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EXAMINING THE RELATIONSHIP BETWEEN INTERNET ADDICTION AND INTERPERSONAL FUNCTIONING; ROLE OF EARLY MALADAPTIVE SCHEMAS AS MODERATOR

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ABSTRACT

Objectives: *To examine the relationship between internet addiction and interpersonal functioning as well as the role of early maladaptive schemas, particularly disconnection/ rejection and impaired autonomy/ performance as moderator.*
Design of Study: *A cross sectional research design was used.*
Place and Duration of the study: *Islamabad and Rawalpindi, during the period of September 2023 to June 2024.*
Sample and Method: *A total sample of 355 young adults aged between 18 to 25years (M=20.8, SD=1.8) was drawn from the universities of Islamabad and Rawalpindi with the help of purposive sampling technique. The following measures were used: Internet Addiction Test, the Young Schema Questionnaire–Short Form and the Interpersonal Relationship Questionnaire–Short Form / FIAT-Q-SF.*
Results and conclusion: *Results showed a significant positive correlation between internet addiction, interpersonal functioning, and early maladaptive schemas, internet addiction and early maladaptive schemas: internet addiction and low interpersonal functioning, early maladaptive schemas and low interpersonal functioning. Furthermore, it highlighted that internet addiction accounted for 7.7 percent of the variance in interpersonal functioning. The outcome of this research indicated that early maladaptive schemas Disconnection/Rejection and Impaired Autonomy/Performance do not moderate this relationship but do predict interpersonal functioning.*

Keywords*: Internet Addiction (IA); Interpersonal Functioning; Early Maladaptive Schemas (EMS); Disconnection/ Rejection (DR); Impaired Autonomy/ Performance; Young Adults*

INTRODUCTION

The Internet is an information and communication medium, popular due to its accessibility. A large number of the population engages with the internet for enjoyable purposes, educational, communal, work, or leisure time activities. Over 5.44 billion people use the Internet worldwide, which amounts to 67.1 percent of the global population (Internet World Stats, 2024). Internet addiction is higher among adolescents and adults in Pakistan (Bajwa & Tahira, 2018). It is a mental health problem emerged during the last decade (Young, 2010) and characterized by behavioral addiction, with no chemical involvement, necessitating interaction of human and machine that can be active like gaming, and social media or passive such as watching movies (Widyanto & Griffiths, 2006). The individuals are more likely to fail in meeting set schedules and spend more than intended time surfing on the internet mediums. According to Young 2008 internet dependence has profound effects on individuals and their surroundings and this behavior also affect individuals at their work places and other domains of life.

Research findings have demonstrated that excessive internet use gives rise to negative effects on psychological health as well as physical health. Internet dependents experience academic, financial, or occupational problems in their day-to-day life but the most prominent and the commonly affected area of life is interpersonal relationships of the users. In Pakistan, it is evident by the reports of respondents themselves and by friends and family in the form of complaints of less communication and time given (Suhail & Bargees, 2006). Internet Addiction leads to mood disturbances that eventually leads to mental health problems and consequences such as anxiety, depression, low-self-esteem, poor communication, poor emotional regulation, and disrupted interpersonal functioning (Zafar et al., 2018).

Interpersonal functioning is defined as the capability and liability of an individual to respond relatively and successfully in the background of his relationship with others (Leising et al., 2011). . Interpersonal functioning is disrupted when a person encounters interpersonal problems that are characterized by any sort of mental and psychological discomfort due to, or related to, the relationship of two individuals or a set of more than two individuals (Mojallal et al., 2015). Internet addiction and excessive virtual media use makes relationships more difficult leading to strain relationships, interpersonal conflicts and neglect of real-life responsibilities which further strains interpersonal functioning (Ahmed, 2023). Individuals with internet addictive behaviors tend to experience

disruptive interpersonal functioning which may lead them to use the internet more as a maladaptive coping mechanism against difficult interpersonal relationships.

Previous research studies stated that daily life stressors and difficulties lead individuals to virtual environments to maladaptive cope with negative affections and the time spent on the virtual environment causes internet addictions (Weinstein et al., 2015). Early maladaptive schemas are an important element that interferes with daily-function. They work at the core level of cognitions, described as extremely broad, fixed, and persistent motifs and mental frames concerning the self of individual and his relationship with others in the surroundings (Young et al., 2003). They emerge early in life, interpreted during the whole life of an individual and are malfunctioned to a considerable degree. Individuals with negative EMSs encounter more negative feelings when they experience difficulties, and they show less motivation in dealing with maladaptive schemas compared to individuals with positive EMSs (Simpson et al., 2018). EMSs repeatedly give rise to heightened pessimistic emotions and feelings with self-defeating behavioral phenomena that are considered to lay the basis for mental health problems, one major symptom of which is difficulty in interpersonal functioning (Young et al., 2003). EMSs are not essentially activated all the time but they become activated when an individual faces unfavorable and discomforting events (Barazandeh et al., 2016). These experiences can result in unpleasant mood i.e. anxiety, sadness, depression and interpersonal conflict, difficult reactions, and emotional dysregulation (Flink et al., 2018; Kunst et al., 2020)

Young (2016) postulated eighteen EMSs categorized under five domains. The present research kept in focus only two of five domains that are 1) Disconnection /Rejection and 2) Impaired Autonomy/Performance. These two domains have been found to have a significant role in addictive behaviors i.e. internet addiction and interpersonal functioning dysregulation.

Individuals identified with themes of rejection from EMSs exhibit low anticipated rejection and low levels of self-esteem in interpersonal relationships when encountering ambiguous stimuli in their environment (Koch, 2002). Individuals with low self-esteem due to past experiences that EMSs, when face difficulties in their interpersonal relationships, they fail to express their emotions and convey their emotional experience, thus their interpersonal functioning worsens and they tend to be more isolated to cope with the stressors in their outside environment. Defectiveness, social isolation, and mistrust abandonment all have been found to have a negative association with the quality of peer

relationships that plays a part in interpersonal functioning (Yoo et al., 2014). Spending excessive hours on the internet may be to avoid the feelings that would otherwise be emotionally discomforting and painful for the individual. They may use the internet to escape their responsibilities and to feel relieved about their psychological distress. This escape behavior can lead to interpersonal conflicts due to irresponsible behavior, lack of effective communication, and avoidance behavior which ultimately significantly affect an individual's interpersonal functioning (Kunst etal., 2020)

Davis's (2001) Cognitive Behavioral Theory of Pathological Internet Use explains the etiology, development, and outcomes related to problematic internet use or internet addiction. He characterizes problematic internet use as more than a behavioral addiction that has a distinct pattern of cognitions and behaviors that result in adverse life outcomes. Generalized problematic internet use proposed by Davis (2001) conceptualizes a multidimensional overuse of the internet itself for various purposes that results in negative and challenging personal and professional outcomes. Individuals, when inclined towards the experience of being online rather than face-to-face interpersonal communication, they develop problems in their overall interpersonal functioning. Some individuals may find themselves hooked to virtual space so much that they forget about their close relationships, responsibilities and commitment which results in strained interpersonal relationships and difficulty in regulating interpersonal functioning.

Furthermore, The Brain Reward Model attempts to explain internet addiction through reinforcement experienced by individuals. It involves the surge of dopamine when certain areas of the brain are stimulated by activities such as video games, movies, chatting, texting, and general surfing. The rise of dopamine levels causes a reinforcing effect for the behavior with elated mood and pleasure outcomes. This rewarding nature of internet activities makes individuals addicted to the experience of it (Chiara, 2000).

Additionally, previous studies have examined that individuals use the internet as a way to compensate for their unmet emotional needs. Internet addicts spend long hours over the internet and like to conceal themselves in a vast and anonymous world to engage with others in a safer way as they face difficulty in offline relationships. Once the users establish relationships in cyberspace they engage with the companions to fulfill their unmet desires. The urge to form online relationships abandons the real world to the extent that close, tangible persons become worthless and virtual companions take up the space in mind in purely text-based society. This behavior sufficiently disrupts interpersonal

functioning and creates difficulties for the individuals and others in the environment. They use virtual space to feel mental satisfaction and sense of fulfillment, to create close relationships and to experience emotional closeness to others (Caplan & High, 2007).

The major purpose of this study was to identify early maladaptive schemas involved in moderating the relationship between internet addiction and interpersonal functioning in Pakistani young adults. Few to no studies have been found studying the intricate relationship of these constructs altogether. EMSs are explored rarely in the context of Pakistani culture. This research bridges the gap in understanding the complex interplay between internet addiction, EMS, and interpersonal functioning; particularly focusing on two major domains of early maladaptive schemas that are disconnection/rejection and impaired autonomy/performance. The hypotheses of the study are as follows:

1. There is a relationship between internet addiction, interpersonal functioning and Early Maladaptive Schemas in young adults
2. Internet addiction predicts low interpersonal functioning among young adults.
3. Early Maladaptive Schemas : disconnection /rejection and impaired/autonomy performance have a moderating effect on the relationship between internet addiction and interpersonal functioning

METHOD

The present study was intended to investigate the relationship between internet addiction and interpersonal functioning as well as the role of early maladaptive schema disconnection/rejection and impaired autonomy/ performance as moderator among young adults from universities of Islamabad and Rawalpindi, Pakistan**.**

Participants

The study was conducted on 355 adults of age 18 to 25, it included both male and female from government and private universities of Islamabad and Rawalpindi such as Shifa Tameer e Millat University Park Road and H-8 campus, NUST, Quaid e Azam University, Islamic International University, Bahria University, Comsats University, and Rapha International University. People who did not give consent or were diagnosed with mental disabilities were excluded.

Measures

The following measures were used:

Demographic Questionnaire

The demographic questionnaire was used to collect background information from participants and it included information related to age, gender, marital status, no. of siblings, birth order, family system, and purpose of internet usage and duration of internet usage of the participant**.**

Internet Addiction Test

The Internet Addiction Test (Young, 1998)

The Internet Addiction Test was constructed by Young in 1998 to measure the presence and severity level of internet dependency. It is a 5-point likert scale and consists of 20 items which measure the severity that includes mild, moderate, and severe internet addiction. The total score is 100 points. The higher the score the more severe the problem. 0-30 score is considered as normal internet usage; 31-49 signals the presence of a mild level of internet addiction; 50-79 reflects the presence of moderate level; and 80-100 suggests severe dependence upon the internet. The value of Cronbach's alpha i.e. .74 indicates good reliability.

Interpersonal Relationship Questionnaire Short-Form (FIAT -Q- SF) (Callaghan, 2014)

Interpersonal Relationship Questionnaire Short-Form (FIAT -Q- SF) was developed by Callaghan in 2014. It is a 6-point likert scale consisting of 32 items and has 6 subscales. The subscales measure interpersonal intimacy, disagreement, connection, conflict, emotional experience and expressing emotions respectively. It is used to measure overall interpersonal functioning. The areas of interpersonal functioning that are covered in this questionnaire with the help of subscales are 'interpersonal intimacy' which includes the first 8 items (1, 2, 3, 4, 5, 6, 7, 8), 'disagreement' it has 7 items (9, 10, 11, 12, 13, 14, 15), 'connection' it comprises of 4 items which are reverse scored (16, 17, 18, 19), 'conflict' it has 3 items ((20, 21, 22), 'emotional experience', it includes 5 items. (23, 24, 25, 26, 27) item number 23, 25, and 27 are reverse scored, and 'expressing emotions' has 5 items (28, 29, 30, 31, 32). Interpersonal Relationship

Questionnaire Short-Form (FIAT -Q- SF) has Cronbach's alpha coefficient value of .7 which shows appropriate reliability**.**

Young Schema Questionnaire-short form (Young & Brown, 1998)

The Young Schema Questionnaire-short form was constructed by Young and Brown in 1998. It is a shorter inventory which measures 15 early maladaptive schemas. But in our study the following two subscales were used: disconnection/ rejection and Impaired Autonomy/ performance. The Young Schema Questionnaire-short form has a Cronbach's alpha value of .74 which suggests appropriate reliability

Procedure

First of all, permission for the conduction of the research was obtained from the Preliminary Ethical Research committee and No Objection Certificate (NOC) was acquired from the Head of the Department of Clinical Psychology, Shifa Tameer e milat University, Islamabad. Approval was taken from respective universities for the purpose of gathering data and the participants were approached with the help of the university's authority. Purpose of the study was shared with the participants and informed consent was obtained. Individuals who gave the consent were requested to fill the following questionnaires; The Internet Addiction Test', Interpersonal Relationship Questionnaire Short-Form (FIAT -Q-SF), and Young Schema Questionnaire-short. It took 25 minutes to complete the questionnaire and in the end their cooperation was acknowledged.

Statistical Analysis

The data was analyzed by using SPSS version 26. In data screening the missing values and incomplete responses were discarded. Descriptive statistics, correlation, linear regression analysis and moderation were applied.

RESULTS

Descriptive Statistics of socio-demographic variables

Table 1
Socio-demographic Factors of the participants (N = 355)

Variables		*f*	*%*
Age (M=20.8, SD=1.8)	-	-	-
Gender	Male	60	16.9
	Female	295	83.1
Ethnicity	Punjabi	192	54.1
	Pashtun	50	14.1
	Sindhi	7	2.0
	Baloch	2	.6
	Saraiki	8	2.3
	Balti	3	.8
	Kashmiri	31	8.7
	Other ethnic groups	62	17.5
Marital Status	Married	16	4.5
	Unmarried	338	95.2
Family System	Joint Family	87	24.5
	Nuclear Family	268	75.5
Birth Order	1st born	109	30.7

	2nd born	57	16.1
	Middle child	94	26.5
	Last born	83	23.4
	Only child	11	3.1
Purpose of internet use	Leisure	19	5.4
	Education	31	8.7
	Work	20	5.6
	All of the above	285	80.3
Time Duration	1-2 hours	29	8.2
	3-4 hours	125	35.2
	5 hours and above	201	56.6

Note, N = 355

The above table presents descriptive statistics of the socio-demographic characteristics of the participants. The mean age of the participants in the study was 23 and the age range of the participants included in the study was 18-25 which consisted of the young adults from the Pakistani universities. It had been found that about 83.1% were female participants while only 16.9% were males. Regarding ethnicity, the sample comprised of 54.1% individuals from Punjabi background, 14.1% from Pashtun descent, 2.0 from Sindhi origin, .6% from Baloch descent, 2.3% individuals identified as Siraiki, .8% were Balti, 8.7% were of Kashmiri origin, and 17.5% fall in the category of other ethnicities. Further, out of 355 participants, 16 (4.5%) were married and 338 (95.2) were unmarried. Moreover, 24.5% belonged to the joint family system while 75.5% belonged to the nuclear family system. Further this study revealed that 30.7% of our sample was of 1st born, 16.1% of 2nd born, 26.5% composed of the middle children, 23.4% identified as last born, and 3.1% were only children in their families. The purpose of the internet usage was found to be 5.4% for leisure activities, 8.7% for educational purposes, 5.6% for work related stuff, and 80.3% for all of the mentioned above. The findings stipulate that 8.2% of the participants used the internet for 1-2 hours, 35.2% used for 3-4 hours, 5 hours and above was used by 56.6% of the sample.

Psychometric properties of Internet Addiction Test, Interpersonal Relationship Questionnaire Short-Form (FIAT -Q- SF), and Young Schema Questionnaire-short form

Table 2

Cronbach's alpha reliability of the Internet Addiction Test, Interpersonal Relationship Questionnaire Short-Form (FIAT -Q- SF), and Young Schema Questionnaire-short form (N=355)

Scales	*M*	*SD*	*α*	*K*
IAT	76.59	30.44	.74	20
FIAT -Q- SF	201.8	34.85	.70	32
YSQ - SF	242.77	76.28	.74	45
Disconnection/ Rejection	140.74	47.32	.75	25
Impaired Autonomy / Performance	102.03	35.87	.74	20

Note, M = mean, SD = Standard deviation, α = Cronbach's Alpha, IAT = Internet Addiction Test, FIAT-Q-SF = *Interpersonal Relationship Questionnaire Short-Form, YSQ - SF =Young Schema Questionnaire-short form*

The reliability analysis of the internet addiction test resulted in a Cronbach's alpha coefficient of .74, which suggests favourable internal consistency. For the Interpersonal Relationship Questionnaire's Short-Form (FIAT-Q-SF), the Cronbach's alpha was .70, indicating satisfactory internal consistency. Similarly, the Young Schema Questionnaire-Short Form demonstrated a Cronbach's alpha coefficient of .74, confirming good reliability. The subdomains of the Young Schema Questionnaire assessed in our study were disconnection/rejection and impaired autonomy/performance. Separate reliability analyses for these subdomains yielded Cronbach's alpha values of .75 for disconnection/rejection and .74 for impaired autonomy/performance, both indicating good internal consistency.

Correlation Between Internet Addiction, Early Maladaptive Schemas (EMS) and Low Interpersonal Functioning

Table 3

Pearson correlation between Internet Addiction, Early Maladaptive Schemas, and Low Interpersonal Functioning among young adults (N=355)

Variables	*M*	*SD*	*1*	*2*	*3*
1. Internet Addiction	36.69	14.38	-	.47**	.28**
2. Early Maladaptive Schemas	121.38	38.14	.47**	-	.55**
3. low Interpersonal Functioning	100.94	17.42	.28**	.55**	-

***. Correlation is significant at the 0.01 level (2-tailed)*

Table 3 demonstrated the values of the Pearson correlation coefficient between internet addiction, low interpersonal functioning and early maladaptive schemas (EMS). The table illustrate a significant positive correlation between internet addiction and early maladaptive schemas (r = .47**), internet addiction and low interpersonal functioning (r = .28**). Likewise, there is a significant positive correlation between early maladaptive schemas and low interpersonal functioning (r = .55**). The analysis depicted that as the severity of internet addiction increases so does the interpersonal functioning worsen. Similarly, more early maladaptive schemas lead to low interpersonal functioning.

Table 4

Simple Linear Regression for Internet Addiction Predicting Low Interpersonal Functioning Among Adults (N=355)

Variables	*B*	*SE*	β	*T*	*p*	R^2
Constant	88.46	2.43		36.26	.00	.07
Internet Addiction	.34	.06	.28	5.49	.00	

Note = B; unstandardized beta, S.E; standardized error, β; standardized beta, p; significance level

Table 4 shows that an increase in internet addiction leads to low interpersonal functioning as a significant regression equation was found F (1, 351) = 30.24, p < .05. The result of the regression indicated that internet addiction predictor explained 7.7 percent of variance in interpersonal functioning.

Table 6

Moderation Analysis to explore the moderating role of early maladaptive schema; disconnection/ rejection and impaired autonomy/ performance between internet addiction and interpersonal functioning (N=355)

Model	*t*	*p*	R^2	ΔR^2	*F*
Model 1					
IA	.49	.62	.26	-	41.9
Disconnection/ Rejection	4.25	.00			
IA * DR	.09	.92		.00	.00
Model 2					
IA	1.33	.18	.25		40.23
Impaired Autonomy/ performance	4.93	.00			
IA * Impaired Autonomy/ performance	-.73	.46		.001	.53

Model 1 suggests that disconnection/ rejection not act as a moderator in the regression equation ($t = .09$, $p = .92$, $p > .05$). It proposes that disconnection/ rejection schemas not render a role to buffer or attenuate the effect of internet addiction on interpersonal functioning. Model 2 indicates that the moderator 'impaired autonomy/performance' is not significant ($t = -.73$, $p = .46$, $p > .05$). This suggests that the EMS related to impaired autonomy/performance and internet addiction do not have a substantial impact on interpersonal relationships.

DISCUSSION

The current study examined the relationship of internet addiction, interpersonal functioning, and early maladaptive schemas.

Numerous studies have established a link between internet addiction and interpersonal functioning, highlighting the fact that in comparison to non-internet addicts, internet addicts have poor interpersonal functioning, mainly concerning poor family relationships, more family conflicts, and poor emotional communication with family and peers (Hou et al., 2019). Such poor relationships, especially with family, deprive the individual of emotional warmth and social control hence, individuals seeking emotional support and warmth from the online platforms (Li et al., 2018). This loss of control weakens an individual's interpersonal connections and isolates them more. There are studies that show a correlation between excessive internet use and social withdrawal. The rise in social media and its increasing use among youth contributes further to virtual connections rather than connecting in-person (Sun, 2020). Individuals more prone to negative emotions such as anxiety, and loneliness are more likely to seek and form online friendships, ultimately lacking real life social connections. This cycle creates a malicious loop where individuals having poor social connections fall into this loop, and hence lose the ability to form healthy interpersonal connections. Finally, the discussion highlights the link between communication difficulties, low self-esteem, and IA (Sun, 2020). Such virtual or online friendships are more preferable for individuals with issues forming real time friendships. This further weakens their ability to form healthy, in-person relationships. Studies have shown that internet addiction (IA) is the most severe manifestation of addiction that correlates with activation of early maladaptive schemas (EMS) and problematic internet use (PIU) (Ostovar et al., 2021b).

The results strongly imply that there exists a significant correlation between internet addiction, low interpersonal functioning and early maladaptive schemas (EMS). These findings support the hypothesis, and indicate that an increase in internet addiction leads to deterioration of interpersonal functioning; meaning internet addiction significantly predicts poorer interpersonal relationships. These results indicate a bidirectional association where worsening of interpersonal relationships contributes to increased internet addiction and vice versa.

This study investigated the moderating effect of early maladaptive schemas (EMS) on the relationship between internet addiction and interpersonal functioning in young adults, focusing specifically on the EMS domains of disconnection/rejection and impaired autonomy/performance. The analysis revealed that interaction between internet addiction (IA) and disconnection/rejection schema was not significant, also the interaction between internet addiction and the impaired autonomy/performance schema failed to reach significance. Hence as shown by the results both the schemas of impaired autonomy/performance and disconnection/rejection did not significantly moderate the relationship between internet addiction and interpersonal functioning.

The analysis results furnish strong and compelling empirical proof that there exists a significant relationship between early maladaptive schemas and internet addiction as per the analysis. The results indicated that the presence of EMS significantly predicted interpersonal functioning. This shows that more early maladaptive schemas lead to low interpersonal functioning of an individual. These results suggest the detrimental impact of early maladaptive schemas on interpersonal relationships. The individuals with significant challenges in interpersonal relationships will have higher maladaptive schemas.

Conclusion

In conclusion, this study demonstrated a significant positive correlation between internet addiction, interpersonal functioning, and early maladaptive schemas (EMS). Additionally, the findings suggest that internet addiction negatively impacts interpersonal functioning. While the moderating effect of EMS did not reach statistical significance, it did have predictive value for interpersonal functioning. Overall, this research provides valuable insights into

the complex relationship between internet addiction, interpersonal functioning, and EMS.

Limitations and Recommendations

Certain limitations of this study could be addressed in future research. The data showed that the moderation effect of early maladaptive schema of disconnection/rejection and reduced autonomy/performance were insignificant. The potential reason for this non-significant data of EMS is partially because of the length of the questionnaires used, as they were extensive and tiresome for participants and it was not translated in the participant's language. Also, due to social desirability factors, the results are somewhat biased thus, jeopardizing the generalizability of this research study. Moreover, data was collected in an uncontrolled setting, which may have included compounding variables for the participants, for instance, other stressors might have been involved and impacted the responses of participants.

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