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THE ASSOCIATION BETWEEN PROBLEMATIC INTERNET USE, DEPRESSIVE SYMPTOMS, SELFESTEEM, AND PERSONALITY TRAITS

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This thesis is submitted in partial fulfilment of the requirements for the degree of Master of Science in Clinical Psychology

Under the Supervision of Dr. Zahir Vally

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Declaration of Original Work

I, Basma Mubarak Yaslam Bensumaidea, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled "*The Association between Problematic Internet Use, Depressive Symptoms, Self-Esteem, and Personality Traits*", hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Zahir Vally, in the College of Humanities and Social Sciences at UAEU. This work has not previously been presented or published, or formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

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Abstract

A number of international studies have investigated the association between problematic internet use (PIU), personality traits and psychopathology, however, despite their widespread prevalence, such investigations in the Middle East region remain rare. Therefore, this study examined the relationship between PIU and depression, self-esteem, and personality traits in a sample of 350 university students both males and females, aged between 17 and 33 years (m_{age}=20.69, SD=2.14), who were resident in United Arab Emirates (UAE). Participants completed several assessments of socio-demographic variables, a validated measure of PIU, depression, self-esteem, and a measure of their personality traits. A total of 75.1% of the sample were determined to engage in behaviors reflective of PIU. The results of a series of bivariate correlations and a hierarchical linear regression confirmed that PIU was indeed predicted by duration of time spent online, elevated scores on depression, and by clusters A and C of the personality assessment. This study's results largely concur with those of preliminary investigations of PIU in the UAE in relation to the association between PIU and psychopathology. Moreover, this study makes a novel contribution to the literature by being the first study in this region of the world to explore the relationship between PIU and personality traits. The significant findings of this study in relation to personality lends support to the theorized reasons motivating the development of PIU; that individuals with particular personality traits are especially prone to develop addictive tendencies to the internet as the online medium enables the satisfaction of particular social needs in the virtual realm that would otherwise go unmet or avoided in real-world interactions with others.

Keywords: Problematic internet use, Depression, Self-esteem, Personality traits, Psychopathology, Middle East.

Title and Abstract (in Arabic)

العلاقة بين الاستخدام المشكل للإنترنت، وأعراض الاكتئاب، وتقدير الذات، وسمات الشخصية

الملخص

بحثت العديد من الدراسات الدولية في العلاقة بين الاستخدام المشكل للإنترنت وسمات الشخصية والأمراض النفسية. لكن بالرغم من انتشارها على نطاق واسع، لا تزال مثل هذه الأبحاث نادرة في منطقة الشرق الأوسط. لذلك بحثت هذه الدراسة في العلاقة بين الاستخدام المشكل للإنترنت والاكتئاب وتقدير الذات وسمات الشخصية في عينة من 350 طالبًا جامعيًا من كلا الجنسين، تتراوح أعمارهم ما بين 17 و33 عامًا (m_{age}=20.69, SD=2.14)، من مقيمين دولة الإمارات العربية المتحدة. أكمل المشاركون العديد من التقييمات كالمتغيرات الاجتماعية والديموغرافية ومقاييس للتحقق من الاستخدام المشكل للإنترنت والاكتئاب وتقدير الذات، وقياس سمات شخصيتهم. وجدت نتائج هذه الدراسة أن 75.1% من العينة منخرطين في سلوكيات تعكس الاستخدام المشكل للإنترنت. وأكدت أيضا نتائج تحليل الارتباط الثنائي (bivariate correlations) والانحدار الخطي الهرمي (hierarchical linear regression) أن الاستخدام المشكل للإنترنت تم توقعه من خلال مدة الوقت المستغرقة في استخدام الانترنت، وارتفاع في درجات الاكتئاب، وزيادة القيم عبر المجموعتين أ (A) و ج (C) لمقياس الشخصية. تتوافق نتائج هذه الدراسة إلى حد كبير مع الدراسات الأولية للاستخدام المشكل للإنترنت في دولة الإمارات العربية المتحدة وعلاقاتها مع الأمراض النفسية. بالإضافة إلى ذلك، تقدم هذه الدراسة مساهمة جديدة للدراسات السابقة من خلال كونها أول دراسة في هذه المنطقة من العالم تكشف العلاقة بين الاستخدام المشكل للإنترنت وسمات الشخصية. تدعم النتائج الدالة إحصائيا المتعلقة بالشخصية الأسباب النظرية التي تحفز الاستخدام المشكل للإنترنت، حيث أن الأفراد الذين يتمتعون بسمات شخصية معينة يميلون بشكل خاص إلى تحفيز ميول الإدمان على الإنترنت، مما يجعل الإنترنت وسط لتلبية احتياجات اجتماعية معينة في المجال الافتراضي لم يتم تلبيتها أو تم تجنبها في التفاعل الواقعي مع الآخرين.

مفاهيم البحث الرئيسية: الاستخدام المشكل للإنترنت، الاكتئاب، تقدير الذات، سمات الشخصية، الأمراض النفسية، الشرق الأوسط.

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Dedication

To the greatest father, Mubarak Bensumaidea

To my beloved mother, Naeema Bensumaidea

To my soulmate, Almaha Alali

And everyone who wished the best for me

Without whom none of my success would be possible

Table of Contents

List of Tables

List of Abbreviations

CESD-10	Center for Epidemiologic Studies Depression Scale
PIU	Problematic Internet Use
PDQ-4	Personality Diagnostic Questionnaire -4
PIUQ-SF-9	Problematic Internet Use Questionnaire Short Form
RSES	Rosenberg Self-Esteem Scale
UAE	United Arab Emirates
UAEU	United Arab Emirates University

Chapter 1: Introduction

1.1 Overview

The internet plays a major role in shaping the lifestyle. While the rate of internet users is rapidly expanding around the world (Shek & Yu, 2012), the ITU predicted that 53.6% of the global population are using the internet by 2019. Moreover, 98.5% of the population of the United Arab Emirates now have access the internet, and this form of communication has now become an indispensable tool that eases the lives (ITU, 2018).

Despite the advantages that clearly accompanies using the Internet, for example, the provision of educational information and the facilitation of social communication (Jung et al., 2014), there are many problems that may ensue because of inappropriate use of the internet. Problematic Internet Use (PIU) has been defined as 'the individual's inability to be in control of their internet use, leading to feeling distressed and functional impairment in their daily activities' (Shapira, Goldsmith, Keck, Khosla, & Mcelroy, 2000; Young, 1999). Another definition of PIU proposed by Beard and Wolf (2001) defines PIU as 'the conditions where internet use creates psychological, social, educational and work difficulties in the person's life'.

There are many concepts that have been used to describe the problematic use of the internet such as computer addiction, internet addiction disorder, internetomania, and pathological internet use (Bai, Lin, & Chen, 2001; Beard & Wolf, 2001; OReilly, 1996; Shaffer, Hall, & Bilt, 2000). Some theories have been proposed in relation to PIU. First, problem behavior theory, which analyzes the structure of problematic behavior in young adults based on three main systems which are personality,

environment, and behavioral system (Jessor, 1987; Jessor, Costa, Krueger, & Turbin, 2006). Furthermore, excessive use of the internet may occur as a mechanism of stress reduction in the motivation of behavioral maintenance (Kim & Davis, 2009). Secondly, cognitive behavioral theory, which was introduced by Davis (2001) proposes that psychological problems such as loneliness and depression causes individuals to develop maladaptive internet related thoughts and behaviors, that leads to negative outcomes, such as cognitive preoccupation. Cognitive preoccupation refers to obsessive thought patterns regarding internet use.

1.2 Statement of the Problem

PIU has been found to have an association with a variety of negative health issues, for example increased depressive symptoms were found to be associated with high time consumption in online activities, mainly shopping and gambling, whereas chatting, communication and email were found to be positively associated with mental health (Morgan & Cotten, 2003). However, recent findings show an overall negative influence of online networking and wellbeing, indicating that normal internet consumption could turn into being problematic over a period of time (Sabatini & Sarracino, 2017).

Considerable evidence exists that has shown PIU to be associated with a variety of negative health outcomes in both adolescents and adults (Ko, Yen, Yen, Chen, & Chen, 2012), as well as detrimental mental health outcomes such as depression (Vally, 2019), anxiety (Kim et al., 2016), sleep disorders (Younes et al., 2016; Chen & Gau, 2016) and personality disorders (Zadra et al., 2016). Despite this mounting evidence of its association with established psychopathological constructs, PIU has still not been classified as a clinical disorder in the current iteration of the DSM (APA, 2013).

In comparison to other samples, substantially less is known about young adults attending universities, who some have argued (Vally, 2019) are at particular risk for engagement in PIU. Moreover, research shows that 90% of internet users in the United States are aged between 18 and 29 years (Perrin, 2015), thus highlighting the need for further research on this emerging mental health issue within this age group.

Research that where conducted on social media or social interaction found that females tend to compare themselves on physical attractiveness aspects through using online photos which is related to self-relevant and self-worth threatening. Furthermore, Starr and Davila (2008) indicated that there is a strong association between adolescent girls have higher percentages of depression in general and reassurance-seeking behaviors.

The difference between males and females has shown in their engagement in different types of online activities which is represented in the negative consequences in each (Kuss & Lopez-Fernandez, 2016). In addition, recent studies suggest that women with PIU are associated with online shopping (Rose & Dhandayudham, 2014) or social networking (Rehbein & Mößle, 2013). On the other hand, men with PIU are associated with video gaming (King, Delfabbro, Zwaans, & Kaptsis, 2013), gambling (Tsitsika, Cristelis, Janikian, Kormas, & Kafetzis, 2010).

Furthermore, with regard to gendered differences, males are found to be roughly 5 times more likely to report PIU compared to females (Cao & Su, 2007; Mei, Yau, Chai, Guo, & Potenza, 2016). In addition, several studies have indicated that internet addiction is more strongly associated with males than females (Bakken, Wenzel, Götestam, Johansson, & Øren, 2009; Lin, Ko, & Wu, 2011; Younes et al., 2016), especially in relation to activities such as online sex and online games (Chou,

Condron, & Belland, 2005). On the other side, some researchers found that young females were more likely to report PIU compared to men (Derbyshire et al., 2013; Kitazawa et al., 2018). In contrast, some studies have found no significant gendered in relation to the prevalence of PIU among young adult (Pezoa-Jares, Espinoza-Luna, & Medina, 2012; Yücens & Üzer, 2018; Laconi, Vigouroux, Lafuente, & Chabrol, 2017; Vally, Laconi, & Kaliszewska-Czeremska, 2020).

1.3 Literature Review

1.3.1 Depression and PIU

Depression is one of the most prevalent mental disorders in the world (World Health Organization, 2020). Carli et al.'s (2012) review of 20 studies reports that 75% of studies showed a significant association between depression and PIU. Adolescents with PIU are at increased risk for developing depression and poor social skills and adaptation. In research conducted by Lam and Peng (2010), which examined the effect of pathological internet use, adolescents who engaged in addictive internet use were at increased risk for developing depression when assessed at follow up (Caplan, 2003; Gámez-Guadix, 2014; Park, Hong, Park, Ha, & Yoo, 2013), indicating that depression is a major predictor of PIU. Furthermore, one of the most interesting studies conducted by Balhara et al. (2019) which examine the correlates of PIU in a sample of young adults from eight countries, including the UAE, concluded that psychological distress such as depression and anxiety symptoms can lead to elevating the probability of having PIU and this appears to occur across divergent cultures.

The association between PIU and depressive symptoms can be explained through many aspects such as the quantity of internet and social media use, comparing

one's life to others (Chou & Edge, 2012), social isolation (Caplan & High, 2011), and online bullying (Best, Manktelow, & Taylor, 2014). In contrast, some scholars such as Valkenburg and Peter (2009) have found that using technology and the internet is associated with positive outcomes such as increased social support, improved relationship quality, and higher self-esteem. Regarding social networking site consumption, it was found the type of interactions and functions for which social networks are used, rather than quantity/ frequency of use, was essential in determining whether positive or negative influences were likely to ensue (Davila et al., 2012).

Individuals with mood disorders tend to use maladaptive strategies to cope with or to avoid stressful life events and personal problems which may lead to the development of PIU (Davis, 2001; Liu, Gentzler, George, & Kovacs, 2009; Park et al., 2013). Furthermore, PIU connected with mood regulation which they use the internet to reduce feelings of isolation and anxious, an adjust their emotions instead of using illegal substances (Dong, Lu, Zhou, & Zhao, 2011; Spada, Langston, Nikčević, & Moneta, 2008).

Individuals who experience internet addiction are more prone to suffer from insomnia (An et al., 2014; Chen & Gau, 2016; Younes et al., 2016). Yoshimura, Kitazawa, Kishimoto, Mimura, and Tsubota (2016) suggested it may be connected to them using the internet in their beds and impacting their sleep negatively. Davis (2001) suggested that there are some distal factors related to PIU and depression such as maladaptive cognitions regarding individual's negative view of the self and the world which might be related to their personality traits (Kuru et al., 2018).

Regarding gender, Laconi et al. (2017) and Gámez-Guadix (2014) found that males and females showed no difference when the relationship between PIU and

depression were examined. In contrast, Vally (2019) also examined this relationship among a sample of young adults and the results indicated that depressive symptoms were more prevalent among females than males. Furthermore, the results of Othman and Lee (2017) in Malaysia indicated that depression in males impacted their internet use to a problematic level.

1.3.2 Self-Esteem and PIU

Self-esteem refers to an individual's point of view regarding himself and how an individual appraises her/his self-concept (Burger, 2006). A number of studies have found a strong relationship between self-esteem and internet addiction (Richter, Brown & Mott, 1991; Younes et al., 2016), specifically, that individuals with low self-esteem were at higher risk for the development of PIU (Kim & Davis, 2009; Vally, 2019; Yücens & Üzer, 2018).

Longitudinal research has found that individuals with low self-esteem are prone to health problems, due to poor quality of relationships, in addition to their low self-esteem (Stinson et al., 2008). Low levels of self-esteem result in self-distrust, loss of control and possibly failure. Research has found that individuals with low self-esteem have a high possibility of having difficulties controlling PIU behavior, and facing the differences between the reality and ideals (Greenberg, Lewis, & Dodd, 1999).

1.3.3 Personality and PIU

Personality disorders appear to act as an important risk factor for the development of PIU, especially in adults who have already stabilized their personality traits (Morey & Hopwood, 2013). A study conducted by Benton, Robertson, Tseng,

Newton, and Benton (2003) reported that college students who visited university counseling units were suffering from severe psychological obstacles such as personality disorders. In France, there are significant differences regarding gender and psychopathological personality traits. Women were more likely to report borderline, histrionic, dependent traits, while men more frequently reported antisocial, narcissistic, paranoid, schizotypal, obsessive compulsive, and schizoid personality traits (Jane, Oltmanns, South, & Turkheimer, 2007).

Comparing between the varying personality clusters defined by the DSM-IV, Cluster B and C appear to exhibit the strongest relationship with PIU (Laconi, Andréoletti, Chauchard, Rodgers, & Chabrol, 2016), while cluster A traits appear to show no significant relationship with PIU (Sepehrain & Loft, 2011). Problematic internet users exhibit high rates of pathological personality traits such as borderline personality traits, avoidant, obsessive compulsive traits (Bernardi & Pallanti, 2009), antisocial (Laconi et al., 2016), narcissistic (Black, Belsare, & Schlosser, 1999), and schizotypal personality traits (Truzoli, Osborne, Romano, & Reed, 2016).

1.4 Purpose of the Study

Despite many studies having been conducted on PIU worldwide, the issue has received significantly less investigation in samples from the Arabian gulf. This research study seeks to address this omission in the literature by contributing to our understanding of PIU and its psychological correlates in a sample if young adults from the UAE. The main objective is to explore the prevalence of PIU among UAE Nationals' Young Adults. The second objective of this research study is to investigate the relationship between PIU and depression, self-esteem and personality traits via a cross-sectional design.

1.5 Hypotheses

This study poses the following hypotheses:

Hypothesis 1 (H1): PIU will be highly prevalent in this sample in comparison to prevalence rates reported in the literature.

Hypothesis 2 (H2): PIU will be positively associated with time spent online.

Hypothesis 3 (H3): PIU will be positively associated with depression.

Hypothesis 4 (H4): PIU will be negatively associated with self-esteem.

Hypothesis 5 (H5): PIU will be positively associated with pathological personality traits, including each of the sub-components of the overall personality disorder measure (i.e., clusters A, B, and C).

Chapter 2: Methods

2.1 Participants

Participants (n=350) were recruited using a convenience sampling method which were undergraduate and graduate students from United Arab Emirates University (UAEU) from different majors. The participants' ages ranged from 17 to 33 years of age (m_{age}=20.69, SD=2.14) and all were Emirati citizens. All participants were given the choice whether or not to participate with no coercion and were offered one bonus mark in return for their study participation.

The sample comprised primarily females (n=264, 75.4%), while the remaining 24.6% were male (n=86). Most of the sample were single (n=322, 92%), while the remainder were married (n=28, 8%). In terms of the daily time spent online, this ranged from 1 hour daily to a total of 24 hours (m_{hours}=7.54, SD=4.12).

2.2 Measures

2.2.1 Socio-Demographic Questions

Participants self-reported their age, gender, marital status, academic year, and the number of hours that they have spent on the internet per day.

2.2.2 Problematic Internet Use Questionnaire Short Form (PIUQ-SF-9)

PIU was measured using the Problematic Internet Use Questionnaire Short Form (Koronczai et al., 2011) which is a short form of the PIUQ-18 (Demetrovics, Szeredi, & Rozsa, 2008). The PIUQ-SF-9 measures three different dimensions of PIU. Firstly, the obsession dimension refers to obsessive and overthinking about the

internet, and whether the lack of the internet might cause withdrawal symptoms. Secondly, the neglect dimension reflects on neglecting basic needs and everyday activities. Finally, the control disorder dimension taps whether the participants experience difficulties in managing internet use (Koronczai et al., 2011; Demetrovics et al., 2016). The range of responses vary from 1 "never" to 5 "always", and the overall score can range from 9 to 45. Scores equal to or higher than 22 is suggestive of significant PIU (Koronczai et al., 2011). In the present study, Cronbach's alpha for the PIUQ-SF-9 was 0.85.

2.2.3 Center for Epidemiologic Studies Depression Scale (CESD-10)

The CESD-10 is a self-report measure used to measure depressive symptoms over the preceding week (Andresen, Malmgren, Carter, & Patrick, 1994). Participants are asked to respond to the 10 items by using a scale that ranges from 0 (rarely or never) to 3 (most of the time or every time). According to Andresen et al. (1994), depressive symptomatology is present when the scores are equal to or higher than 10. In the present study, Cronbach's alpha for the CESDS-10 was 0.77.

2.2.4 Rosenberg Self-Esteem Scale (RSES)

The RSES (Rosenberg, 1965) was used to measure global self-esteem by capturing how individuals feel about themselves. Participants were asked to respond to the 10 items by using a 4-point Likert scale that ranged from 1 (strongly agree) to 4 (strongly disagree). Example statements include "I wish I could have more respect for myself" and "I feel I do not have much to be proud of". The presence of low self-esteem is indicated when the overall score is lower than 31 (Chabrol et al., 2004). In the present study, Cronbach's alpha for the RSES was 0.80.

2.2.5 Personality Diagnostic Questionnaire - 4 (PDQ-4)

The PDQ-4 (Bouvard, 2002; Hyler, 1994) is a self-report questionnaire that consists of 99 items of true/false statements that assesses the personality criteria of 10 personality disorders contained in the DSM IV (APA, 2013). In this study only three clusters were used, Cluster A (paranoid, schizoid, and schizotypal), Cluster B (antisocial, borderline, histrionic, and narcissistic) and Cluster C (avoidant, dependent, and obsessional compulsive). According to Hyler (1994), a significant probability of personality disturbance is indicated when the score for this measure is equal to or more than 30. In the present study, Cronbach's alpha for the overall PDQ-4 was 0.92, and 0.65, 0.79, and 0.75 for each of clusters A, B, and C, respectively.

2.3 Procedure

The present study employed a cross-sectional, correlational design. College students enrolled at a large university in the UAE completed an online-administered battery of questionnaires via the Qualtrics online portal. The invitation link was emailed to participants within this sampling frame to complete the survey which required approximately 25 minutes to complete. Participants received one additional course credit for participation. The survey was conducted in English.

Ethical approval for the conduct of this study was obtained from the Social Sciences Research Ethics Sub-committee at UAEU (Ref. No.: ERS_2019_6001). Several mechanisms were used in order to protect participants from the potential for negative consequences that might have accompanied participation in this study. Firstly, the survey began with a participant information sheet highlighting the rights of the participants and the responsibilities of the researchers. Secondly, the researcher

provided her contact details so that participants could make contact if they had any questions or concerns before or during completion of the survey. Lastly, a debriefing statement regarding the availability of the research team and the on-campus counseling services, either of whom could be contacted if participation stimulated any concerning thoughts or feelings.

2.4 Data Analytic Plan

The Statistical Package for Social Sciences (SPSS) version 26 was used to analyze the data. The prevalence of categorical variables is reported using counts and percentages, while the values of continuous variables are reported using means and standard deviations. Where between group comparisons are examined (e.g., gendered differences between the primary outcome variables), the magnitude of these differences are expressed using Cohen's d effect size. According to Cohen (1988), an effect size of 0.2 should be considered small, 0.5 represents a medium effect size, and 0.8 as large. The recommended cut-off scores for each measure derived from the literature were used to determine the prevalence of each variables. Correlational analyses (expressed using Pearson r) were conducted as preliminary investigations of the potential relationships between PIU and the studied variables. Then, a hierarchical linear regression analysis was computed to investigate whether the demographic or psychopathological variables acted as significant predictors of PIU. To achieve this, a priori blocks of predictor variables were specified: age and gender in block 1, time spent online in block 2, depression and self-esteem in block 3, and the personality clusters in block 4.

Chapter 3: Results

3.1 Descriptive Analysis

3.1.1 Prevalence of Problematic Internet Use and Time Spent Online

PIU in this sample was common (M=26.98, SD=7.72). When Koronczai et al.'s (2011) recommended cut-off score was used, a total of 75.1% (n=263) of the sample reported behaviors indicative of PIU. Among PIU internet users, 24.3% were men (n=64) and 75.6% were women (n=199), however, when overall mean scores for the PIUQ-SF were examined, no statistically significant differences were evident between males and females $t(348)$=-1.11, p>0.05. There was a significant difference in relation to the daily duration of time spent online, with females, on average, presenting with more frequent online use, compared to their male counterparts, a difference that was statistically significant, $t(348)$=-2.67, p<0.05, and a small effect size, d=0.34.

3.1.2 Prevalence of Depression and Low Self-Esteem

The prevalence of depressive symptoms was high in the sample (M=12.88, SD=5.18). Based on Anderson et al.'s (1994) recommended cutoff score of 10, a total of 228 participants were deemed to be at risk for depression (65.1%). Depressive symptoms were more common among females (n=184) compared to males (n=44), a difference that was statistically significant, $t(348)$=-3.09, p<0.05, and a small effect size d=0.38.

Analysis of the RSES data indicated that low self-esteem was highly common in the sample (M=30.84, SD =5.09). A total of 46% (n=161) of participants fell in the low self-esteem range, 27.7% (n=97) scored in the high self-esteem category, and the

remaining 26.2% (n=92) produced scores in the average range. There was no statistically difference on the RSES between males and females ($t(384)=-0.29$, $p>0.05$).

3.1.3 Prevalence of Psychopathological Personality Traits

The means and standard deviations for the PDQ-4 total score and clusters A, B, and C are shown in Table 1. Cluster B traits were most common in this sample (m=15.89, SD=5.75). Where males and females were compared, means scores for cluster A ($t(123.36)=-0.95$, $p>0.05$) and cluster B ($t(124.17)=-1.73$, $p>0.05$) did not significantly differ, however, the overall PDQ-4 score as well as the scores for cluster C ($t(126.34)=-2.01$, $p<0.05$) indicated that females tended to scores significantly higher than males.

Table 1: Descriptive statistics of all primary variables stratified by gender

Variables	Total sample (n=350)	Males (n=86)	Females (n=264)
Age	20.69 (2.14)	20.12 (1.92)	20.88 (2.18)
Daily use online (hours)	7.54 (4.12)	6.52 (3.85)	7.87 (4.15)
PIUQ	26.98 (7.72)	26.17 (8.32)	27.24 (7.51)
CESD-10	12.88 (5.18)	11.39 (5.04)	13.36 (5.14)
RSES	30.84 (5.09)	30.69 (5.03)	30.88 (5.11)
PDQ - 4	44.31 (14.96)	41.66 (17.61)	45.18 (13.91)
Cluster A	9.52 (3.39)	9.19 (3.95)	9.63 (3.19)
Cluster B	15.89 (5.75)	14.86 (6.63)	16.22 (5.41)
Cluster C	9.81 (4.20)	8.95 (4.75)	10.09 (3.98)

Note: Scores are mean and standard deviation.

3.2 Correlation Analyses

A correlational matrix was computed in Table 2 as a preliminary exploration of the relationships between the primary variable (PIUQ), the demographic variables (gender, sex, and number of daily hours spent online), and the three psychological variables (depression, self-esteem, and personality traits).

Results indicated a significant positive relationship between PIU and the following variables: number of daily hours spent online ($r=0.21$, $p<0.01$), depressive symptoms ($r=0.36$, $p<0.01$), the overall PDQ-4 measure ($r=0.27$, $p<0.01$), and each of the three clusters of personality traits, cluster A ($r=0.12$, $p<0.05$), cluster B ($r=0.27$, $p<0.01$), and cluster C ($r=0.34$, $p<0.01$). In contrast, PIU was negatively correlated with self-esteem ($r=-0.22$, $p<0.01$) indicating a statistically significant association between increasing problematic use and lowered self-esteem, despite being relatively small.

Table 2: Bivariate correlations between all primary variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender	1									
2. Age	0.15**	1								
3. Daily internet use	0.14**	-0.00	1							
4. PIUQ	0.06	-0.06	0.21**	1						
5. CESD-10	0.16**	-0.05	0.11*	0.36**	1					
6. RSES	0.01	0.05	-0.06	-0.22**	-.45**	1				
7. PDQ-4	0.10	-0.05	0.06	0.27**	0.35	-0.32**	1			
8. Cluster A	0.05	-0.06	0.03	0.12*	0.23**	-0.22	0.81**	1		
9. Cluster B	0.10	-0.05	0.083	0.27**	0.33**	-0.22**	0.91**	0.65**	1	
10. Cluster C	0.11*	-0.06	0.07	0.34**	0.35**	-0.40**	0.85**	0.56**	0.71**	1

Note*: **$p<0.01$, *$p<0.05$*

3.3 Hierarchical Regression Analysis

Hierarchical linear regression analysis was used to examine, whether any of the psychopathological or demographic variables were predictive of increased engagement in PIU. The analysis was implemented by specifying four blocks of predictor variables as shown in Table 3. In the block 1, the demographic variables were included (age and sex), daily hours spent online was included in block 2, both psychopathological variables (depression and self-esteem) were included in block 3, and the three personality clusters (Cluster A, B, and C) were included in block 4. The overall PIUQ score was the dependent variable in the computation.

A hierarchical linear regression was computed to examine potential predictors of total PIU. Predictor variables were inserted into the model using a priori blocks of variables. The overall model was not significant at step 1, $F(2, 346)=1.688$, $p>0.05$, $R^2=0.01$, as neither sex nor gender significantly predicted PIU. However, step 2, with the inclusion of the duration of internet use variable ($\beta=0.20$, $p=0.001$, $\Delta R^2=0.04$), was significant. At step 3, depression significantly predicted overall PIU ($\beta=0.31$, $p<0.001$), however, self-esteem did not ($\beta=-0.07$, $p>0.05$). Finally, in step 4, cluster A ($\beta=-0.15$, $p<0.05$) and cluster C ($\beta=0.27$, $p=0.001$) personality traits emerged as significant predictors of overall PIU, but the cluster B personality variable was not significant ($\beta=0.08$, $p>0.05$). The personality variables in step 4 contributed the largest proportion of the variance in predicting PIU (22.7%, $\Delta R^2=0.06$).

Table 3: Hierarchical regression analysis predicting overall PIU

Variables	Overall PIU				
	B	SE	β	R²	ΔR²
Model 1				0.01	0.01
(Constant)	30.62	4.14			
Gender	1.28	0.97	.07		
Age	-0.28	0.19	-.79		
Model 2				0.051	0.04
(Constant)	28.21	4.11			
Gender	0.74	0.96	.04		
Age	-0.26	0.19	-.73		
Time spent online	0.38	0.09	.20**		
Model 3				0.166	0.11
(Constant)	25.85	4.92			
Gender	-0.12	0.92	-.01		
Age	-0.16	0.18	-.04		
Time spent online	0.32	0.09	.17**		
CESD-10	0.45	0.08	.31**		
RSES	-0.11	0.08	-.07		
Model 4				0.227	0.06
(Constant)	20.16	5.07			
Gender	-0.56	0.89	-.03		
Age	-0.13	0.17	-.03		
Time spent online	0.30	0.09	.16**		
CESD-10	0.38	0.84	.25**		
RSES	-0.00	0.087	-.00		
Cluster A	-0.34	0.14	-.15*		
Cluster B	0.11	0.10	.08		
Cluster C	0.50	0.13	.27**		

Note: *$p<.05$, ** $p<.001$.

Chapter 4: Discussion

4.1 Introduction

The present study sought to assess the prevalence of PIU among a sample of young adults resident in the UAE and to examine the associations between PIU and a range of demographic and psychological variables; specifically, depression, self-esteem, and psychopathological personality traits. This study contributes to a novel area of research in behavioral science, the study of PIU, and is the first to examine the intersection of PIU and personality traits in a Middle Eastern context.

4.2 PIU Prevalence

The overall prevalence of PIU in this sample was found to be 75.1%, which indicates a higher percentage of prevalence compared to previous studies, including studies conducted in the UAE (Vally, 2019; Vally et al., 2020) as well as those from elsewhere in the world (Mei et al., 2016). There may be several reasons that likely explain the high rate of prevalence of PIU in this sample. First, the age range of the sample employed in this study was that of young adults (range:17 – 33 years old, m=20.69, SD=2.14). This is a section of the developmental spectrum that typically represents a high risk group for the development of addictive tendencies, including excessive of use of technologies, and so this result is in concurrence with that of previous studies (Perrin, 2015; Vally, 2019; Balhara et al., 2019). Second, when this sample was stratified using the recommended cut-off score indicative of problematic use, the majority of problematic users were women (n=199, 75.67%). While, the comparison of the overall PIU scores between men and women were not statistically significant in this sample, a number of studies have found that PIU tends to be more

prolific among females (Vally et al., 2020; Pezoa-Jares et al., 2012; Yücens & Üzer, 2018; Laconi et al., 2017). Thus, given that this sample disproportionately consisted of females, this may serve as a potential explanation for the overwhelming rate of PIU present in the overall sample. Third, excessive and problematic engagement with technological devices may be the inevitable result of the rate of economic development and technological advancement in the region. The UAE is a rapidly developing region of the world, economically and technologically. The prevalence of wealth, its economic stability, and the accessibility of technologies to the public (e.g., wireless mobile internet and mobile phone ownership) may all have collectively driven the population towards problematic engagement (Vally & El Hichami, 2019).

4.3 PIU and Time Spent Online

The duration of daily internet use was found to be highly correlated with the overall PIUQ score, both at the correlational level and following regression analysis. This is in accordance with the literature (Vally, 2019). Therefore, it is reasonable conclusion that duration of internet use as well as the nature of online activities (i.e. the specific activities individuals engage in when online) represent risk factors for the development of PIU. Griffiths (2000) has suggested that where individuals spend a large amount of time consuming online material, this is related to the individual's inability to control their use. Additional psychopathological constructs such as impulsivity, rumination, and attentional issues may be variables that should be further examined in relation to PIU. The connection between increasing use and PIU is supported by the results of Balhara et al. (2019) who found that this risk factor appears to be related to PIU across culture and context. Duration and addictive use are therefore not particular to only individualistic or collectivist cultures.

Some authors are increasingly suggesting that, when attempting to quantify duration of internet use, studies should differentiate between the purpose use. In other words, whether the internet use, and by extension, the presentation of PIU, is generalized (GPIU) or specific (SPIU). SPIU refers to individuals who are dependent on a specific internet function, such as online sexual services, gaming, communication, auctions, stock trading or gambling. Conversely, GPIU refers to a generalized overuse of the internet that typically involves wasting time online without any specific purpose (Grohol, 1999). Previous studies that have differentiated PIU using this taxonomy have found that time spent online (duration of use) is a better predictor of GPIU, in fact, where individuals have a clear preference for a particular online activity but are prevented from engaging in it, duration of internet use tends to diminish (Guertler et al., 2014; Laconi, Tricard, & Chabrol, 2015; Pawlikowski, Nader, Burger, Stieger, & Brand, 2013), thus lending credence to the theorized difference between generalized and specific forms of PIU.

4.4 PIU and Depression

A significant and positive association between PIU and depression was evident. This represented the strongest relationship between PIU and any of the studied variables. This association was evident both at the correlational level and following regression analysis. Depression was significantly associated with female gender and this finding is in line with that of Vally (2019) in which was also conducted with a sample of UAE young adults. These findings have a number of possible explanations. The work of both Lee and Stapinski (2012) and Caplan (2003) suggest that the primary reason prompting some individuals to prefer the use of virtual social communication methods rather than face-to-face is that this modality of communication provides a

sense of safety for individuals who invariably hold a negative view of themselves, and of their sense of social competence, as a result of their depressive symptomology. Moreover, the social isolation that often accompanies depression may be alleviated via online social engagement and some individuals may come to overly depend on such online activities to relieve their emotional and psychological difficulties (Moreno, Jelenchick, & Breland, 2015). In addition, some depressed individuals may tend to seek attention from others on the internet as a means of compensating for the lack of real-world social stimulation in their lives.

4.5 PIU & Self-Esteem

Self-esteem was significantly and negatively associated with PIU at the correlational level (i.e., an increased tendency to engage in PIU was associated with lower levels of self-esteem) but this relationship was not evident following the regression analysis where the potential impact of additional variables were included in the analysis. Niemz, Griffiths, and Banyard (2005) similarly reported that levels of self-esteem are not predictive of risk for PIU. Self-esteem appears to reflect individuals' need for social approval which may lead some individuals to engage in maladaptive behaviors such as drug or alcohol use or indeed excessive internet use as a means of securing the approval and adoration of others (Caudill & Kong, 2001; Scherer, Ettinger & Mudrick, 1972). Some individuals, particularly those prone to depressive feelings as these two constructs are also inextricably linked, may experience online engagement with others as being less risky than real life and thus the need to boost an otherwise fragile sense of self drives excessive approval-seeking behavior online (Şenormancı et al., 2014). Another explanation proposed by Aydın and San (2011) is that people with low self-esteem use the internet as a coping

mechanism to reduce their negative feelings and via continued use come to overly rely on it as a means of emotional regulation. Arguably, people with low self-esteem and pathological internet use could become socially avoidant and no longer socialize as normal (Mei et al., 2016).

4.6 PIU & Personality Traits

The current study found significant associations between psychopathological personality traits and PIU. Personality clusters appear to be crucial risk factors linked to the development of PIU, in particular, cluster A and cluster C traits.

PIU scores were negatively associated with cluster A personality traits. This is a finding that is in concurrence with the existing literature (Laconi et al., 2016; Yeon, 2009). Cluster A comprises three principal diagnoses: paranoid personality disorder, schizoid personality disorder, and schizotypal personality disorder. Individuals with these psychopathological personality profiles tend to avert direct, face-to-face social contact and primarily prefer solitary activities, that are principally the result of deficits in their interpersonal skills and/or discomfort with close personal contact with others (APA, 2013). Therefore, it is understandable that these individuals would avoid all forms of social engagement, whether it be in the real-world or virtually, as this represents the primary genesis of their distress. However, an area of research that remains unexplored in relation to this personality profile is whether these individuals may potentially be 'passive' users of the internet. In other words, rather than actively seeking connections and engagement with others online, as some individuals may indeed do, individuals with cluster A traits may potentially browse online forums, read threads, view videos or consume online material that do not the satisfaction of social

desires. This question could be examined by implementing a stratified assessment of PIU (i.e., generalized versus specific).

Cluster C traits, which comprises three diagnoses, dependent personality disorder, avoidant personality disorder, and obsessive-compulsive personality disorder, are characterized by fear and anxiety, the need for reassurance and advice, the need to obtain nurturance and support from others, and feelings of loneliness and helplessness (APA, 2013). Given these considerations, it is likely that individuals high in these personality traits may actively seek connections and engagement with other, in-person, but also 'virtually' in cyberspace as this medium provides immediate accessibility to a virtual support system. It may also be likely that the lack of social connection in these individuals' lives may cause them emotional distress or depressive symptoms. For the present sample, this contention seems plausible – cluster C traits were highly correlated with depression (r=0.35, p<0.001) and depression too was highly predictive of overall PIU. Thus, an additional potential explanation for the link between cluster C traits and PIU is that engagement with others online may serve as a means of emotion regulation and thus drive addictive tendencies given the satisfaction derived from the activity. This finding is in line with the theorized contention in the literature and in fact verifies its validity (Vally, 2019; Vally et al., 2020).

4.7 Limitations

The following limitations should be borne in mind. Conclusions cannot be drawn about the potential causal relationships between PIU and the studied variables given the cross-sectional nature of the study's design. The need for longitudinal examination of the relationships between these variables remains. While the current study sampled university students specifically given that young adults were the

targeted sample (as they present as a high-risk group for PIU), the results of this study cannot be generalized to other segments of the UAE population. In addition, the use of an online self-report questionnaire may be considered a limitation given that responses on self-report measures are prone to issues related to social desirability and accurate recall. Despite the assessment measures used in this study producing satisfactory internal consistency scores, they were not validated for the population they were used with. The sample are bilingual and therefore it is reasonable that this could be done without overtly disadvantaging the participants. However, the preferable option, naturally, would be to employ measures that are validated for use with this specific population and in the Arabic language. Additionally, most students use the internet for studying purposes. Thus, future studies may find it useful to differentiate between duration of use according to essential purposes (such as work and study) and non-essential, recreational use. This is in line with a number of studies that have suggested the need to differentiate between generalized and specific PIU (Vally, 2019). Finally, the present sample was mostly females. Accordingly, a sample with a larger proportion of male participants would have been preferable.

Chapter 5: Conclusion

To conclude, this study provides baseline data of PIU and its association with psychological and psychopathological variables among a sample of young adults in the UAE, a region of the world where studies of PIU have been minimal. The findings revealed that psychopathological variables such as depression, self-esteem and personality traits, were more highly associated with PIU. Therefore, PIU appears to be an important public health issue in this region and therefore requires further investigation, specifically exploration of the feasibility and efficacy of prevention and treatment strategies.

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Appendices

Appendix A

Demographics Questionnaire

Age: _____

Marital status:

Single

Married

Gender:

Male

Female

Academic year:

First year	Third year	Fifth year
Second year	Fourth year	More than 5 years

The daily hours spent online: _____

Appendix B

Problematic Internet Use Questionnaire Short Form (PIUQ-SF-9)

In the following you will read statements about your Internet use. Please indicate on a scale from 1 to 5 how much these statements characterize you.

	Never	Rarely	Sometimes	Often	Always
1. 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?	1	2	3	4	5
2. How often do you neglect household chores to spend more time online?	1	2	3	4	5
3. How often do you feel that you should decrease the amount of time spent online?	1	2	3	4	5
4. How often do you daydream about the Internet?	1	2	3	4	5
5. How often do you spend time online when you'd rather sleep?	1	2	3	4	5
6. How often does it happen to you that you wish to decrease the amount of time spent online but you do not succeed?	1	2	3	4	5
7. How often do you feel tense, irritated, or stressed if you cannot use the Internet for as long as you want to?	1	2	3	4	5
8. How often do you choose the Internet rather than being with your partner?	1	2	3	4	5
9. How often do you try to conceal the amount of time spent online?	1	2	3	4	5

Appendix C

Center for Epidemiologic Studies Depression Scale (CESD-10)

Below is a list of some of the ways you may have felt or behaved.

Please indicate how often you have felt this way during the past week by checking the appropriate box for each question.

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	All of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I had trouble keeping my mind on what I was doing.	0	1	2	3
3. I felt depressed.	0	1	2	3
4. I felt that everything I did was an effort.	0	1	2	3
5. I felt hopeful about the future.	0	1	2	3
6. I felt fearful.	0	1	2	3
7. My sleep was restless.	0	1	2	3
8. I was happy.	0	1	2	3
9. I felt lonely.	0	1	2	3
10. I could not "get going".	0	1	2	3

Appendix D

Rosenberg Self-Esteem Scale (RSES)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	Strongly agree	Agree	Disagree	Strongly disagree
1. I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
2. I feel that I have a number of good qualities.	SA	A	D	SD
3. All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I take a positive attitude toward myself.	SA	A	D	SD
7. On the whole, I am satisfied with myself.	SA	A	D	SD
8. I wish I could have more respect for myself.	SA	A	D	SD
9. I certainty feel useless at times.	SA	A	D	SD
10. At times I think I am no good at all.	SA	A	D	SD

Appendix E

Personality Diagnostic Questionnaire - 4 (PDQ-4)

The purpose of this questionnaire is for you to describe the kind of person you are. When answering the questions, think about how you have tended to feel, think, and act over the past several years. To remind you of this, on the top of each page you will find the statement: "Over the past several years..."

Please answer either True or False to each item. Where: T (True) means that the statement is generally true for you.

F(False) means that the statement is generally false for you.

Even if you are not entirely sure about the answer, indicate "T" or "F" for every question.

For example, for the question:

> xx. I tend to be stubborn. T F

If, in fact you have been stubborn over the past several years, you would answer True by circling T.

If, this was not true at all for you, you would answer False by circling F.

There are no correct answers.

You make take as much time as you wish.

1. I avoid working with others who may criticize me.	T	F
2. I can't make decisions without the advice, or reassurance, of others.	T	F
3. I often get lost in details and lose sight of the "big picture."	T	F
4. I need to be the center of attention.	T	F
5. I have accomplished far more than others give me credit for.	T	F
6. I'll go to extremes to prevent those who I love from ever leaving me.	T	F
7. Others have complained that I do not keep up with my work or commitments.	T	F

8. I've been in trouble with the law several times (or would have been if I had been caught). T F

9. Spending time with family or friends just doesn't interest me. T F

10. I get special messages from things happening around me. T F

11. I know that people will take advantage of me, or try to cheat me, if I let them. T F

12. Sometimes I get upset. T F

13. I make friends with people only when I am sure they like me. T F

14. I am usually depressed. T F

15. I prefer that other people assume responsibility for me. T F

16. I waste time trying to make things too perfect. T F

17. I am "sexier" than most people. T F

18. I often find myself thinking about how great a person I am, or will be. T F

19. I either love someone or hate them, with nothing in between. T F

20. I get into a lot of physical fights. T F

21. I feel that others don't understand or appreciate me. T F

22. I would rather do things by myself than with other people. T F

23. I have the ability to know that some things will happen before they actually do. T F

24. I often wonder whether the people I know can really be trusted. T F

25. Occasionally I talk about people behind their backs. T F

26. I am inhibited in my intimate relationships because I am afraid of being ridiculed. T F

27. I fear losing the support of others if I disagree with them. T F

28. I have many shortcomings. T F

29. I put my work ahead of being with my family or friends or having fun.   T   F

30. I show my emotions easily.   T   F

31. Only certain special people can really appreciate and understand me.   T   F

32. I often wonder who I really am.   T   F

33. I have difficulty paying bills because I don't stay at any one job for very long.   T   F

34. Sex just doesn't interest me.   T   F

35. Others consider me moody and "hot tempered."   T   F

36. I can often sense, or feel things, that others can't.   T   F

37. Others will use what I tell them against me.
38. There are some people I don't like.   T   F

39. I am more sensitive to criticism or rejection than most people.   T   F

40. I find it difficult to start something if I have to do it by myself.   T   F

41. I have a higher sense of morality than other people.   T   F

42. I am my own worst critic.   T   F

43. I use my "looks" to get the attention that I need.   T   F

44. I very much need other people to take notice of me or compliment me.   T   F

45. I have tried to hurt or kill myself.   T   F

46. I do a lot of things without considering the consequences.   T   F

47. There are few activities that I have any interest in.   T   F

48. People often have difficulty understanding what I say.   T   F

49. I object to supervisors telling me how I should do my job.   T   F

50. I keep alert to figure out the real meaning of what people are saying. T   F

51. I have never told a lie. T   F

52. I am afraid to meet new people because I feel inadequate. T   F

53. I want people to like me so much that I volunteer to do things that I'd rather not do. T   F

54. I have accumulated lots of things that I don't need but I can't bear to throw out. T   F

55. Even though I talk a lot, people say that I have trouble getting to the point. T   F

56. I worry a lot. T   F

57. I expect other people to do favors for me even though I do not usually do favors for them. T   F

58. I am a very moody person. T   F

59. Lying comes easily to me and I often do it. T   F

60. I am not interested in having close friends. T   F

61. I am often on guard against being taken advantage of. T   F

62. I never forget, or forgive, those who do me wrong. T   F

63. I resent those who have more "luck" than I. T   F

64. A nuclear war may not be such a bad idea. T   F

65. When alone, I feel helpless and unable to care for myself. T   F

66. If others can't do things correctly, I would prefer to do them myself. T   F

67. I have a flair for the dramatic. T   F

68. Some people think that I take advantage of others. T   F

69. I feel that my life is dull and meaningless. T   F

70. I am critical or others.   T   F

71. I don't care what others have to say about me.   T   F

72. I have difficulties relating to others in a one-to-one situation.   T   F

73. People have often complained that I did not realize that they were upset.   T   F

74. By looking at me, people might think that I'm pretty odd, eccentric or weird.   T   F

75. I enjoy doing risky things.   T   F

76. I have lied a lot on this questionnaire.   T   F

77. I complain a lot about my hardships.   T   F

78. I have difficulty controlling my anger, or temper.   T   F

79. Some people are jealous of me.   T   F

80. I am easily influenced by others.   T   F

81. I see myself as thrifty but others see me as being cheap.   T   F

82. When a close relationship ends, I need to get involved with someone else immediately.   T   F

83. I suffer from low self esteem.   T   F

84. I am a pessimist.   T   F

85. I waste no time in getting back at people who insult me.   T   F

86. Being around other people makes me nervous.   T   F

87. In new situations, I fear being embarrassed.   T   F

88. I am terrified of being left to care for myself.   T   F

89. People complain that I'm "stubborn as a mule."   T   F

90. I take relationships more seriously than do those who I'm involved with.   T   F

91. I can be nasty with someone one minute, then find myself apologizing to them the next minute.   T   F

92. Others consider me to be stuck up.   T   F

93. When stressed, things happen. Like I get paranoid or just "black out."   T   F

94. I don't care if others get hurt so long T F as I get what I want.   T   F

95. I keep my distance from others.   T   F

96. I often wonder whether my wife (husband, girlfriend, or boyfriend) has been unfaithful to me.   T   F

97. I often feel guilty.   T   F

98. I have done things on impulse (such as those below) that could have gotten me into trouble.   T   F

     Check all that apply to you:

         a. Spending more money than I have

         b. Having sex with people I hardly know

         c. Drinking too much

         d. Taking drugs

         e. Eating binges

         g. Reckless driving

99. When I was a kid (before age 15), I was somewhat of a juvenile delinquent, doing some of the things below.   T   F

     Now, check all that apply to you:

         (1) I was considered a bully.

         (2) I used to start fights with other kids.

         (3) I used a weapon in fights that I had.

         (4) I robbed or mugged other people.

         (5) I was physically cruel to other people.

         (6) I was physically cruel to animals.

         (7) I forced someone to have sex with me.

         (8) I lied a lot.

(9) I stayed out at night without my parents permission.

(10) I stole things from others.

(11) I set fires.

(12) I broke windows or destroyed property.

(13) I ran away from home overnight more than once.

(14) I began skipping school, a lot, before age 13.

(15) I broke into someone's house, building or car.