was examined in the relationship of temperament and character, diurnal preference and identity styles with internet tendency. Using Baron and Coney's method (1986) (Table 2), anxiety mediates the relationship of harm avoidance (p=0.037), diffuse-avoidant identity (p=0.044), diurnal preference (p=0.034), self-directedness (p=0.048) and cooperation (p=0.039) with internet tendency. Based on the goodness-of-fit indices of the research model, the data have a proper and adequate fit for measuring the latent variables, and the model estimation results are reliable.

Discussion and conclusion

The personality and identity traits of internet users are associated with anxiety. Novelty seeking affects internet tendency by reinforcing the behavioral activation system and low self-direction affects this tendency by making the individual not have any goals and be dependent on external stimuli and uncertainty avoidance. Based on the model of the incentive theory of motivation, reward and need, cooperation with others and receiving social support reduce the individual's internet tendency by affecting anxiety. Furthermore, eveningness intensifies internet tendency through anxiety and the use of alternative solutions for neutralizing anxious behaviors. According to the neurobiological model, a high level of harm avoidance, which is characterized by traits such as escaping and avoiding dangerous situations, cautiousness, and isolation, acts as a barrier against internet tendency in those who are inclined to use the internet due to anxiety and to neutralize their worries and uncertainty; this group tends to reduce

their anxiety by looking for information online and creating a temporary state of security for themselves. The diffuse-avoidant identity is associated with low self-efficacy and uncertainty about one's cognitive ability; emotion-focused strategies, which are associated with a low level of commitment, increase in people with this identity due to their anxiety, leading to poor processing of personal decisions and conflicts. To reduce this conflict and anxiety, these people become inclined toward temporary activities and transient pleasures such as internet use.

This study had some limitations. Only questionnaires were used to collect data. The hours of internet access, which could have affected the results, were not controlled. Given the mediating role of anxiety in the relationship of diurnal preference, temperament and character and identity styles with internet tendency, recommendations shall be made to curriculum developers for nurturing effective personality traits among students in order to manage their anxiety.

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