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Doutorado em Psiquiatria

Daniel Tornaim Spritzer

Avaliação do Uso Problemático de Internet, Jogos Digitais e Smartphones no Brasil:
Foco em Psicometria

Porto Alegre
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Brasil:**
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Tese apresentada como requisito parcial à obtenção do título de doutor em Psiquiatria pelo Programa de Pós-graduação em Psiquiatria e Ciências do Comportamento da Faculdade de Medicina da Universidade Federal do Rio Grande do Sul.

Orientador: Profa. Dra. Simone Hauck

Co-orientador: Prof. Dr. Ives Cavalcante
Passos

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RESUMO

Introdução: Apesar dos benefícios que as Tecnologias da Informação e Comunicação (TICs) proporcionam para a sociedade como um todo, também se reconhecem as possíveis consequências negativas de seu uso excessivo. Um dos primeiros passos para se identificar adequadamente pessoas em risco para o uso problemático de TICs deve ser a utilização de instrumentos de avaliação com propriedades psicométricas sólidas. **Métodos:** Este estudo faz parte de um projeto multicêntrico, realizado em 14 países, para avaliar os fatores associados ao uso problemático de Internet e de smartphones. Trata-se de estudo de delineamento transversal, com amostragem por conveniência e recrutamento online, que incluiu indivíduos brasileiros maiores de 18 anos de idade. Através de um questionário online foram avaliados o perfil sócio demográfico, o uso de TICs, características de personalidade, comorbidades psiquiátricas e funcionalidade/prejuízo. **Resultados:** O artigo 1 (publicado) apresenta a adaptação cultural e as propriedades psicométricas da versão em português brasileiro do *Problematic Internet Use Questionnaire – Short Form – 9* (PIUQ-SF-9). Este instrumento demonstrou estrutura bifator, com um fator geral e três dimensões específicas (obsessão, negligência e perda de controle). Sua consistência interna foi considerada boa e sua estabilidade temporal, adequada. A validade de constructo do PIUQ-SF-9 foi demonstrada a partir da avaliação simultânea da influência da idade, tempo de uso da Internet, autopercepção de uso problemático e sintomas depressivos. O artigo 2 (publicado) avalia e expande as propriedades psicométricas da *Self-perception of Text-message Dependency Scale* (STDS). A análise fatorial confirmatória multigrupos confirmou estrutura de três fatores e demonstrou invariância de medida do instrumento para sexo e idade. A consistência interna foi satisfatória, e a validade de constructo do STDS foi demonstrada pela correlação das suas 3 dimensões com medidas de uso problemático de Internet e de smartphones. A análise de rede proporcionou insights sobre os sintomas mais influentes relacionados ao uso problemático de mensagens de texto. O artigo 3 (submetido) avalia as propriedades psicométricas da versão brasileira do *Internet Gaming Disorder Test – 10* (IGDT-10) e explora a sua associação com prejuízo. O IGDT-10 demonstrou uma estrutura unidimensional tanto na análise fatorial confirmatória, quanto exploratória, com consistência interna satisfatória e estabilidade temporal adequada. Os participantes com escores acima do ponto de corte

apresentaram níveis de prejuízo significativamente maiores quando comparados com aqueles com escores abaixo do ponto de corte do IGDT-10. A análise de rede permitiu identificar que o sintoma "consequências negativas" era o item mais relevante ao conectar o uso problemático de jogos digitais com prejuízo. Ainda, a partir da colaboração internacional estabelecida, os dados da amostra brasileira integraram outros dois artigos do estudo multicêntrico, que avaliaram os fatores associados ao uso problemático de smartphones (artigo #4 – publicado, apêndice C) e ao uso problemático de internet (artigo #5 – publicado, apêndice D). **Conclusões:** A disponibilidade de instrumentos breves, com sólidas propriedades psicométricas e validados para uso na população brasileira é essencial para uso em futuros estudos populacionais em nosso país, auxiliando na geração de dados mais confiáveis que permitam o desenvolvimento de melhores políticas públicas sobre o uso problemático de tecnologia.

Palavras-chave: Internet, videogames, mensagens de texto, texting, psicomетria, Brasil

ABSTRACT

Introduction: Despite the benefits that Information and Communication Technologies (ICTs) provide to society as a whole, the possible negative consequences of their excessive use are also recognized. One of the first steps to properly identify people at risk for problematic ICT use should be the use of assessment instruments with solid psychometric properties. **Methods:** This study is part of a multicentric project, conducted in 14 countries, to assess factors associated with problematic Internet and smartphone use. This is a cross-sectional study, with convenience sampling and online recruitment, which included Brazilian individuals over 18 years of age. Through an online questionnaire we evaluated the socio demographic profile, ICT use, personality characteristics, psychiatric comorbidities and functionality/ impairment. **Results:** Study 1 (published) presents the cultural adaptation and psychometric properties of the Brazilian Portuguese version of the Problematic Internet Use Questionnaire - Short Form - 9 (PIUQ-SF-9). This instrument showed a two-factor structure, with a general factor and three specific dimensions (obsession, neglect, and loss of control). Its internal consistency was considered good and its temporal stability, adequate. The construct validity of PIUQ-SF-9 was demonstrated from the simultaneous evaluation of the influence of age, time of Internet use, self-perception of problematic use, and depressive symptoms. Study 2 (published) evaluates and expands the psychometric properties of the Self-perception of Text-message Dependency Scale (STDS). Confirmatory multigroup factor analysis confirmed three-factor structure and demonstrated the instrument's measurement invariance for sex and age. Internal consistency was satisfactory and construct validity of the STDS was demonstrated by correlating its 3 dimensions with measures of problematic Internet and smartphone use. Network analysis provided insights into the most influential symptoms related to problematic text messaging use. Study 3 (submitted) evaluated the psychometric properties of the Brazilian version of the Internet Gaming Disorder Test - 10 (IGDT-10) and explored its association with disability. The IGDT-10 demonstrated a unidimensional structure in both confirmatory and exploratory factor analysis, with satisfactory internal consistency and adequate temporal stability. Participants with scores above the cut-off point showed significantly higher levels of impairment when compared to those with scores below the IGDT-10 cut-off point. Network analysis allowed us to identify that the symptom "negative consequences" was the most

relevant item when connecting gaming disorder and disability. Also, as part of the established international collaboration, data from the Brazilian sample integrated two other papers from the multicentric study that assessed factors associated with problematic smartphone use (paper #4 - published, appendix C) and problematic internet use (paper #5 - published, appendix D). **Conclusions:** The availability of brief instruments, with solid psychometric properties and validated for use in the Brazilian population, is essential for future populational studies in our country, helping to generate more reliable data to enable the development of better public policies on problematic technology use.

Keywords: Internet, video games, text messaging, texting, psychometrics, Brazil

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LISTA DE ABREVIATURAS E SIGLAS

CD	Control Disorder
CES-D-10	Center for Epidemiologic Studies - Depression Scale
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CID-11	Classificação Internacional de Doenças - 11
CUDIT-R	Cannabis Use Disorders Identification Test-Revised
DSM-5	Manual Diagnóstico e Estatístico dos Transtornos Mentais
DSQ-28	Defense Style Questionnaire - 28
ER	Emotional Reaction
EU	Excessive Use
GF	General Factor
IAT	Internet Addiction Test
ICC	Intraclass Correlation Coefficient
IGDT-10	Internet Gaming Disorder Test – 10
KMO	Kaiser–Meyer–Olkin
LASSO	Least Absolute Shrinkage and Selection Operator
MGCFA	Multigroup Confirmatory Factor Analyses
MIMIC	Multiple Indicators Multiple Causes
MPPUS	Mobile Phone Problem Usage Scale
NA	Network Analysis
NEG	Neglect
OBS	Obsession
OCS	Online Cognition Scale
OSF	Open Science Framework
PBI	Parental Bonding Instrument
PDQ-4+	Personality Diagnostic Questionnaire-4+
PIU	Problematic Internet Use
PIUQ-SF-9	Problematic Internet Use Questionnaire– Short Form–9
PSU	Problematic Smartphone Use
PTM	Problematic Text Messaging

RM	Relationship Maintenance
RMSEA	Root Mean Square Error of Approximation
RSES	Escala de Autoestima de Rosenberg
SPU	Self-perception of Problematic Use
SRMR	Standardized Root Mean Residual
STDS	Self-perception of Text-message Dependency Scale
TICs	Tecnologias da Informação e Comunicação
TLI	Tucker- Lewis Index
TM	Text messaging
TSO	Time Spent Online
UPI	Uso Problemático da Internet
WHODAS 2.0	World Health Organization Disability Assessment Schedule 2.0
WLSMV	Weighted Least Squares Mean

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1 INTRODUÇÃO

As Tecnologias da Informação e Comunicação (TICs) revolucionaram o modo como buscamos conhecimento, como nos comunicamos e nos relacionamos com os outros e também como nos divertimos. A cada ano aumenta o número de atividades que fazemos online, assim como o tempo que dedicamos a elas (1). O uso da Internet, especialmente por meio da telefonia móvel, se tornou cada vez mais integrado à vida da maioria das pessoas. O envio de mensagens de texto tornou-se a principal forma de comunicação interpessoal mediada pela tecnologia (2). Os jogos digitais são uma das principais atividades de lazer para crianças, adolescentes e adultos, e estima-se que mais de 3 bilhões de pessoas em todo o mundo jogam videogames (3,4).

Apesar dos indiscutíveis benefícios que as TICs oferecem para a sociedade como um todo, também é significativo o questionamento sobre o papel que as novas tecnologias passam a ter nas nossas vidas e sobre possíveis consequências negativas que podem acarretar (5). De fato, o uso problemático de novas tecnologias digitais tem despertado cada vez mais preocupação, sendo foco crescente de estudo. O Uso Problemático da Internet (UPI) pode ser definido como o uso excessivo e descontrolado da Internet associado a um prejuízo significativo na saúde física e emocional do indivíduo, nas suas relações sociais e/ou na sua vida profissional (6,7). Trata-se de um termo "guarda-chuva", que pode incluir problemas relacionados com os diversos usos da internet (jogos digitais, redes sociais, envio de mensagens de texto, compras, apostas, entre outros) (7). São condições heterogêneas, provavelmente decorrentes da complexa interação entre diversos fatores intra e interpessoais (8).

O uso problemático de jogos digitais é o subtipo de UPI mais estudado na literatura científica. Ele pode acometer até 2% da população mundial (9), sendo mais comum em adolescentes e adultos jovens do que em crianças e adultos mais velhos. Afeta mais homens do que mulheres e está associado a diversas condições psicológicas e comorbidades psiquiátricas (10–12). A evidência do impacto do uso problemático de jogos digitais em termos de saúde pública levou à sua inclusão como uma "condição que merece mais estudos" na seção 3 da 5ª edição do Manual

Diagnóstico e Estatístico dos Transtornos Mentais (DSM-5) (13) e a sua inclusão como diagnóstico oficial (6C51) na 11ª edição da Classificação Internacional de Doenças-11 (CID-11)(14–17). No DSM-5 recebeu o nome de Transtorno do Jogo pela Internet (que se mantém no DSM-5-revisado) e, na CID-11, é referido como “Gaming Disorder” (ainda sem tradução oficial para o português). A expressão “Gaming Disorder” tem sido a mais utilizada na literatura científica para se referir ao uso problemático de jogos digitais.

Nos últimos anos, o Brasil tem passado por uma grande revolução tecnológica, que se observa tanto nas áreas rurais como urbanas, em todas as suas cinco regiões políticas. Em 2021, dentre a população de 183,9 milhões de pessoas acima de 10 anos, 84,7% (ou 155,7 milhões) haviam utilizado a Internet nos últimos três meses (18). O meio de acesso indicado por maior número de pessoas foi, destacadamente, o telefone móvel celular (98,8%), sendo que 84,4% da população acima de 10 anos tinha telefone móvel celular para uso pessoal. Entre adultos jovens de 25 a 39 anos, cerca de 93% tem telefone celular para uso pessoal. O percentual de pessoas que acessaram a Internet para enviar ou receber mensagens de texto, voz ou imagens por aplicativos diferentes de e-mail (correio eletrônico) foi de 94,9%. Aproximadamente 75% da população brasileira referiu jogar videogames, a maioria destes entre 16 e 24 anos de idade (19).

A pesquisa sobre o UPI no Brasil tem aumentado significativamente, assim como em muitos países. No entanto, apesar do seu crescente reconhecimento como possível transtorno mental, ainda não há consenso sobre a melhor forma de avaliar estes comportamentos (20). Os questionários de auto-relato, por serem simples e acessíveis, são largamente utilizados para avaliar o uso problemático de TICs em contextos clínicos e de pesquisa (21). Porém, até o momento, não existe um instrumento considerado padrão ouro na avaliação do uso problemático de internet ou dos seus diferentes subtipos. É importante que os instrumentos utilizados sejam breves, para que possam ser utilizados em estudos epidemiológicos, especialmente de larga escala. É essencial que uma escala para o rastreio de pessoas em risco para o uso problemático de TICs deve ter propriedades psicométricas robustas, isto é, que seja uma medida confiável e válida do fenômeno que se propõe a avaliar. Ainda, é necessário que este questionário seja validado para uso em diversas populações.

(20,22). Nesse sentido, a fim de avançar neste campo, se tem buscado evitar o desenvolvimento de novas escalas e focar os esforços na validação das escalas já existentes e identificadas como as mais úteis (20,23).

Considerando o uso cada vez prevalente das TICs em todas as faixas etárias, um grande desafio na avaliação do uso problemático de tecnologia é o risco de se patologizar comportamentos específicos e/ou benéficos relacionados ao uso das TICs. Em função disso, a identificação de prejuízo funcional associado ao uso das TICs auxilia a distinguir os indivíduos que apresentam uso intenso, porém saudável, daqueles que têm problemas significativos decorrentes desses comportamentos (24,25). Além disso, evita que se hiperestime a prevalência desses transtornos em estudos epidemiológicos (9) e permite uma detecção mais precisa dos correlatos clínicos e neurobiológicos associados a estas condições (26–28). Apesar disso, ainda é pouco comum que os instrumentos psicométricos existentes nessa área tenham suas propriedades psicométricas examinadas junto com medidas padronizadas de prejuízo.

A disponibilidade de instrumentos de avaliação com propriedades psicométricas sólidas é especialmente relevante em países como o Brasil, onde ainda não foram realizados estudos de prevalência que possam guiar a elaboração de políticas públicas baseadas em evidências (29). Uma vez que o acesso às TICs tem aumentado em todas as faixas etárias e em todas as regiões de nosso país (18), é necessário que os instrumentos utilizados para avaliar o seu uso problemático, ao serem adaptados para o contexto brasileiro, sejam facilmente compreendidos pela população. Esta característica é particularmente relevante em países como o Brasil, onde a escolaridade tende a variar significativamente dependendo do contexto socioeconômico (30). Ainda, para que se possa comparar a pesquisa sobre o uso problemático de tecnologia no Brasil com a que é desenvolvida em outros países, é preciso que se faça uso de instrumentos reconhecidos e utilizados internacionalmente.

Na época em que este projeto iniciou, apenas dois instrumentos para avaliar o uso problemático de internet haviam sido culturalmente adaptados para o português brasileiro. O *Internet Addiction Test* (31), o mais frequentemente utilizado, não possuía outras propriedades psicométricas avaliadas na nossa população além da

consistência interna. O *Online Cognition Scale* (32) já havia sido avaliado quanto à equivalência semântica, confiabilidade e validade de constructo; mas, talvez por ser mais longo e de preenchimento mais demorado, era consideravelmente menos utilizado na literatura internacional sobre UIP. Para avaliar o uso problemático de jogos digitais, os dois instrumentos adaptados e validados para uso no Brasil eram o *Videogame Addiction Test* (33) e o *Gaming Addiction Scale* (34). Entretanto, ambos, por terem sido desenvolvidos antes da inclusão do Transtorno do Jogo pela Internet na seção 3 do DSM-5, não apresentavam cobertura de todos os critérios utilizados no DSM-5 ou na CID-11. Ainda, não existia nenhum instrumento específico para avaliar o uso problemático de mensagens de texto adaptado e validado para uso no nosso país.

Em nível internacional, o *Problematic Internet Use Questionnaire – Short Form – 9* (PIUQ-SF-9), um questionário de triagem breve, com propriedades psicométricas robustas é um dos instrumentos mais utilizados atualmente para avaliar o uso problemático de internet (35). Quanto ao uso problemático de jogos, o *Internet Gaming Disorder Test – 10* (IGDT-10) se destaca como um instrumento também breve, com linguagem simples e direta, que avalia todos os critérios utilizados no DSM-5 e pode ser utilizado em aproximação direta aos os critérios da CID-11 (36). Em relação a mensagens de texto, o *Self-Perception of Text-message Dependence Scale* (STDS) tem sido um dos questionários mais utilizados e apresenta grande potencial de auxiliar no entendimento dos mecanismos relacionados ao uso problemático de smartphones e de Internet (37).

1.1 JUSTIFICATIVA

Estudos sobre o uso problemático de Internet, smartphones, mensagens de texto e jogos digitais são raros no nosso país, apesar do crescente acesso da população a essas tecnologias. Para viabilizar a realização de estudos de qualidade, a adaptação e validação para o português brasileiro de instrumentos de pesquisa utilizados e reconhecidos internacionalmente é essencial, disponibilizando essas ferramentas para futuros estudos e colaborando dessa forma para o crescimento do campo.

A forma com que os indivíduos se relacionam com a tecnologia é resultado de uma complexa interação entre fatores intrínsecos (intra e interpessoais) e extrínsecos (sociais e tecnológicos), que ainda precisa ser melhor conhecida e compreendida. Apesar do aumento significativo das pesquisas sobre UPI nos últimos anos, ainda são poucos os estudos que avaliam sua associação, por exemplo, com traços de personalidade, mecanismos de defesa, estratégias de enfrentamento e qualidade de vínculo parental.

Ainda, é possível que o uso problemático das TICs esteja associado a diferentes características em diferentes países. A comparação dos dados da amostra brasileira com as de outros países, a partir da utilização dos mesmos instrumentos de avaliação, pode fornecer insights sobre especificidades desses fenômenos, que por sua vez permitam uma compreensão maior e mais específica do uso problemático das TICs no nosso país.

1.2 OBJETIVOS

Geral:

Adaptar para o português brasileiro e examinar as propriedades psicométricas das escalas de avaliação de uso problemático de Internet, mensagens de texto e jogos digitais utilizadas no presente estudo.

Específicos:

- Descrever o processo de adaptação cultural do Problematic Internet Use Questionnaire - Short Form-9 para o português brasileiro e a avaliar as suas propriedades psicométricas numa amostra da população geral.
- Validar e expandir as propriedades psicométricas da Self-perception of Text-message Dependency Scale numa amostra de brasileiros usuários de Internet.
- Avaliar as propriedades psicométricas da versão em português brasileiro do Internet Gaming Disorder Test-10 e explorar a sua associação com prejuízo.
- Colaborar com um estudo internacional multicêntrico sobre fatores associados ao uso problemático de smartphones e Internet

2 METODOLOGIA

2.1 AMOSTRA E PROCEDIMENTOS

Estudo internacional

Este é um estudo transversal multicêntrico realizado em 14 países (Brasil, Chile, Colômbia, Equador, Finlândia, França, Grécia, Irã, Itália, Paquistão, Peru, Roménia, Turquia e Emirados Árabes Unidos). Indivíduos com mais de 18 anos de idade foram recrutados a partir de um procedimento de amostragem de conveniência através de um website dedicado ao estudo. O questionário online era composto por uma série de variáveis sociodemográficas, perguntas relacionadas com o uso da tecnologia e questionários relacionados com o uso problemático da tecnologia (*Mobile Phone Problem Usage Scale* (38), *Self-perception of Text-message Dependency Scale* (37), *Problematic Internet Use Questionnaire - Short Form-9* (35), características de personalidade (*Personality Diagnostic Questionnaire-4+* (39), *Defense Style Questionnaire-28* (40,41), *Brief Cope Dispositional* (42), Escala de Autoestima de Rosenberg (43) e psicopatologia (*Center for Epidemiologic Studies-Depression Scale-10* (44), *Cannabis Use Disorders Identification Test-Revised* (45)).

O estudo brasileiro

A amostragem não probabilística, por conveniência, foi utilizada tanto no estudo brasileiro como nos demais países. A coleta de dados no Brasil ocorreu entre setembro de 2018 e julho de 2019. A divulgação da pesquisa ocorreu através de postagens em perfis individuais e em grupos na rede social Facebook, considerando o alcance desta rede em relação ao público-alvo na época em que a pesquisa foi realizada. Também foram realizados convites via WhatsApp e email. Apesar dos esforços dos investigadores para divulgar a pesquisa em todas as regiões do país, é possível que nem todos os estados/regiões do Brasil tenham sido igualmente representados na população estudada.

O questionário estava acessível através da plataforma online SurveyMonkey (versão premium), amplamente utilizada para fins de pesquisa. O preenchimento do questionário poderia ser feito através de smartphones, tablets ou computadores.

Caso o respondente desejasse/precisasse fazer uma pausa no preenchimento da pesquisa e concluir o questionário num outro momento, era necessário apenas que clicasse novamente no link utilizando o mesmo aparelho no qual começou a responder a pesquisa. Em função do grande número de instrumentos a serem respondidos nesta pesquisa, para evitar perdas de preenchimento nos últimos instrumentos, foi utilizado um recurso de aleatorização disponível na plataforma SurveyMonkey que permitiu que as diferentes escalas que compunham o questionário fossem exibidas em ordem aleatória para cada novo respondente.

Devido ao objetivo de avaliar a relação entre o uso problemático de jogos digitais e prejuízo, o protocolo brasileiro também incluía o *Internet Gaming Disorder Test - 10* (36) e o *World Health Organization Disability Assessment Scale 2.0* (46). Para investigar características de vínculo parental associadas ao uso problemático de Internet, jogos digitais, smartphones e mensagens de texto, foi incluído o *Parental Bonding Instrument* (47).

As informações sobre o objetivo do estudo e uma declaração de consentimento informado (com informações sobre o anonimato e confidencialidade, tratamento de dados, abandono do estudo) foram apresentadas na primeira página do questionário e antes da coleta de dados (Apêndice A). Devido ao fato de a aceitação e o preenchimento do questionário ocorrerem inteiramente online e sem contato do participante com a equipe de pesquisa, torna-se inviável a assinatura de um Termo de Consentimento Livre e Esclarecido tradicional. Por orientação do próprio comitê de ética em Pesquisa do Hospital de Clínicas de Porto Alegre, a declaração de consentimento dos participantes foi chamada de "Convite para participação em projeto de pesquisa". Nesse convite os participantes foram informados que seu consentimento seria fornecido ao responder e enviar o questionário final. Neste convite foi também explicado sobre o anonimato, aprovação do projeto pelo CEP da instituição e demais características da pesquisa. O projeto foi aprovado pelo Comitê de Ética em Pesquisa do Hospital de Clínicas de Porto Alegre (protocolo número 89702318.2.0000.5327), e foi conduzido de acordo com a Declaração de Helsinki.

Ao completar o questionário, foi oferecido aos participantes receber um feedback sobre os seus escores nos questionários sobre uso problemático de internet,

jogos digitais e smartphones, sendo assim solicitado um endereço de e-mail. Aqueles que forneceram o seu endereço de e-mail foram posteriormente convidados a responder novamente os questionários de uso problemático de internet e de jogos digitais, para validação teste-reteste. Para assegurar a privacidade, o e-mail de feedback convidando para o reteste foi enviado de forma automatizada através do aplicativo Mail Merge[®], de modo que os investigadores não tivessem acesso às pontuações dos questionários e endereços de e-mail dos participantes ao mesmo tempo.

O número de 1000 participantes foi pensado em função de dois principais fatores: Primeiramente, na estimativa do tamanho amostral para validação de instrumentos psicométricos, é frequente a utilização de uma razão de respondente para item, e uma das mais utilizadas é a de 10 respondentes para cada item da escala (48). Esta pesquisa consta de 12 instrumentos diferentes, 6 dos quais serão adaptados e validados como parte deste projeto. Destes 6, o instrumento mais extenso é o *Personality Diagnostic Questionnaire-4+*, que é constituído por 99 itens. Assim, seguindo a razão de 10 respondentes para cada item, seriam necessários 990 respondentes para o processo de validação deste questionário. À essa estimativa baseada na razão respondentes/item soma-se a sugestão de alguns autores de que para realização de testes de validação de instrumentos psicométricos os tamanhos amostrais de 50 seriam considerados como muito pobres, 100 como pobres, 200 como regulares, 300 como bons, 500 como muito bons e 1000 ou mais como excelentes (49).

2.2 VARIÁVEIS E INSTRUMENTOS DE MEDIDA

As perguntas referentes ao perfil sociodemográfico (idade, gênero, estado civil, escolaridade, TICs mais utilizadas e tempo de uso das mesmas), assim como a versão final do questionário online, encontram-se disponíveis no Apêndice B.

Instrumentos que já haviam sido adaptados e validados para uso na população brasileira:

- Escala de Autoestima de Rosenberg (RSES (43)) Trata-se de uma escala constituída por dez itens com o objetivo de avaliar a autoestima global. Todas as perguntas são respondidas em uma escala tipo Likert de quatro pontos variando entre 1 “Discordo totalmente” e 4 “concordo totalmente”. A autoestima pode ser considerada como muito baixa (escores < 25), baixa (25-30), média (31-34), alta (35-39) ou muito alta (>39). Neste estudo foi utilizada a versão adaptada para o português brasileiro por Hutz & Zanon (50), cuja consistência interna medida pelo alfa de Cronbach variou entre 0,70 e 0,90 (50,51).

- Center for Epidemiologic Studies-Depression Scale (CES-D-10 (44,52)): Trata-se de uma versão reduzida do Center for Epidemiologic Studies-Depression Scale, que tem por objetivo avaliar sintomas depressivos. É composta por 10 itens que são avaliados numa escala tipo Likert que varia entre 0 (“Raramente ou nunca”) e 3 (“a maioria do tempo ou o tempo todo - 5 a 7 dias”). Os escores podem variar de 0 a 30, e escores iguais ou maiores que 10 apontam para sintomatologia depressiva. Neste estudo foi utilizada a versão adaptada para o português brasileiro por Silveira & Jorge (53). Tanto no estudo original quanto em validações mais recentes, a confiabilidade medida pelo alfa de Cronbach foi maior que 0,80 em todos os subgrupos (44,54).

- Defense Style Questionnaire-28 (DSQ-28 (40,41)): Trata-se de uma versão reduzida do Defense Style Questionnaire com o objetivo de avaliar mecanismos de defesa maduros, neuróticos e imaturos de como as pessoas – consciente ou inconscientemente – lidam com o conflito. É composta por 28 itens que apresentam respostas tipo Likert que variam de 1 (“discordo totalmente”) até 4 (“concordo totalmente”). Os escores podem variar de 28 até 112. Neste estudo foi utilizada a versão adaptada para o português brasileiro por Blaya e colaboradores (55). A confiabilidade do DSQ-28 medida pela correlação média entre os itens é considerada adequada (40).

- Brief Cope Dispositional (42): Trata-se de uma versão reduzida do Inventário de Cope que tem como objetivo avaliar as diversas estratégias de enfrentamento (“*coping*”) utilizadas, que podem ser classificadas como adaptativas ou não-adaptativas. É composta por 28 itens com resposta tipo Likert que varia entre 1

("Nunca fiz isto") e 4 ("Faço isto sempre"). Os escores podem variar de 28 até 112, sugerindo a frequência do uso de estratégias de enfrentamento. Neste estudo foi utilizada a versão adaptada para o português por Maroco e colaboradores, cuja consistência interna medida pelo alfa de Cronbach variou entre 0,66 e 0,90 (56).

- Parental Bonding Instrument (PBI (47)): Este questionário tem como objetivo avaliar a contribuição do comportamento parental para o desenvolvimento dos laços vinculares entre pais e filhos, a partir das dimensões afeto e controle / proteção. É composto por 25 questões relacionadas às lembranças do indivíduo acerca do comportamento do pai e da mãe (avaliados separadamente) até a idade de 16 anos. Todos os itens apresentam resposta tipo Likert que variam de 0 ("Muito parecido") até 3 ("Muito diferente"). Neste estudo foi utilizada a versão adaptada para o português por Hauck e colaboradores (57). A consistência interna do PBI medida pelo alfa de Cronbach variou entre 0,62 e 0,93 (58).

- World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0 (46)): Este questionário, em sua versão reduzida, é composto por 12 itens elaborados para avaliar incapacidade e prejuízo funcional através de 6 domínios: cognição, mobilidade, autocuidado, relações interpessoais, atividades de vida e participação. As respostas às perguntas foram classificadas de acordo com uma escala do tipo Likert de 5 pontos indicando o nível de dificuldade ou problema, variando de 0 ("nenhum") a 4 ("extremo ou incapacidade de desempenho"). As pontuações foram calculadas utilizando a recomendação oficial do WHODAS 2.0 baseada na teoria de resposta ao item (46). Cada resposta é tratada separadamente, e a pontuação final é gerada pela ponderação diferencial dos itens e dos níveis de severidade. Os passos para calcular a pontuação incluem a soma das pontuações dos itens recodificados dentro de cada domínio, a soma das seis pontuações de domínio, e a conversão da pontuação total numa pontuação métrica que vai de 0 a 100 (0= nenhuma incapacidade; 100= incapacidade total). Neste estudo, foi utilizada a versão adaptada para o português por Castro & Leite (60). A consistência interna da WHODAS 2.0 medida pelo alfa do Cronbach é alta ($\alpha=0.86$) (46).

Instrumentos que não dispunham de versões validadas para uso na população brasileira, e foram adaptados para o português brasileiro como parte deste estudo:

- Mobile Phone Problem Usage Scale (MPPUS (38)): Trata-se de um questionário constituído por 27 perguntas que avaliam motivação para o uso, sintomas de adição e consequências negativas do uso de telefone celular. Todas as perguntas apresentam respostas tipo Likert variando de 1 (“Totalmente falso”) a 10 (“Totalmente verdadeiro”). A consistência interna do MPPUS medida pelo alfa de Cronbach é de 0,93 (38).

- Self-perception of Text-message Dependency Scale (STDS (37)): É uma escala que avalia como as pessoas percebem seu uso de mensagens de texto, assim como sintomas relacionados ao uso problemático e interferência nos relacionamentos. São 15 perguntas com respostas do tipo Likert que variam de 1 (“Concordo plenamente”) a 5 (“Discordo plenamente”). Os escores finais variam de um mínimo de 15 até um máximo de 75. Igarashi e colaboradores (37) classificaram os escores da STDS nas seguintes categorias: 15–45 - sem problemas com o uso de mensagens de texto; 46–60 - problemas leves com o uso de mensagens de texto; e ≥ 61 - problemas importantes. Estudos prévios mostram alta consistência interna para cada dimensão, com alfa de Cronbach variando entre 0,78 e 0,91 (37,60).

- Problematic Internet Use Questionnaire – Short Form-9 (PIUQ-SF-9 (35)): Este questionário é uma versão reduzida do PIUQ-18 (61). É composto por 9 itens que avaliam 3 dimensões: obsessão, negligência e descontrole. Todas as perguntas têm respostas tipo Likert que variam de 1 “nunca” até 5 “sempre”. Os escores variam de 9 até 45, e escores maiores indicam maior risco de uso problemático de internet. O PIUQ-SF-9 tem demonstrado alta consistência interna através de diferentes estudos, com alfa de Cronbach variando entre 0,80 e 0,91 (35,62).

- Internet Gaming Disorder Test – 10 (IGDT-10 (36)): Este questionário é constituído por 10 itens que abrangem os 9 critérios diagnósticos do Transtorno do Jogo pela Internet apresentados no DSM-5 (13). Todas as perguntas têm respostas do tipo Likert que variam entre 0 “nunca”, 1 “algumas vezes” e 2 “frequentemente”. Entretanto, para manter a semelhança com a abordagem dicotômica utilizada pelo DSM-5, respostas “nunca” e “algumas vezes” são codificadas como não satisfazendo o critério (0 pontos) enquanto “frequentemente” é codificado como satisfazendo o

critério (1 ponto). Os itens 9 e 10 se referem ao mesmo critério de IGD pelo DSM, e são combinados para a análise. Ao responder “frequentemente” para qualquer um destes itens é gerado 1 ponto no escore final. Assim, o escore do IGDT-10 varia entre 0 e 9, e um escore de 5 ou mais pontos indica casos clinicamente relevantes de acordo com o DSM-5. A consistência interna medida pelo alfa de Cronbach varia entre 0,68 e 0,79 (36,63).

- Personality Diagnostic Questionnaire-4+ (PDQ-4+ (39)): Trata-se de uma escala com o objetivo de avaliar transtornos de personalidade de acordo com a classificação do DSM-IV (64), na qual estão divididos em 3 categorias: Grupo A (paranóide, esquizóide e esquizotípico), Grupo B (antissocial, borderline, histriônico e narcisista) e Grupo C (evitativo, dependente e obsessivo-compulsivo). É composta por 99 afirmativas com respostas dicotômicas (Verdadeiro ou Falso). Os escores totais podem variar de 0 até 99, e escores maiores do que 30 podem indicar um maior risco para a presença de algum transtorno de personalidade. Utilizando a amostra total coletada nos 14 países que participaram do estudo multicêntrico, o alfa de Cronbach foi de 0,92 (65).

- Cannabis Use Disorders Identification Test-Revised (CUDIT-R (45)): Trata-se de uma escala que tem como objetivo avaliar o Transtorno por uso de *Cannabis*. É composto por 8 itens com resposta tipo Likert variando entre 0 (“nunca”) e 4 (“4 ou mais vezes por semana”). Os escores podem variar de 0 até 32, e um escore maior ou igual a 13 pode indicar um Transtorno por Uso de *Cannabis*. A consistência interna medida pelo alfa de Cronbach variou entre 0,73 e 0,91 (45,66).

2.3 PROCESSO DE ADAPTAÇÃO CULTURAL

Os autores de todos os instrumentos foram contatados e consentiram com a adaptação e validação dos mesmos para o português brasileiro. A adaptação cultural para o português brasileiro seguiu diretrizes bem estabelecidas de adaptação transcultural (67,68), consistindo em tradução direta, retrotradução, revisão por comitê de especialistas e avaliação de validade de face.

As instruções, itens e possibilidades de resposta da versão em inglês dos

questionários foram traduzidas independentemente por dois grupos, compostos cada um por 3 profissionais de saúde mental bilíngues, cuja língua materna era o português, produzindo 2 versões em português brasileiro. Um comitê de especialistas composto por 15 membros com experiência em investigação psicométrica e uso problemático de Internet examinou ambas as versões traduzidas para avaliar discrepâncias linguísticas e semânticas, e uma síntese da tradução foi desenvolvida por consenso. Duas retrotraduções foram então produzidas independentemente por dois falantes nativos de inglês que vivem no Brasil há muitos anos, sendo um deles um psicólogo nascido nos Estados Unidos e o outro um professor de inglês nascido em Inglaterra. Eles não foram informados sobre os objetivos do estudo e não tinham qualquer conhecimento prévio sobre a adaptação do questionário. Estas versões foram então avaliadas para verificar o quanto diferiam do instrumento original quanto ao seu significado, utilizando uma escala Likert de 4 pontos (1 = não alterado e 4 = muito alterado). Numa nova reunião do comitê de especialistas, os itens foram revisados com base nos insights das retrotraduções e, quando necessário, foram consensualmente ajustados para manter o significado do instrumento original, produzindo uma nova versão sintetizada e unificada em português brasileiro. A validade da face foi avaliada por 15 pessoas (brasileiros, adultos, usuários de internet) a quem foram solicitados comentários e sugestões relativamente à clareza e compreensibilidade de cada item e de todo o questionário.

2.4 ANÁLISE DOS DADOS

Será especificada no corpo dos artigos publicados.

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3 RESULTADOS

3.1 ARTIGO #1: PSYCHOMETRIC PROPERTIES OF THE NINE-ITEM PROBLEMATIC INTERNET USE QUESTIONNAIRE IN A BRAZILIAN GENERAL POPULATION SAMPLE

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Psychometric properties of the nine-item Problematic Internet Use Questionnaire in a Brazilian general population sample

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Abstract

Objective: The goal of the study is to adapt and examine the psychometric properties of the Brazilian version of the nine-item Problematic Internet Use Questionnaire (PIUQ-SF-9).

Methods: A convenience sample of Brazilian internet users aged between 18 and 89 years (72.7% female, mean age 38.7 years \pm 13.5) was recruited online from September 2018 to July 2019 (test sample = 1,525; retest sample = 237). Participants responded to the adapted version of the PIUQ-SF-9, as well as the Center for Epidemiologic Studies-Depression Scale (CES-D-10) and sociodemographic questions.

Results: A bifactor model with one general factor and three specific dimensions (obsession, neglect and control disorder) yielded the best fit indices [$\chi^2 = 67.66$, $df = 15$, $CFI = 0.99$, $TLI = 0.99$, $RMSEA = 0.048$ (0.037–0.060), $RMSEA p \text{ close} = 0.587$ and $SRMR = 0.01$]. McDonald's hierarchical omega coefficient was 0.76 for the general factor and varied between 0.16 and 0.33 for the specific dimensions. The intraclass correlation coefficient was 0.73 for the general factor and varied between 0.64 and 0.72 for the specific dimensions. The MIMIC model supported the scale's construct validity as the relationship of the predictors (age, time spent online, self-perception of problematic internet use, and depression symptoms) with the PIUQ-SF-9 factors was in line with the assumptions based on the literature.

Conclusion: PIUQ-SF-9 seems to be a brief and culturally validated instrument with sound psychometric properties to be used in future studies on problematic internet use in the Brazilian population.

Keywords: internet addiction, Problematic Internet Use Questionnaire, cultural adaptation, psychometrics, Brazil

INTRODUCTION

The internet has become an integral part of most people's lives, and in some cases, its countless benefits seem to give way to negative consequences from its overuse. Problematic internet use can be defined as excessive and uncontrolled internet use associated with significant impairment in the individual's physical and emotional health, social relationships, and professional life (1, 2). Its occurrence is associated with high rates of psychiatric comorbidities, such as depressive and anxiety disorders (3), and it is more prevalent in adolescents and young adults, who use the internet for longer periods of time than other age groups (4). Problematic internet use is an umbrella term that includes behaviors related to gaming, social network use, and access to pornography, among others (5).

In recent years, Brazil has undergone a major technological revolution, and it is estimated that ~75% of the Brazilian population has regular access to the internet, which corresponds to more than 150 million individuals (6). Research on the problematic internet use in Brazil is on the rise, as it is in many countries. However, one of the existing difficulties is the paucity of instruments available to study this phenomenon, since only the Internet Addiction Test [IAT; (7, 8)], and the Online Cognition Scale [OCS; (9–11)] have been translated and culturally adapted to Brazilian Portuguese. The IAT, despite being the most widely used, had no psychometric properties other than the internal consistency assessed in our population. The OCS has been assessed for semantic equivalence, reliability, and construct validity among university students, but it has been considerably less investigated, perhaps because it is longer and more time-consuming. The development of measurement tools that are valid, reliable, and validated across cultural settings is essential for screening people in risk of problematic internet use, investigating clinical and etiological aspects of this phenomenon, and evaluating prevention and treatment strategies (2).

The Problematic Internet Use Questionnaire—Short Form-9 (PIUQ-SF-9) is a nine-item comprehensive screening tool assessing three basic aspects of problematic internet use: obsession (i.e., preoccupation and withdrawal symptoms), neglect (i.e., negligence of everyday activities and basic needs), and control disorder (i.e., trouble in controlling internet use) (12). Several studies have examined its psychometric

properties, showing high internal consistency, replicable factor structure, and moderate to good test–retest properties. It has also proved to be valid across various methods of data collection (i.e., online as well as paper– pencil) and age groups, being considered suitable for time-limited surveys (12, 13). Cross-cultural psychometric studies found that the PIUQ-SF-9 demonstrated adequate measurement invariance across several European and Asian countries (14–16).

The aim of the present study is to describe the cultural adaptation process of the PIUQ-SF-9 to Brazilian Portuguese and the evaluation of its psychometric properties in a general population sample.

MATERIALS AND METHODS

Cultural Adaptation Process

The original instrument (including instructions, all items and answer possibilities) was independently translated by six bilingual translators whose native language was Brazilian Portuguese, divided into two groups (two psychologists and one psychiatrist in each group). The translated versions were examined by an expert committee to assess semantic discrepancies (including linguistic and conceptual issues), and, by consensus, a synthesized version of the translation was developed. The expert group was composed of 15 members skilled in psychometric research and also in internet use disorders.

It was then back translated into English by two native English speakers who worked independently to produce back- translations. The first back-translator was a psychologist born in the USA, and the second was an English teacher born in England, and both of them have lived in Brazil for many years. None of the translators previously knew the questionnaire being adapted, and they were not informed about the objectives of the study. The back-translated versions were then evaluated by two independent groups, composed of three members each, to verify how much the instructions, each item and the answer possibilities differed from the original instrument in relation to their meaning, rating on a four-point Likert scale from 1 (much altered) to 4 (not altered). At a new meeting of the experts' group, based on the insights from the

back-translations' evaluations, all items on the scale were revised and, when necessary, consensually adjusted to maintain the meaning of the original instrument, producing a new synthesized and unified version in Brazilian Portuguese. A synthesized version of the back-translation was also produced and, along with the description of the adaptation process, were forwarded to the PIUQ-SF-9 authors for appraisal.

This version was then sent, in an online format, to a group of 15 people to investigate the face validity of the instrument, that is, whether the items, instructions and response scale were comprehensible to the target population (17). Comments and suggestions regarding clarity and comprehensibility were requested for each item, as well as for the whole questionnaire.

Sample and Procedures

A convenience sample of Brazilian internet users aged between 18 and 89 years was recruited online *via* social media platforms and email, between September 2018 and July 2019. Data collection was carried out anonymously through the online research platform Survey Monkey, and the questionnaire could be accessed and answered *via* smartphone, computer, or tablet. At the end of the questionnaire, participants were offered feedback on their results from the questionnaire on problematic internet use, for which an email address was requested. Those who provided the email address were invited, in August 2019, to answer the PIUQ-SF-9 scale again for the retest validation. The invitation was made in an automated way so that the researchers did not have contact with the participants' email contacts. The time between the test and the retest was at least 4 weeks.

All participants who filled in the sociodemographic data and completed at least 90% of the PIUQ-SF-9 were included. The missings were at random and were excluded from subsequent analyzes. The sample size estimate was 1,000, considered "excellent" for carrying out the confirmatory factor analysis (CFA) and other psychometric testings (18, 19).

This cross-sectional study is part of a multicentric project carried out in 16 countries, whose main objective is to assess cross-cultural aspects of internet and smartphone problematic use. The study was approved by the Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (protocol number 89702318.2.0000.5327), and it was conducted in accordance with the Declaration of Helsinki.

Variables and Measures

Sociodemographic and internet use data: participants were asked about their age, sex, education, working and marital status, as well as number of hours of daily internet use, main device for internet connection, and self-perception of problematic internet use.

PIUQ-SF-9, (12): this questionnaire consists of nine items, which evaluate problematic internet use based on the three-factor structure of the original 18-item instrument (20): obsession, neglect, and control disorder. All questions have five-point Likert-type answers, ranging from 1 “never” to 5 “almost always/always.” Total scores range from 9 to 45, and higher scores indicate a higher risk of problematic use. Internal consistency, measured by Cronbach’s alpha, varies between 0.91 and 0.93 for the whole instrument and between 0.77 and 0.89 for specific dimensions (12, 21). Test–retest reliability varies between 0.61 and 0.90 for the whole instrument and between 0.53 and 0.90 for the specific factors (20, 21).

Center for Epidemiologic Studies—Depression Scal-10 [CES- D-10; (22–24)]: it is a brief version of the CES-D, which aims to assess depressive symptoms. It consists of 10 items that are evaluated on a Likert-type scale ranging from 0 (“rarely or never”) to 3 (“most of the time or all the time”). Scores can range from 0 to 30 and, according to Andresen et al. (22), scores ≥ 10 suggest significant depressive symptomatology. In the original study and also in recent validations, Cronbach’s alpha is higher than 0.80 in all subgroups (23, 25).

Statistical Analysis

The analyses were performed in R environment (version 3.2.2) implemented by the *lavaan* package (26). In addition, *semTools* package was used to estimate reliability measures (27), and *semPlot* package was used to produce the MIMIC diagram (28). For ordered categorical variables, the Diagonal Weighted Least Squares estimation method and polychoric correlation coefficients were used with robust estimation of the means, variances, and standard errors.

CFA was performed to verify the structural validity of the instrument. In addition to the analysis of the fitted model suggested by the original study (12), other three alternative models were also evaluated as proposed by a recent study that verified the psychometric properties of this questionnaire in nine European countries (14). The model originally proposed is composed of three oblique factors (neglect, obsession, and control disorder). The alternative models presented are: (1) two oblique factors model in which the dimensions neglect and control disorder belong to the same factor; (2) bifactorial model composed of a general factor and three specific dimensions (neglect, obsession, and control disorder); and (3) bifactorial model consisting of the general factor and two specific dimensions, in which neglect and control disorder compose the same dimension. The fit indices considered to compare the model's adequacy were: Comparative Fit Index and Tucker-Lewis Index (CFI and TLI, ≥ 0.95), Root Mean Square Error of Approximation (RMSEA, ≤ 0.06) with associated p -value and Standardized Root Mean Residual (≤ 0.10) (29).

The internal consistency was assessed using McDonald's hierarchical omega coefficient (ω_H), considering satisfactory if higher than 0.70 (but in the case of a bifactor model, this parameter is valid only for the general factor, once the specific dimensions scores are controlled for the variance due to the general factor) (30). Cronbach's alpha (α) was also reported for the sake of comparability with previous research. To estimate test-retest reliability, the intraclass correlation coefficient (ICC) and corresponding 95% confidence interval (CI) were calculated, and reliability was considered adequate for values between 0.50 and 0.75, good for values between 0.75 and 0.90, and excellent for values > 0.90 (31).

We also conducted a Multiple Indicators Multiple Causes (MIMIC) model to explore construct validity by estimating simultaneously the influence of possible

predictors (age, time spent online, self-perception of problematic use, and depression symptoms) on the PIUQ-SF-9 general and specific factors, *via* standardized partial regression coefficients. The MIMIC is a variety of Structural Equation Modeling, which describes the effects of covariates on latent variables and the inter-relationships of latent variables, thus providing better insight than traditional correlational analysis (32, 33). Based on the literature, it was assumed that age would have a negative effect on the PIUQ-SF-9 factors while time spent online, self-perception of problematic internet use, and depression symptoms would have a positive effect on the PIUQ-SF-9 factors.

Floor and ceiling effects are considered to be present if more than 15% of respondents achieved the lowest or highest possible score, respectively (34). The dataset and the analysis script were uploaded can be accessed from the following link: https://github.com/wagnerLM/PIUQ/blob/main/PIUQ-SF-9_script_data.R.

RESULTS

Cultural Adaptation

The two forward translations achieved very similar results, and only minor adjustments were needed to obtain by consensus, a synthesized version. All back-translation items were considered to be unaltered from the original instrument in relation to their meanings. No adjustment needs were identified by the authors of the original instrument when evaluating the synthesis of the back-translations. On pre-test, all respondents rated the questionnaire as “easy to understand,” and there were only a couple of minor suggestions involving word order and replacement of a term by a synonym. The final Brazilian Portuguese version of the PIUQ-SF-9, as well as the original English version, are available in Appendices A, B, respectively.

Demographic Data

A total of 1,525 people answered the sociodemographic part, the questions about internet use and the PIUQ-SF-9 (72.7% were female, mean age was 38.7 years \pm 13.5). A total of 735 participants informed their email at the end of the questionnaire and were invited to complete the PIUQ-SF-9 retest. Thus, 237 out of the 735

responded to the PIUQ-9 retest (74.7% were female, mean age was 38.1 years \pm 13.8), in an average time of 6 months after the original completion. The main sociodemographic data of the test and retest samples are presented in Table 1.

Psychometric Properties

We evaluated the factor structure of the PIUQ-SF-9 testing the four models previously proposed by Laconi et al. (14) and the fit indices are reported in Table 2. The bifactor model with one general factor and three specific dimensions (obsession, neglect, and control disorder) yielded the best fit to the data [$\chi^2 = 67.661$, $df = 15$, CFI = 0.99, TLI = 0.99, RMSEA = 0.048 (0.037–0.060), RMSEA p close = 0.587 and SRMR = 0.01]. Factor loadings for this model are presented in Table 3. After confirming the factorial structure of the instrument, a normative table was produced, which can be found in Appendix C.

Regarding internal consistency of PIUQ-SF-9, ω_H was 0.76 for the general factor and varied between 0.16 and 0.33 for the specific dimensions. Cronbach's alpha was 0.91 for the general factor and varied between 0.73 and 0.88 for the specific dimensions. For the test–retest reliability, ICC was 0.73 for the general factor and varied between 0.64 and 0.72 for the specific dimensions (complete results for both internal consistency and test–retest reliability measures are presented in Table 3).

The MIMIC model had an excellent fit to the data [$\chi^2(35) = 108.9$, CFI/TLI = 0.99, RMSEA = 0.04 (90% C.I. = 0.03–0.05)]. Predictors explained the variance of the general and specific factors as follows: general factor = 34%, neglect = 25%, obsession = 8%, and control disorder = 35%. According to the model, the age of the respondents had no effect on the general factor, but a small negative effect on all the specific factors. Time spent online had a small positive effect on neglect and obsession, but no effect on the general factor and control disorder. Self-perception of problematic internet use had a large positive effect on general factor and control disorder, a small effect on negligence, and no effect on obsession. Depression symptoms had a small positive effect on the PIUQ-SF-9's general factor and all specific dimensions. A diagram of PIUQ-SF-9's factorial structure and the results of all regressions paths and

correlations, as well as a Supplementary Material link for the detailed measurement model assessment, are presented in Figure 1.

Regarding floor and ceiling effects, 4.2% of the sample answered the minimum value for PIUQ-SF-9, while 0.1% answered the maximum value, which were considered satisfactory.

DISCUSSION

This study aimed at culturally adapting the PIUQ-SF-9 for use in Brazil, as well as examining its psychometric properties. Our findings demonstrated that the questionnaire has shown the best fit in the bifactor model (one general factor and three specific dimensions: neglect, obsession, and control disorder). Therefore, reliability and validity tests were carried out taking into account this factorial structure. The Brazilian Portuguese version of the PIUQ-SF-9 has shown good internal consistency and the test–retest procedures highlighted moderate stability. Construct validity was demonstrated with the MIMIC model, by the means of hypothesis testing, with an excellent fit to the data.

The bifactor model suggests that a general factor (problematic internet use) explains most of the variance in the PIUQ-SF-9 scores, while the three specific dimensions have distinct but smaller participation in the variance. In the original version of the instrument (12, 18) the most appropriate factorial structure was the three-factor model, that would be neglect, obsession, and control disorder. When evaluating the psychometric properties of PIUQ-SF-9 in samples from nine European countries, Laconi et al. (14) observed that the bifactor model with one general factor and two specific dimensions had an acceptable or good fit in eight out of nine subsamples. However, in that same study, the bifactor model with the three specific dimensions showed acceptable fit indices in six out of nine languages (Italian, German, Spanish, Turkish, English, and Greek). All items loaded significantly on the general factor. Item 6 (concealing the time spent online) showed the highest load in the general factor (0.87), although there was non-significant loading on the control disorder specific dimension. Item 9 (people complaining about too much time online) also loaded only in the general factor (0.70), but not on the neglect specific dimension. This was also

observed in the nine subsamples evaluated in the study by Laconi et al. (14), and we may hypothesize that these behaviors are more frequent when a pattern of problematic use is already established, and when one's perception of problematic use is higher.

The internal consistency of the Brazilian version of PIUQ-SF- 9 demonstrated good levels of homogeneity, as demonstrated by the analysis of both the α and the ω_H indices, which is in line with previous international validating studies of the questionnaire (14, 35). It is worth mentioning that, in bifactor models, the ω_H for the specific dimensions represent the reliability of a subscale score after controlling for the variance due to the general factor, explaining why these values are much smaller than the ω_H value for the general factor (30).

Test–retest reliability was considered to be moderate, not differing much from other recent validation studies (21). It is possible that methodological aspects may have influenced the stability of the measure, like the time interval between the test and the retest, and also the possible different contexts in which participants responded to the instrument for the first time (during the academic year or during holidays, for example). On the other hand, we can also raise the hypothesis that problematic internet use may present variations in its natural course, either in the intensity of symptoms or in its recovery, as a chronic disorder with spontaneous remission and recurrences (20). It is also worth mentioning that both the test and the retest were carried out before the COVID-19 pandemic, which greatly interfered with the use of the internet.

Although there are dozens of instruments developed to assess problematic internet use (36), none of them is considered to be the gold standard, which makes it difficult to assess the PIUQ-SF-9's criterion validity. MIMIC analyses used to assess the construct validity was based on findings in the literature showing that problematic use is related to more time spent on the internet (not for studies or work), is more prevalent in young adults than in older age groups, and it is also often associated with psychiatric comorbidities (especially depression). All the associations and their degrees were consistent with previous studies (13, 37, 38). The greatest magnitudes were found in the positive effect of self-perception of problematic internet use on the PIUQ-SF-9's general factor (0.48) and control disorder (0.51). Interestingly, self-

perception of problematic use showed a non-significant effect on the obsession dimension, perhaps because it is the most subjective dimension of the scale. Taken together, these results also reinforce the usefulness of a bifactor model.

The validation process of an instrument needs to be understood within the context in which it was used and, in this sense, it may have some limitations about the findings of this study. The first is that the cross-sectional design of the study doesn't permit to make causal inferences, and the terms "predictors" and "effect" related to the MIMIC model are only statistical predictors and effects, not real causal prediction. The second is that the study sample was selected in a non-probabilistic way, which may limit the external validity of our findings. In a continental and culturally diverse country as Brazil, it is possible that not all regions of the country have been equally represented in the study population, despite the efforts of researchers to seek this representation when recruiting the sample. We observed that both test and retest participants had a high level of education, considerably higher than the average Brazilian population (39). Although internet use in Brazil has been shown to be associated with higher levels of education (6), convenience sampling may have also influenced this finding.

In summary, based on the process of the adaptation of the PIUQ-SF-9 into Brazilian Portuguese and the validation evidence examined, the PIUQ-SF-9 seems to be a valid and reliable instrument to be used in future studies on problematic internet use in Brazil. The availability of a culturally validated instrument with sound psychometric properties will allow us to estimate and monitor the risk of problematic internet use in our population, to examine the effectiveness of prevention and treatment protocols, and also to compare these data with findings from other countries. Due to its brevity, the PIUQ-SF-9 can easily be included in research protocols without increasing significantly the completion time. This can also increase participants' compliance, especially those with more severe patterns of problematic internet use. In order to increase the PIUQ-SF-9 evidence of validation, future research should explore the instrument's measurement invariance, its performance in clinical samples and populations of different stages of development (e.g., teenagers), and also its possible gender differences in problematic internet usage (40).

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found in the article/Supplementary Material.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (Protocol Number 89702318.2.0000.5327). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

DS, WLM, SL, KK-C, ZD, OK, IP, and SH contributed to the conception and design of the study. DS, VA, CP, and PL organized the database. DS, WLM, MY, and OK performed the statistical analysis. DS and MY wrote the first draft of the manuscript. SL, KK-C, PL, OK, ZD, and SH wrote sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsy.2021.660186/full#supplementary-material>

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Conflict of Interest:

ELTE Eötvös Loránd University receives funding from the Szerencsejáték Ltd to maintain a telephone helpline service for problematic gambling. ZD has also been involved in research on responsible gambling funded by Szerencsejáték Ltd and the Gambling Supervision Board and provided educational materials for the Szerencsejáték Ltd's responsible gambling program. The University of Gibraltar receives funding from the Gibraltar Gambling Care Foundation. However, this funding are not related to this study and the funding institution had no role in the study design or the collection, analysis, and interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Tabela 1 - Table 1 - Descriptive statistics of socio-demographic variables

	Test sample (n = 1525)	Retest sample (n = 237)
Mean age in years (SD)	38.75 (13.55)	38.08 (13.80)
GENDER		
Women (%)	1.106 (72.7%)	177 (74.7%)
OCCUPATION (%)		
Studying only	217 (14.2%)	41 (17.3%)
Studying and working	368 (24.2%)	66 (27.8%)
Working only	817 (53.6%)	105 (44.3%)
Not working, not studying	121 (7.9%)	25 (10.5%)
EDUCATIONAL LEVEL (%)		
Elementary School	15 (1.0%)	--
High school, incomplete	17 (1.1%)	--
High school, complete	74 (4.9%)	8 (3.4%)
High school, complete + 1-3 years of study	163 (10.7%)	33 (14.1%)
High school, complete + 4-6 years of study	311 (20.3%)	43 (18.4%)

Tabela 2 - Table 2 - Confirmatory factor analysis of four measurement models of the PIUQ-9

	χ^2	df	p	CFI	TLI	RMSEA (95% CI)	RMSEA pclose	SRMR
3-Factor model	528.277	24	< .001	.97	.96	.117 (0.109-0.126)	.000	.05
2-Factor model	668.107	26	< .001	.97	.95	.127 (0.119-0.136)	.000	.06
Bifactor model with 3 specific dimensions	67.661	15	< .001	.99	.99	.048 (0.037-0.060)	.587	.01
Bifactor model with 2 specific dimensions	218.172	17	< .001	.99	.98	.088 (0.078-0.099)	.000	.03

PIUQ-9, Problematic Internet Use Questionnaire–9 items; χ^2 , chi-square; df, degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis Index; RMSEA, root-mean-square error of approximation with 95% confidence interval; SRMR, standardized root mean residual.

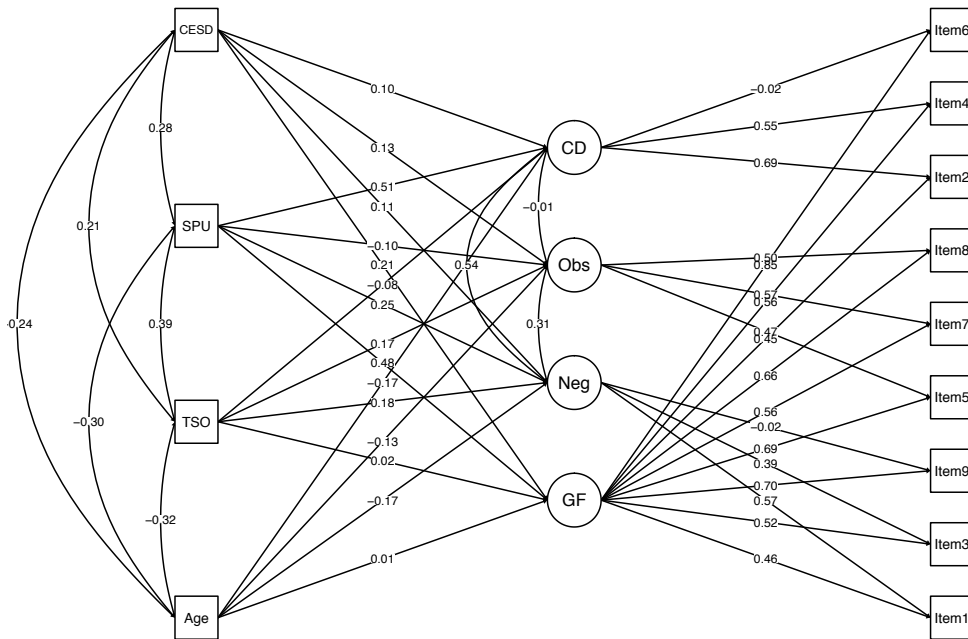
Tabela 3 - Table 3 - Standardized factor loadings and reliability indicators of the bifactor model with three specific dimensions of the PIUQ-SF-9

	General factor	Specific dimensions		
		Neglect	Obsession	Control Disorder
Item 1	.64	.47		
Item 3	.57	.49		
Item 9	.70	-.01		
Item 5	.72		.48	
Item 7	.56		.63	
Item 8	.69		.52	
Item 2	.72			.53
Item 4	.75			.56
Item 6	.87			-.08
ω_H	.76	.16	.33	.18
α	.91	.73	.88	.86
ICC	.73	.72	.68	.64
ICC 95% CI	.67-.79	.66-.78	.61-.75	.56-.71

PIUQ-SF-9, Problematic Internet Use Questionnaire – Short Form – 9; ω_H , McDonald hierarchical omega coefficient; α , Cronbach's alpha; ICC, Intraclass correlation coefficient; ICC 95% CI, 95% confidence interval.

Note. The significance test showed $p < .001$ for all intraclass correlation coefficients.

Figura 1 - Figure 1 - Diagram of the MIMIC model of the PIUQ-SF-9 general factor and specific dimensions and the age of the respondents, time spent online, self-perception of problematic internet use, and depressive symptoms



MIMIC, Multiple Indicators Multiple Causes; CESD, Center for Epidemiologic Studies Depression Scale; SPU, Self-perception of Problematic Use; TSO, Time Spent Online; CD, Control Disorder; Obs, Obsession; Neg, Neglect; GF, General Factor.

Note: a detailed measurement model assessment as supplementary material can be found on the following link: https://github.com/wagnerLM/PIUQ/blob/main/PIUQ-SF-9_fit.

Supplementary Material

Questionário de Uso Problemático de Internet – 9 itens*
(Spritzer et al. 2021)

As perguntas abaixo se referem ao seu uso de internet de uma maneira geral (não para trabalho ou estudos). Ao responder cada pergunta, marque a opção que melhor descreve como você tem se sentido e se comportado nos últimos 6 meses, de acordo com a seguinte escala:

1 Nunca	2 Raramente	3 Algumas vezes	4 Frequentemente	5 Sempre/quase sempre				
				1	2	3	4	5
Com que frequência você deixa de realizar tarefas domésticas para ficar mais tempo online?								
Com que frequência você sente que deveria diminuir a quantidade de tempo que você passa online?								
Com que frequência você fica online quando deveria estar dormindo?								
Com que frequência você tem vontade de diminuir a quantidade de tempo que você passa online, mas não consegue?								
Com que frequência você se sente tenso, irritado ou estressado se você não pode usar a internet pelo tempo que você gostaria no dia?								
Com que frequência você tenta esconder a quantidade de tempo que você passa online?								
Com que frequência você se sente tenso, irritado ou estressado se você não pode usar a internet por vários dias seguidos?								
Com que frequência você se sente deprimido, mal-humorado ou nervoso quando você não está na internet e esses sentimentos passam assim que você se conecta novamente?								
Com que frequência as pessoas ao seu redor reclamam do tempo que você passa online?								

* No previous authorization is required to use the "Questionário de Uso Problemático de Internet - 9 itens". We just require that proper credit be given to its authors and the present article be cited as a reference.

Supplementary Material

Problematic Internet Use Questionnaire – Short Form - 9 items
(Koronczai et al. 2011)

The following questions refer to your Internet use, in a general way (not for work nor studies). As you answer each question, check the box that best describes how you have felt and conducted yourself over the past 6 months, according to the following scale:

1 Never	2 Rarely	3 Sometimes	4 Often	5 Always /almost always				
				1	2	3	4	5
How often do you neglect household chores to spend more time online?								
How often do you feel that you should decrease the amount of time spent online?								
How often do you spend time online when you'd rather sleep?								
How often do you wish to decrease the amount of time spent online but you do not succeed?								
How often do you feel tense, irritated, or stressed if you cannot use the Internet for as long as you want to?								
How often do you try to conceal the amount of time spent online?								
How often do you feel tense, irritated, or stressed if you cannot use the Internet for several days?								
How often does it happen to you that you feel depressed, moody, or nervous when you are not on the Internet and these feelings stop once you are back online?								
How often do people in your life complain about spending too much time online?								

Supplementary Material

Tabela 4 — Normative Values Based on Mean Scores of Subscales

Percentile	GF	Neg	Obs	CD
10%	1,22	1,33	1,00	1,00
20%	1,44	1,67	1,00	1,33
30%	1,67	1,67	1,33	1,67
40%	1,89	2,00	1,67	2,00
50%	2,11	2,33	1,67	2,33
60%	2,33	2,33	2,00	2,33
70%	2,56	2,67	2,33	2,67
80%	2,78	3,00	2,67	3,00
90%	3,22	3,33	3,33	3,67

GF, General Factor; Neg, Neglect; Obs, Obsession; CD, Control Disorder

3.2 ARTIGO #2: THE SELF-PERCEPTION OF TEXT MESSAGE DEPENDENCE SCALE (STDS): A BRAZILIAN-PORTUGUESE VALIDATION AND EXPANSION OF ITS PSYCHOMETRIC PROPERTIES

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The Self-perception of Text message Dependence Scale (STDS): A Brazilian-Portuguese Validation and Expansion of its Psychometric Properties

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Abstract

Text messaging is the primary form of technology-mediated interpersonal contact and the most carried out activity on cell phones. Despite its advantages, text messaging is not exempt from risks. The present paper aimed to validate and expand the psychometric properties of the Self-perception of Text-message Dependency Scale (STDS) in a Brazilian sample of adult internet users. In this cross-sectional study, we recruited a convenience sample of Brazilian internet users aged 18 and over. A total of 1,642 (*M* age = 38.6, *SD* = 13.5; 73% female) participants completed the STDS, the Mobile Phone Problem Usage Scale-27 (MPPUS), and the Problematic Internet Use Questionnaire – Short form – 9 questionnaires (PIUQ-SF-9). Multi- group confirmatory factor analysis showed measurement invariance for gender and age. Internal consistency was high when accessed by both McDonalds' Omega and Cronbach's alpha. Network Analysis provided insights into the core symptoms of problematic text messaging. Convergent validity of the STDS was demonstrated by the subscale's correlation with MPPUS and PIUQ-SF-9. Due to its expanded psychometric properties and brevity, the STDS can be used in more comprehensive investigations about other excessive technology-related behaviors, such as problematic smartphone and internet use, allowing a better understanding of the mechanisms involved in problematic technology use.

Keywords Internet addiction · Texting · Problematic use · Cultural adaptation · Psychometrics · Brazilian Portuguese

INTRODUCTION

Text messaging (TM) has revolutionized human communication in recent decades and has become the primary form of technology-mediated interpersonal contact (Statista, 2020). It has increasingly become integrated into people's daily lives, work-related communications, interactions between families, as well as interpersonal and romantic relationships (GWI, 2021). TM is widely available on various platforms (from instant messaging apps to social networks and online games), enabling also the sending of voice messages, images, videos, links, gifs, stickers, and emojis (We Are Social, 2021), and it is the most carried out activity on cell phones, especially among young people (GWI, 2021; Roberts et al., 2014; Smith & Page, 2015). Communication via text messaging has also increased in face of the challenges of the COVID-19 pandemic given the social distancing measures implemented in many countries (CTIA.org, 2021).

Despite the advantages of TM in communication and interaction between people, this practice is not exempt from risks. Problematic Text Messaging (PTM) may be defined as impaired control over texting, intense emotional reactions (anxiety, frustration, feelings of rejection) arising from texting, high importance of messaging in people's social lives, and negative consequences secondary to this behavior (Liese et al., 2019; Lu et al., 2014). Studies have linked PTM with many negative consequences, such as the increased risk of traffic accidents (resulting both from texting while driving as well as from distracted walking) (Klauer et al., 2014; Phuksuksakul et al., 2021; Ropaka et al., 2020), sleep disorders (Ferraro et al., 2015), academic difficulties (Grant et al., 2019), among others. PTM has also been associated with higher levels of depression (Lu et al., 2014; Panova et al., 2020), anxiety (Lu et al., 2014), emotion dysregulation (Liese et al., 2020) and impulsivity, as well as lower levels of executive function and self-directedness (Hayashi & Blessington, 2020; Lu et al., 2014). Several authors state that PTM is more prevalent in younger individuals (Ferraro, 2018; Hayashi & Blessington, 2020), but its specificities regarding gender differences are not fully established. From a nosological and taxonomic perspective, research on PTM is also relevant to increasing the understanding of problematic smartphone use (PSU) and problematic internet use (PIU), as it deepens the discussion about the potential

mechanisms of these disorders (Montag et al., 2021; Rozgonjuk et al., 2021; Starcevic et al., 2021).

To date, one of the most frequently used questionnaires to evaluate PTM is the Self-Reported Scale of Text Message Dependence (STDS), developed by Igarashi et al. (2008). It is a brief instrument which assess PTM based on three dimensions: (i) emotional reaction (ER); (ii) excessive use (EU); (iii) relationship maintenance (RM). The ER dimension measures excessive preoccupation with TM while the EU dimension assess self-perception regarding compulsive TM. Finally, the RM comprises items related to fear of relationship breakdown in the absence of TM and psychological dependence on texting to maintain social relationships. The STDS demonstrates a robust three-factor structure, good internal consistency measured by Cronbach's alpha, and good construct validity (Igarashi et al., 2008; Liese et al., 2019; Lu et al., 2011, 2014).

However, to date, no validation study has evaluated the measurement invariance of the factor structure of the STDS in different age groups. Furthermore, whether the STDS demonstrates measurement invariance to gender has only been verified in the original development of the instrument in a Japanese sample (Igarashi et al., 2008). As such, gender invariance has not been investigated in samples from other cultural backgrounds. Measurement invariance assesses the psychometric equivalence of a construct across groups, demonstrating if the scale has similar meanings to different groups, which allows for meaningful comparisons across groups (Putnick & Bornstein, 2016). Measurement invariance is considered to be a prerequisite to conducting further cross-group comparisons, with implications for the analysis of the internal factor structure of the scale as well as the correlations of its scores with external variables (Van De Schoot et al., 2015; Vandenberg & Lance, 2000). In addition, internal consistency of the STDS has only been assessed by methods that may not be suitable for psychological constructs in which variances of and covariances between items are not equal. Moreover, convergent validity has not been evaluated in comparison to any instrument that assesses problematic smartphone use, and has only been evaluated once in relation to problematic internet use (Lu et al., 2011). Moreover, no study has used network analysis to explore the distribution of items and their relationship to gender.

Over the recent years, Brazil, like other low- and middle-income countries, has faced a significant technological transition. According to the Brazilian Internet Steering Committee (2020), in less than a decade, the number of Internet users has nearly doubled in Brazil. This number accounts for 74% of the Brazilian population aged ten and over, which corresponds to 134 million individuals. Of importance to the present research, TM is the most used form of communication (92%) followed by social networks (76%) and voice or video calls (73%) (Brazilian Internet Steering Committee, 2020). Given the high rate of TM in the Brazilian population, PTM may be relatively frequent, but to date, there is no instrument available to assess PTM in Brazil.

Given that the validation of a measurement instrument is a continuous process, this paper aimed to further explore the psychometric properties of the STDS in a sample of adult Internet users, as well as to adapt the STDS to the Brazilian population. We hypothesized that: (i) the STDS would exhibit high internal consistency levels; (ii) the three-factor solution of the STDS proposed in the original version would be similar for Brazilian adults; (iii) the invariance levels of the instrument would be equivalent for age and gender; (iv) the distribution among the instrument' items would be similar among different groups by using the Network Analysis approach; (v) the STDS' subscales would show moderate correlation with measures of PSU and PIU (convergent validity).

METHODS

This cross-sectional study is part of a multicentric project in 16 countries whose main objective is to assess the cross-cultural aspects of Internet and smartphone use. The study was conducted according to the Declaration of Helsinki and was approved by the Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (protocol number 89702318.2.0000.5327).

Cultural Adaptation

The instructions, items, and answers of the English version of the instrument were forward translated independently by two groups of 3 bilingual mental health

professionals whose native language was Brazilian Portuguese, which produced 2 Brazilian Portuguese versions. An expert committee examined both translated versions to assess linguistic and semantic discrepancies, and a synthesized translation version was developed by consensus. Two back-translations were then produced independently by two native English speakers, and these versions were then evaluated to verify how much they differed from the original instrument concerning their meaning using a 4-point Likert scale from 1 (much altered) to 4 (not altered). Items were revised based on the insights from the back-translations and, when necessary, consensually adjusted to maintain the meaning of the original instrument, producing a new synthesized and unified version in Brazilian Portuguese. Face validity was evaluated by 15 people who were asked for comments and suggestions regarding clarity and comprehensibility regarding each item and the whole questionnaire in line with previous studies (Spritzer et al., 2021).

Sample and Procedures

A convenience sample of Brazilian adults (18+) was recruited online via social media platforms (especially Facebook and WhatsApp) and email. Data collection was carried out anonymously through SurveyMonkey®, and the questionnaire could be accessed and answered via smartphone, computer or tablet. A total of 2,046 participants started the survey, from which 404 participants did not complete the survey, resulting in a final sample size of 1,642 (M age = 38.67; SD = 13.52; male n = 451; 27%; female n = 1.191; 73%) participants.

Measures

Sociodemographic and Technology Use Data

We collected the following information: age, sex, education level, employment, and marital status. We also collected information related to the number of hours spent on smartphones and the Internet as well as self-perceptions of problems related to TM, smartphone, and Internet use.

Problematic Text Messaging (PTM)

The Self-perception of Text-message Dependency Scale (STDS; Igarashi et al., 2008) is a self-report instrument that assesses PTM from 3 dimensions: emotional reaction, excessive use, and relationship maintenance. Each of these has five questions that are answered on a Likert scale ranging from 1 ("Strongly agree") to 5 ("Strongly disagree"). Scores range from a minimum of 15 to a maximum of 75. Previous studies have shown high internal consistency for each dimension, ranging between $\alpha = 0.78$ — 0.91 (Igarashi et al., 2008; Lu et al., 2011). In the present study, the internal consistency of the STDS dimensions was high (McDonald's omega ranging between 0.82 — 0.87 , Cronbach's α ranging between 0.79 — 0.86).

While acknowledging that the STDS has been validated as a multidimensional scale and using its 3-factor structure when evaluating factorial structure and convergent validity, in order to facilitate comparisons to previous studies (Blessington & Hayashi, 2020; Hayashi & Washio, 2020; Hayashi et al., 2019) we opted to explore the distribution of the sociodemographic variables among different levels of PTM based on the tertiles of participants STDS final score: (i) lower tertile; (ii) middle tertile; and (iii) upper tertile. This procedure is in line with previous studies (Andrade et al., 2020) and demonstrated the most prominent effect size between groups, indicating a robust difference in self- perception of PTM ($F(2) = 3,570.49$, $\eta^2 = 0.813$).

Problematic Smartphone Use (PSU)

The Mobile Phone Problem Usage Scale (MPPUS) is a 27-item instrument to assess motivation for use, addiction symptoms, and negative consequences of using a cell phone (Bianchi & Phillips, 2005). Questions are answered on a Likert scale ranging from 1 ("Totally false") to 10 ("Totally true"). Scores range from 27 to 270 with higher scores indicating an increased risk of PSU. In our sample, MPPUS has demonstrated high internal consistency (Cronbach's $\alpha = 0.93$).

Problematic Internet Use (PIU)

The Problematic Internet Use Questionnaire – Short Form – 9 (PIUQ-SF-9) consists of nine items, which evaluates problematic internet use according to three dimensions: obsession, neglect, and control disorder (Koronczai et al., 2011). All items are based on a 5-point Likert scale, ranging from 1 ("never") to 5 ("almost always/always"). Total scores range from 9 to 45, and higher scores indicate a higher

risk of PIU. The PIUQ-SF-9 has demonstrated high internal consistency across different studies (Cronbach's $\alpha = 0.91$, Koronczai et al., 2011; Cronbach's $\alpha = 0.81$ — 0.90 , Laconi et al., 2019; Cronbach's $\alpha = 0.93$, Spritzer et al., 2021).

Data Analysis

Factor Structure and Reliability

The Kaiser–Meyer–Olkin method ($KMO = 0.882$) and Bartlett's test of sphericity ($p < 0.001$) were used to assess the suitability of the data for factor analysis. Confirmatory Factor Analysis (CFA) was used to confirm the original three-factor structure of the STDS (Igarashi et al., 2008), using robust error calculation, Weighted Least Squares Mean (WLSMV) and variance-adjusted as the estimation method. We chose this method because it uses polychoric correlation and is more suitable for ordinal data (Gadermann et al., 2012). We considered factor loadings values according to Comrey and Lee's (1992) recommendations, thus excluding loadings lower than 0.45. We used the fit thresholds recommended by Cheung and Rensvold (2002) to examine good model fit.

We conducted multigroup confirmatory factor analyses (MGCFAs) to test measurement invariance for gender and age. Regarding age, participants were classified according to the guidelines provided by the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística, 2020): (i) young adults (18 to 29 years, $n = 477$); (ii) middle-aged adults (30 to 59 years, $n = 999$); and (iii) older adults (60 years or more, $n = 156$). We evaluated metric, scalar, and residual invariances in a hierarchical way, where a less restricted model was compared to a more restricted model. Measurement invariance was achieved when CFI and SRMR difference values (ΔCFI and $\Delta SRMR$) were lower than 0.01 and 0.02, respectively. Due to the fact that unbalanced sample sizes in MGCFAs may impact the results of some parameters, we have chosen ΔCFI since it is independent of both model complexity and sample size, and is not correlated with the overall fit measures (Cheung & Rensvold, 2002; Pimenta de Devotto et al., 2020).

The internal consistency was assessed using McDonald's omega coefficient (ω) due to the fact that it performs better than Cronbach's alpha in models in which tau-

equivalence cannot be assumed, as factor loadings, variances of and covariances between items are not equal (Cho, 2016). Additionally, the use of “omega if item deleted” better reflects the genuine population estimates of reliability by removing a particular scale item than “alpha if item deleted” (Dunn et al., 2014). and was considered satisfactory if higher than 0.70 (Dunn et al., 2014). Nevertheless, Cronbach's alpha (α) was also reported for the sake of comparability with previous research.

Network Analysis (NA)

We use NA as an exploratory graphical statistical technique to estimate how items in the factor structure group and how much influence each item exerts on the system (network). NA has been increasingly used to assess the psychometric properties of instruments because it allows us to identify in different ways the degree of importance of each item in the instrument. In this case, the network can be understood as the instrument itself so that the nodes (items) correlate through edges. These correlations can be positive (green edges) or negative (red edges), and the greater the strength of the correlation, the thicker the edge (Borsboom & Cramer, 2013). In this study, we assessed four measures of item centrality; (i) The number of shortest connections between any two nodes that pass through the aimed node (betweenness centrality); (ii) the magnitude of these connections (degree centrality); (iii) the average weight of each item's correlations with the other items (closeness centrality); and (iv) the weighted weight of the item's influence on the system if it were removed from the instrument (expected influence).

We used the LASSO (Least Absolute Shrinkage and Selection Operator) regularization method to generate the graphs, using a network of partial correlations between the nodes. This technique was chosen because it allows a better-fitted model that does not consider low magnitude correlations in the graph. According to an algorithm that took into account the frequency and magnitude of the associations of the STDS items, the nodes were positioned in the system in line with previous studies (Andrade et al., 2020, 2021; de Oliveira Pinheiro et al., 2020).

Convergent Validity

We analyzed convergent validity using Spearman's correlation between the STDS subscales and: i) the MPPUS-27 and the PIUQ-SF-9, ii) self-perception of PTM, PSU, and PIU, and iii) time spent on the smartphone and the Internet. We considered in the analyses weak (< 0.40), moderate ($0.40\text{—}0.69$) and strong (0.70 and above) correlations (Nunnally & Bernstein, 1999).

Research Data

The dataset and the syntax of the analysis presented in this study are fully available online in the Open Science Framework (OSF) repository: <https://osf.io/btq9m/>.

RESULTS

Cultural Adaptation

The two forward translations achieved very similar results, and only minor adjustments were needed to obtain the first synthesized version. The experts suggested adding a clarification that TM refers to both messages through applications (apps) and SMS functionality in the instructions. To facilitate understanding, the expression "check my mailbox" was modified in Brazilian Portuguese for the equivalent of "check my telephone." In the back-translation, all items maintained their meaning compared with the original instrument. Concerning the face validity, all respondents rated the questionnaire as "easy to understand." One typo was identified and corrected. The final Brazilian Portuguese version of the STDS is available as supplementary material in Appendix A.

Factor Structure and Reliability

The CFA's model indicated an acceptable fit (Table 1), which corroborates the original three-factor structure of the instrument (Igarashi et al., 2008). The MGCFA also indicated that the STDS showed optimal fit indexes when evaluating participants based on gender and age. All invariance tested in the model provided evidence that the STDS is not biased for any of the parameters analyzed (Table 1). These procedures ensured the quality of the factor structure of the STDS.

Table 2 shows the factor loadings for each item, as well as the scale reliability indices. The data indicated high levels of internal consistency for the three dimensions using both McDonald's Omega (ω ranging between 0.82—0.87) and Cronbach's alpha (α ranging between 0.79—0.86) analyses.

Network Analysis (NA)

Partial correlations using NA are shown in Fig. 1, in which analyses were performed among all participants (Fig. 1A), among Men (Fig. 1B), and Women (Fig. 1C). In all graphs, the STDS items showed a similar distribution. The strongest correlations were found between items 2 and 3, which are part of the ER factor. Also, a higher frequency of strong correlations was observed between the RM factor items among women.

Figure 2 shows four centrality levels in both the overall sample (Fig. 2A) and between men and women (Fig. 2B). The higher the centrality indices, the greater the relevance of a given item in the system (questionnaire). Items 8 (*"I often exchange many text messages in a short period of time"*), 9 (*"I use text messages even while I am talking with friends"*), and 13 (*"I think my relationships would fall apart without text messages"*) were the items with the most significant influence on the system (Fig. 2A). When evaluated by gender, items 9 (see above) and 11 (*"I cannot maintain new friendships without text-messages"*) showed higher levels of centrality among men, and items 8 (see above) and 12 (*"I can't form any new relationships without using text messages"*) among women.

Convergent Validity

As presented in Table 3, all the STDS subscales showed a moderate correlation with MPPUS-27 and PIUQ-SF-9 scores, weak to moderate correlation with self-perception of PTM, PSU, and PIU, and weak correlation with time spent on smartphones and time spent on the Internet.

Table 4 shows the sociodemographic data of the participants based on the STDS classification from the tertiles. Regarding gender, almost 80% of the "upper tertile" group participants were women. Also, the average age of the participants in the "upper tertile" group was 12 years younger (33 years) compared to those in the "lower tertile" group (45 years).

DISCUSSION

We aimed to expand the psychometric properties of the STDS in a sample of adult internet users, as well as to culturally adapt the questionnaire to the Brazilian population. The original 3-factor structure (emotional reaction, overuse, and relationship maintenance) of the STDS initially proposed by Igarashi et al. (2008) and confirmed by several authors (Liese et al., 2019; Lu et al., 2011, 2014) was also confirmed in our study. The findings from the network analysis reinforced the factorial structure through the analysis of both partial correlations and centrality indices. Items related to the 3 dimensions of the STDS showed a high expected influence on the system for both men and women.

To our knowledge, this is the first study to assess factor structure through multigroup confirmatory factor analysis for individuals of different ages, demonstrating measurement invariance between groups of younger and older individuals. These findings reinforce the instrument's external validity, given that the vast majority of validation studies of the STDS have assessed younger populations, especially college students (Blessington & Hayashi, 2020; Liese et al., 2019). Our data also demonstrated the factorial invariance on gender in a sample of adults from a different sociodemographic background, which had only been evaluated previously in the original study with Japanese high school students (Igarashi et al., 2008).

The internal consistency of the Brazilian version of STDS demonstrated high levels of homogeneity, as demonstrated by the analysis of both the ω and the α indices. This is in line with previous validation studies (Igarashi et al., 2008; Lu et al., 2014). This was the first study to evaluate the internal consistency of the STDS using McDonald's omega, which has been increasingly used in psychometric studies. This is a more suitable approach for assessing reliability when the factor loadings, variances

of and covariances between items are not equal, while alpha assumes that variance unique to an item is comprised wholly of error (Cho, 2016).

Regarding convergent validity, all STDS subscales demonstrated moderate correlation with MPPUS-27 and PIUQ- SF-9 scores. This is not surprising since messaging is the main activity performed on mobile phones and since smartphones are the main device used to access the Internet in Brazil (Brazilian Internet Steering Committee, 2020; GWI, 2021; Smith & Page, 2015). Self-perception of PTM, PSU, and PIU were weak to moderately correlated with the STDS subscales, which may be related to the possibility of people not recognizing that they have a problem as these technologies are increasingly integrated into people's daily lives. Correlation with time spent on smartphones and time spent on the Internet was weak, supporting the need to assess the symptoms of PTM use more comprehensively rather than assessing only time spent on smartphones and the Internet.

Network analysis has been used in recent years as a complementary procedure to traditional factor analyses, as it allows for assessing dimensionality by inferring clusters of behaviors in a network (Golino & Epskamp, 2017; Santiago et al., 2021). In our study, the network structure adequately described the dimensions of the STDS, reinforcing the three-factor structure of the instrument observed through the CFA. The results of the network analysis also showed that for both men and women, the symptoms with the greatest impact on PTM scores were related to the importance the person assigns to texting communication in their social life, either by establishing or maintaining their relationships. The insights from the core symptoms of PTM highlighted in the NA may help guide more specific prevention and intervention strategies (Borsboom & Cramer, 2013; Hayashi & Blessington, 2020), as well as further research that investigates motivations for texting use and their relationship with personality characteristics and psychiatric comorbidities (Starcevic et al., 2021).

We also observed socio-demographic differences between individuals who scored on the highest tertile group compared to the lowest tertile group. Specifically, participants who may be experiencing PTM were younger in age, more likely to be women, single, and being a student. These findings should be interpreted with caution, as they were conducted based on the total STDS score rather than its 3-factor

structure. However, these results provide preliminary clues as to who is most likely to be experiencing PTM and thus provide an avenue for potential prevention initiatives. For example, based on the socio-demographic profiles of participants who scored in the highest tertile of the STDS, education initiatives related to the potential harms of excessive TM could be geared towards women who are in their late 20 s, early 30 s and who are studying. For example, the message could include potential signs of excessive TM, consequences of PTM, and alternate ways to socialize (e.g., face-to-face). Such initiatives may help reduce the rates of PTM in the Brazilian population.

Although this study was not based on a probabilistic sample, the socio-demographic findings above can be considered from a cultural perspective. In Brazil, the fact that TM is the most used form of communication on the internet may be related to socialization motivations, which may be particularly true for single women. In addition, the low cost of texting, which is often provided free of charge may also have a significant influence on PTM, especially in a middle- income country with huge economic disparities as is the case in Brazil. Furthermore, given that cell phones are the main and usually the only means of access to the Internet for the vast majority of the Brazilian population may influence the rates of PTM in Brazil.

Our findings have some limitations that deserve attention. First, the cross-sectional design does not allow for causal inferences. Second, we tested the STDS psychometric properties based on a non-probabilistic sample, which may restrict the external validity of the instrument. On the other hand, we believe that a large number of participants and the inclusion of people up to 89 years of age may partly offset the instrument's external validity. In addition, our study used validation strategies with sophisticated statistical analyses, such as Multigroup CFA for invariance measures, McDonald's omega for internal consistency, and the Network Analysis approach providing confidence in our findings.

This study strengthens and expands the psychometric properties of the STDS by examining its factor structure, reliability, and convergent validity in a sample from a middle-income Latin American country with a very heterogeneous cultural and socioeconomic background. The Brazilian version of the STDS is a brief scale with sound psychometric properties that can be used in further research on the

mechanisms of problematic smartphone and internet use. The Brazilian version of the STDS could also be used in clinical studies as a potential outcome measure which may help in developing effective interventions for PTM. Future psychometric studies would also benefit from: (i) including clinical interviews to assess criterion validity, (ii) assess construct validity from the correlation with psychopathological and personality characteristics, (iii) test–retest validation to assess instrument stability, and (iv) compare scores on the STDS with objective measures obtained from the analysis of reports provided by the phones themselves to further examine the psychometric properties of the STDS.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1007/s12144-022-02957-8>.

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Data Availability

The dataset and the syntax of the analysis presented in this study are fully available online in the Open Science Framework (OSF) repository (Andrade et al., 2021).

Declarations**Ethics Approval**

This study was conducted according to the Declaration of Helsinki and was approved by the Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (protocol number 89702318.2.0000.5327).

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent for Publication Patients signed informed consent regarding publishing their data.

Conflicts of Interest The authors declare that they have no conflicts of interest.

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Tabela 5 - Table 1 - Confirmatory factor analyses of the STDS and MGCFA fit indexes for gender and age

	Goodness-of-fit indexes							
	χ^2 (df)	χ^2/df	RMSEA (90% IC)	SRMR	Δ SRMR	TLI	CFI	Δ CFI
Three-factor model	833.1(73)	11.412	.079 (.074-.084)	.054	-	.985	.988	-
Gender								
Male (n= 452)	130.206 (73)	1.784	.042 (.03 - .054)	.054	-	.986	.989	-
Female (n= 1.197)	257.876 (73)	3.533	.046 (.04 - .053)	.048	-	.981	.985	-
<i>Unconstrained model</i>	388.082 (146)	2.658	.045 (.04 - .051)	.047	-	.983	.986	-
Metric invariance	402.393 (158)	2.547	.044 (.038 - .049)	.047	.000	.984	.986	.000
Scalar invariance	409.682 (169)	2.424	.042 (.037 - .047)	.048	.001	.985	.986	.000
Residual invariance.	421.091 (183)	2.301	.040 (.035 - .045)	.048	.000	.986	.986	.000
Age								
Young adults (n=479)	137.11 (73)	1.878	.043 (.032 - .054)	.054	-	.978	.982	-
Middle-aged adults (n=1.003)	221.965 (73)	3.041	.045 (.039 - .052)	.049	-	.983	.986	-
Older adults (n= 157)	55.796 (73)	.764	.000 (.000 - .013)	.067	-	1.012	1.000	-
<i>Unconstrained model</i>	414.872 (219)	1.894	.041 (.035 - .047)	.049	-	.985	.988	-
Metric invariance	48.03 (243)	1.975	.043 (.037 - .048)	.052	.003	.984	.985	.003
Scalar invariance	604.935 (265)	2.283	.049 (.044 - .054)	.057	.005	.978	.979	.006
Residual invariance.	718.846 (293)	2.453	.052 (.047 - .057)	.065	.008	.975	.974	.005

STDS = Self-reported Text message Dependence Scale; MGCFA = Multigroup confirmatory factor analysis; RMSEA = Root-mean-square error of approximation; TLI = Tucker-Lewis Index; SRMR = Standardized root-mean-square residual; CFI = Comparative fit index. *Note:* The fit criteria were considered as according to Cheung and Rensvold (2002): comparative fit index (CFI \geq .95), Tucker-Lewis Index (TLI \geq .95), root mean square error of approximation (RMSEA \leq .08), standardized root means square residual (SRMR \leq .05) and the ratio between the chi-square/degrees of freedom value (χ^2/df), with the ideal values being between 2 and 3

Tabela 6 - Table 2 - Factor loading and reliability of STDS

Factors	Item	<i>M</i>	<i>SD</i>	Item loading	α if item deleted	ω if item deleted
Emotional reaction		2.71	1.16		.864	.868
	1	3.15	1.15	.718	.870	.874
	2	2.56	1.13	.876	.869	.872
	3	2.50	1.15	.868	.868	.872
	4	3.09	1.20	.623	.870	.874
	5	2.26	1.16	.657	.870	.873
Excessive use		2.90	1.28		.831	.835
	6	2.76	1.30	.672	.873	.877
	7	2.71	1.29	.786	.867	.872
	8	3.07	1.29	.769	.869	.874
	9	2.79	1.25	.759	.869	.874
	10	3.17	1.26	.538	.877	.881
Relationship maintenance		2.00	1.04		.791	.820
	11	1.79	.96	.798	.873	.877
	12	1.81	1.02	.819	.874	.877
	13	1.68	.93	.759	.875	.878
	14	3.12	1.38	.459	.881	.882
	15	1.63	.90	.591	.876	.879
Overall					.880	.883

STDS = Self-reported Text message Dependence Scale; *M* = mean; *SD* = standard deviation; α = Cronbach's alpha; ω = McDonald's omega.

Tabela 7 - Table 3 - Spearman correlation of the STDS' subscales with MPPUS-27, PIUQ-SF-9, self-perception of problem use, and time spent online

	Emotional reaction	Excessive use	Relationship maintenance
MPPUS-27	.591	.614	.468
PIUQ-SF-9	.540	.527	.465
Self-perception of problem use			
Text messages	.339	.385	.207
Smartphone	.389	.433	.264
Internet	.354	.386	.288
Time spent (hours per day)			
On smartphone	.277	.401	.192
On the Internet	.194	.300	.183

STDS = Self-perception of Text-message Dependency Scale; MPPUS-27 = Mobile Phone Problem Usage Scale 27; PIUQ-SF-9 = Problematic Internet Use Questionnaire – Short Form – 9. *Note:* In all analyses, the significance level was less than .001.

Tabela 8 - Table 4 - Participants' sociodemographic data according to the risk of PTM (based on SDTS tertile scores)

	Upper tertile (n=571)		Middle tertile (n= 544)		Lower tertile (n= 527)		Test	Effect size
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	$\eta\rho^2$
Age	33.6	11.3	37.6	12.8	45.2	13.8	116.6	.12
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	χ^2	<i>V</i>
Gender							21.17	.11
Male	128	22.4	141	25.9	182	34.5		
Female	443	77.6	403	74.1	345	65.5		
Marital status							42.68	.16
In a relationship	265	46.4	272	50.1	342	65.1		
Single	306	53.6	271	49.9	183	34.9		
Educational level							29.59	.09
Up to High-School degree	41	7.2	44	8.1	29	5.5		
High-School degree +1-4 years of study	111	19.5	88	16.3	66	12.6		
High-School degree + 5-7 years of study	140	24.6	124	23.0	93	17.8		
High-School degree + 8 or more years of study	276	48.6	284	52.6	335	64.1		
Occupation							85.93	.16
Studying only	108	18.9	85	15.6	34	6.5		
Studying and working	181	31.7	130	23.9	95	18.0		
Working only	250	43.8	288	52.9	340	64.5		
Not working, not studying	32	5.6	41	7.5	58	11.0		

STDS = Self-reported Text message Dependence Scale; PTM = Problematic Text Messaging; *M* = mean; *SD* = standard deviation; $\eta\rho^2$ = Partial eta squared; *V* = Cramers'V Test. Note: In all analyses, the significance level was less than .001.

Figure 2 - Figure 1. Gaussian Graphical Model based on network analyses (NA) for Self-reported Text message Dependence Scale (STDS) in a Brazilian sample according to the general population (1A), female (1B) and male (1C). The green line represents the

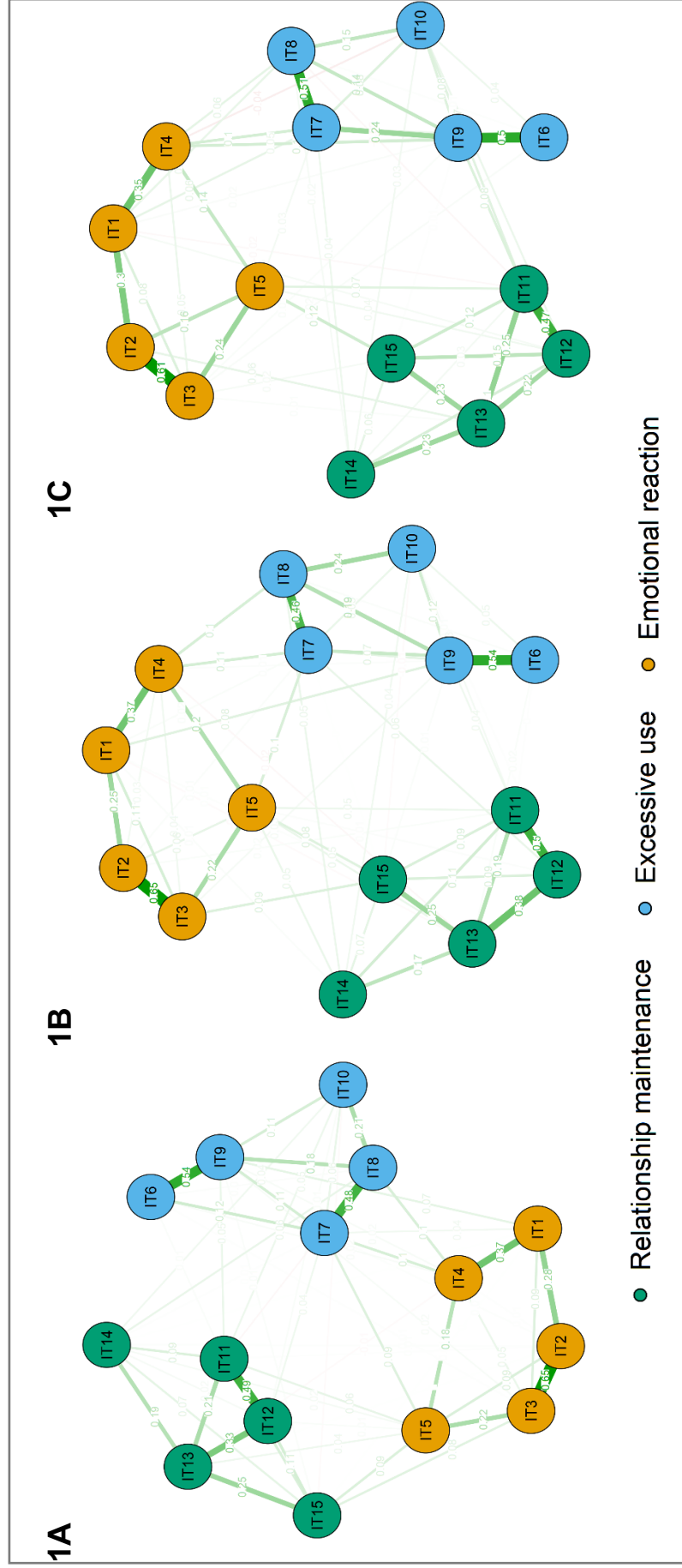
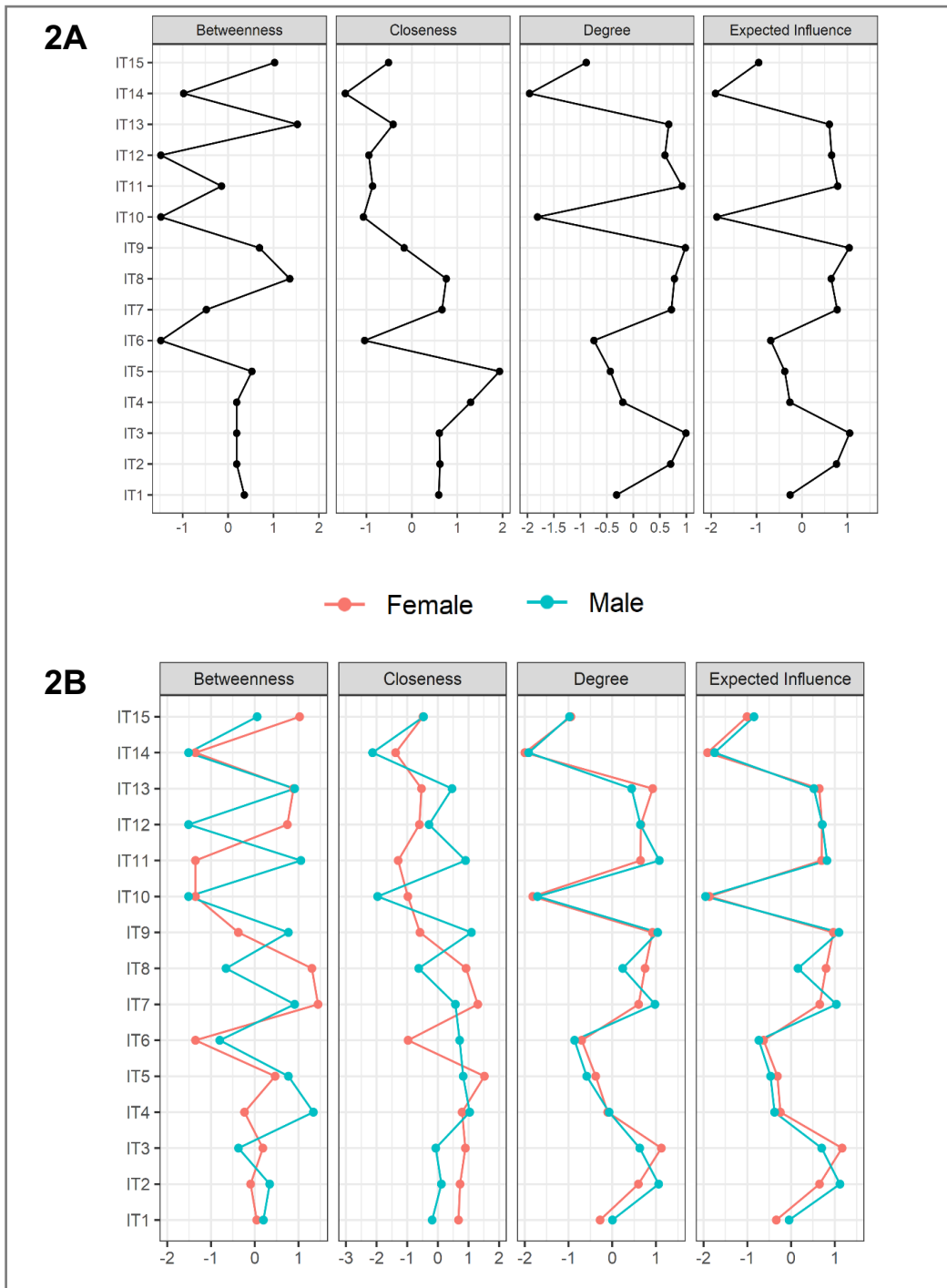


Figura 3 - Figure 2 - Four-centrality indices for Self-reported Text message Dependence Scale (STDS) for the general population according to gender: female and male



Supplementary Material

Escala de auto-percepção de dependência de mensagens de texto*
(Spritzer et al. 2022)

As afirmativas abaixo referem-se ao uso de mensagens de texto pelo celular, seja através do app do próprio telefone (SMS) ou através de algum outro app (ex: WhatsApp, Facebook Messenger, Telegram, Skype, Snapchat, etc.). Por favor, assinale abaixo a opção que mais combina com o seu uso de mensagens de texto, de acordo com a seguinte escala:

1 Discordo fortemente	2 Discordo	3 Não concordo nem discordo	4 Concordo	5 Concordo fortemente				
				1	2	3	4	5
Depois de enviar uma mensagem de texto, eu olho meu telefone repetidamente para ver se eu recebi uma resposta.								
Eu me sinto chateado se eu não recebo uma resposta para minha mensagem imediatamente.								
Eu me sinto ansioso quando as pessoas não respondem imediatamente minhas mensagens.								
Eu olho meu telefone com frequência pra ver se recebi uma nova mensagem.								
Eu me sinto chateado se não recebo nenhuma mensagem.								
Às vezes envio mensagens enquanto estou conversando com outra pessoa.								
Às vezes eu passo muitas horas enviando e recebendo mensagens.								
Com frequência eu troco muitas mensagens num período curto de tempo.								
Eu troco mensagens mesmo enquanto estou falando com meus amigos.								
Eu acho que digito rápido no celular.								
Eu não consigo manter minhas amizades sem mensagens de texto.								
Eu não consigo fazer novas amizades sem usar mensagens de texto.								
Eu acho que meus relacionamentos iriam acabar se não fossem as mensagens de texto.								
Sem mensagens de texto eu não teria como falar com os amigos que eu não encontro diariamente.								
Sem usar mensagens eu não consigo dizer o que está na minha cabeça.								

* Não é necessária autorização prévia para utilizar a "Escala de auto-percepção de dependência de mensagens de texto". Apenas solicitamos que seja dado o devido crédito aos seus autores e que o presente artigo seja citado como referência.

3.3 ARTIGO #3: PSYCHOMETRIC PROPERTIES OF THE BRAZILIAN VERSION OF THE TEN- ITEM INTERNET GAMING DISORDER TEST (IGDT-10) AND ITS ASSOCIATION WITH DISABILITY

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Psychometric Properties of the Brazilian version of the Ten- Item Internet Gaming Disorder Test (IGDT-10) and its association with disability

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Abstract

Despite the growing recognition of gaming disorder as a mental disorder, there is still debate about how it should be best screened for. This study aims to evaluate the psychometric properties of the Brazilian Portuguese version of the Ten-Item Internet Gaming Disorder Test (IGDT-10) and to explore its association with disability. An online convenience sample of 805 Brazilian adults who reported playing videogames completed the IGDT-10 and the World Health Organization Disability Assessment Scale 2.0, as well as the Problematic Internet Use Questionnaire, Center for Epidemiologic Studies-Depression Scale, and Rosenberg Self Esteem Scale. The IGDT-10 demonstrated unidimensional structure in both confirmatory and exploratory factor analysis, with satisfactory internal consistency and adequate temporal stability. Participants who scored 5 or more on IGDT-10 presented higher levels of disability compared to those who scored 4 symptoms or less. This difference was statistically significant and reflected a moderate effect size. Network analysis allowed to disentangle the connections between specific gaming disorder symptoms and disability, with “negative consequences” being the most relevant IGDT-10 item connecting those variables. The IGDT-10 is a brief, easy to understand, valid and reliable instrument, proving to be a suitable candidate for screening gaming disorder in future epidemiological studies in Brazil.

Keywords: Videogame, Gaming Disorder, Impairment, Cultural adaptation, Psychometrics, Brazil

1. Introduction

Gaming is one of the main leisure activities for children, adolescents and adults, and it is estimated that over 3 billion people around the world play video games (NewZoo, 2022; Statista, 2021). Although it is healthy and beneficial for the vast majority, approximately 2% of the world population may experience significant negative consequences resulting from their uncontrolled gaming behavior (Stevens et al., 2021). Despite the growing recognition of Gaming Disorder (GD) as a mental disorder, there is still debate about how it should be best screened and assessed (King, Chamberlain, et al., 2020). This is especially relevant in countries, such as Brazil, where prevalence studies that could support evidence-based policy making are still to be conducted (Spritzer & Kessler, 2018). It is thus important that future prevalence studies in this country benefit from the availability of a validated and psychometrically robust instrument to screen for GD in the general population.

The Ten-Item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017) is considered one of the most valid and reliable tools to screen for GD symptoms (Fineberg et al., 2022; King, Chamberlain, et al., 2020). It stands out as a brief self-report screening instrument that uses simple item-wording that adequately reflects the gaming disorder concept (King, Billieux, et al., 2020; Király et al., 2017). The IGDT-10 covers all DSM-5 criteria, and its items can also be used to approximate the proposed GD clinical guidelines included in ICD-11 (Higuchi et al., 2021; Ko et al., 2014). Previous validation studies have shown that IGDT-10 has a one-factor structure, satisfactory internal consistency, and adequate construct and criterion validity (Evren et al., 2020; Király et al., 2017, 2019; Männikkö et al., 2019). It has been validated in a large number of Western and Eastern countries, and its gender and language invariance has been tested in a large international sample with more than 7,000 gamers (Chiu et al., 2018; Evren et al., 2020; Király et al., 2019; Männikkö et al., 2019).

The identification of functional impairment/disability has a central role in the assessment of GD. It helps to differentiate between intensive but healthy versus pathological involvement in video games (Billieux et al., 2017, 2019), to prevent prevalence overestimation in epidemiological studies (Stevens et al., 2021), and to allow more accurate detection of the clinical and neurobiological correlates associated with GD (Dong et al., 2020; Granero et al., 2021; Jo et al., 2019). In addition, from both psychometric and psychopathological perspectives, it is relevant to understand which

GD symptoms are most related to impairment/disability (Borsboom et al., 2021; King, Billieux, et al., 2020). However, no study to date has examined the validity of the IGDT-10's latent construct or its specific items using a standard measure of impairment/disability, as the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0).

1.1. The present study

This study aimed primarily to assess the psychometric properties of the Brazilian version of the IGDT-10. Based on the previous studies, we hypothesize that the Brazilian version of the IGDT-10 will demonstrate a unidimensional factor structure, with good internal consistency and satisfactory temporal stability. To further ascertain the clinical relevance of the IGDT-10, we will also examine the construct validity of the IGDT-10 through its association with disability, using the standard WHODAS 2.0. We expect that participants who score above the IGDT-10 cut-off point will have higher levels of disability than those who score below this threshold. In exploring the role of specific IGDT-10 items in their association with disability, we hypothesize that a prominent role might be played by the "negative consequences" criterion.

2. Methods

This is a cross-sectional study that is part of the multicentric project to evaluate "Cross-cultural Internet and mobile phone uses", conducted in fourteen countries from September 2018 to July 2019 (Kalaitzaki et al., 2022). This project was approved by the Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (protocol number 89702318.2.0000.5327), and was conducted in accordance with the Declaration of Helsinki.

2.1. Participants and procedures

A convenience sample of Brazilian adults (≥ 18 years) who reported playing games was recruited online via social media platforms. Data collection was made anonymously through SurveyMonkey®, and no identifying information (e.g., Internet protocol addresses) was collected. At the end of the questionnaire, participants were

offered feedback on their scores on problematic gaming, internet and smartphone use, for which an email address was requested. Those who provided an email address were invited to answer the IGDT-10 scale once more for retest validation. Interval between the test and the retest was at least 4 weeks.

2.2. Measures

Sociodemographic and gaming use data. Participants were asked about their age, sex, education, working and marital status, as well as the number of hours of daily gaming. The self-perception of problematic gaming was accessed with the question “Over the past year, do you feel that you have a problematic gaming use?”. Participants were provided with a 4-point Likert scale of “No; Rather no; Rather yes; and Yes”.

Ten-Item Internet Gaming Disorder Test-10 (IGDT-10). This questionnaire assesses past-year GD with 10 items that address the nine diagnostic criteria for Internet gaming disorder as proposed in DSM-5 (American Psychiatric Association, 2013). Each criterion was operationalized using a single item, except for the last criterion referring to “negative consequences”, which involved two separate items. All questions have Likert-type responses ranging from 0 “never”, 1 “sometimes”, and 2 “often”. However, to maintain similarity with the dichotomous approach used by the DSM-5, “never” and “sometimes” responses are coded as not meeting the criterion (0 points), while “often” is coded as meeting the criterion (1 point). Items 9 and 10 refer to the same DSM-5 criterion and are combined for analysis. Answering “often” for either of these items generates 1 point in the final score. Thus, the IGDT-10 score ranges from 0 to 9, and a score of 5 or more points (IGDT-10 problematic status) identifies individuals at risk of GD according to DSM-5. Since there is an established cutoff point, we used the IGDT-10 as a categorical variable (Chiu et al., 2018; Király et al., 2017, 2019). Previous validation studies have shown that IGDT-10 has a one-factor structure (Evren et al., 2020; Király et al., 2017, 2019; Männikkö et al., 2019). Considering 9 items and dichotomous answers, the internal consistency measured by Cronbach’s alpha ranged between 0.68 (Király et al., 2017) and 0.79 (Evren et al., 2020). The Brazilian Portuguese cultural adaptation of the IGDT-10 followed well-established cross-cultural adaptation guidelines (Beaton et al., 2000), consisting of forward translation, back-translation, expert committee review and face validity evaluation.

The World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0). WHODAS 2.0 is a standardized method for measuring functioning and disability both in the general population and in specific groups (Üstün et al., 2010). It comprises twelve items that assess six different dimensions: cognitive functions, mobility, self-care, getting along, life activity, and participation. Answers to the questions were classified according to a 5-point Likert-type scale indicating the level of difficulty or problem, from 0 (“none”) to 4 (“extreme or inability to perform”). Scores were computed using the official item response theory-based WHODAS recommendation (Üstün et al., 2010), in which the summary score is converted into a metric ranging from 0 to 100 (where 0=no disability; 100=full disability). The internal consistency of WHODAS 2.0 measured by Cronbach's alpha is high ($\alpha=0.86$)

Problematic Internet Use Questionnaire – Short Form-9 (PIUQ-SF-9). The PIUQ-SF-9 consists of nine items that evaluate problematic internet use according to three dimensions: obsession, neglect, and control disorder (Koronczai et al., 2011). All items are based on a 5-point Likert-type scale, ranging from 1 (“never”) to 5 (“almost always/always”). Total scores range from 9 to 45, and higher scores indicate a higher risk of PIU. The PIUQ-SF-9 has demonstrated high internal consistency across different studies (Cronbach's $\alpha=0.91$, Koronczai et al., 2011; Cronbach's $\alpha=0.81-0.90$, Laconi et al., 2019; Cronbach's $\alpha=0.93$, Spritzer et al., 2021).

Center for Epidemiologic Studies - Depression Scale-10 (CESD-10). It is a brief version of the CES-D, which aims to assess depressive symptoms. It consists of ten items that are evaluated on a Likert-type scale ranging from 0 (“rarely or never”) to 3 (“most of the time or all the time”). Scores can range from 0 to 30, and a cutoff of 10 or more is indicative of significant depressive symptomatology (Andresen et al., 1993). In the original study and in recent validations, Cronbach's α was higher than 0.80 in all subgroups (Radloff, 1977; Zhang et al., 2012).

Rosenberg Self Esteem Scale (RSES). The RSES consists of ten items that are assessed on a 4-point Likert-type scale ranging from 1 (“strongly disagree”) to 4 (“strongly agree”). The scale comprised five positive and five negative statements, and the negative items were reverse scored prior to analysis. The scale ranges from 10 to 40. Scores between 25 and 35 are considered to be within the normal range, while scores below 25 suggest low self-esteem (Rosenberg, 1965). The Brazilian version of RSES presents reliability measured by Cronbach's α ranging between 0.70 and 0.90 (Hutz & Zanon, 2011; Sbicigo et al., 2010).

2.3. Data analysis

The analyses were performed using R (version 3.2.2) implemented by the following packages: scales (v.1.1.1) (Wickham & Seidel, 2022), car (v3.0-10) (Fox & Weisberg, 2019), psych (v2.1.3) (Revelle, 2022), lavaan (v0.6-9) (Rosseel, 2011), semTools (v0.5-3) (Jorgensen et al., 2021), qgraph (v1.6.9) (Epskamp et al., 2012), IsingFit (v0.3.1) (Van Borkulo et al., 2014), and bootnet (v1.4.3) (Epskamp et al., 2016). No imputation or replacement technique was used to handle missing data, estimations were made using pairwise information.

2.3.1. Factor structure and reliability

The factorability of sample data was assessed using Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) index. First, we conducted an exploratory factor analysis (EFA) (Fabrigar et al., 1999) with oblique rotation and parallel analysis retention method to identify latent variables of IGDT-10 (Horn, 1965). Second, we performed a confirmatory factor analysis (CFA) to verify the structural validity of the instrument, considering the following fit indices to compare the model's adequacy: Comparative Fit Index and Tucker-Lewis Index (CFI and TLI, ≥ 0.95), Root Mean Square Error of Approximation (RMSEA, ≤ 0.06) with associated p-value and Standardized Root Mean Residual (≤ 0.10) (Comrey & Lee, 1992; Hair et al., 2019). Both EFA and CFA were performed using the same total sample (Orcan, 2018).

The IGDT-10 internal consistency considering the final nine items with dichotomous answers was assessed using McDonald's asymptotic hierarchical omega coefficient (ω_H), considered satisfactory if higher than 0.70 (Cho, 2016; Dunn et al., 2014). Cronbach's alpha (α) was also reported for the sake of comparability with previous research. The intraclass correlation coefficient (ICC) and corresponding 95% confidence interval (CI) were calculated to estimate test-retest reliability, being considered adequate for values between 0.50 and 0.75, good for values between 0.75 and 0.90, and excellent for values > 0.90 (Koo & Li, 2016).

2.3.2. Construct validity

Bivariate and partial correlation analysis were conducted to evaluate how IGDT-10 problematic status (scoring > 5) correlated with sex, age, time spent gaming, self-

perception of problematic gaming, problematic internet use, self-esteem, depression symptoms and disability.

To assess the relationship between the risk of GD and disability, we used the Mann–Whitney U test to estimate a rank biserial correlation (and its significance and effect size) between IGDT-10 problematic status and the WHODAS 2.0 total score. A linear regression analysis was also implemented to evaluate the impact on disability associated with each one-point increase on IGDT-10 score.

We developed a network model to further explore how the relationship between IGDT-10 and disability occurred at the symptom level, that is, which IGDT-10 symptoms had a direct connection with WHODAS 2.0. The accuracy and stability of centrality measures were assessed by the means of sample permutation bootstrapping (N=500 resamples) (Burger et al., 2022; Epskamp & Fried, 2018). Edge and centrality measures accuracy was estimated through a 95% confidence interval of bootstrapped samples (N=500) while centrality stability was estimated by case-dropping correlation with original estimates (from 95 to 25% of cases).

The data and analysis code are available on the Open Science Framework at: <https://osf.io/wcjn5/> (Spritzer & Machado, 2022).

3. Results

3.1. Cultural adaptation

The two forward translations achieved comparable results, and only minor adjustments were needed to obtain the first synthesized version. In general, these refinements suggested by the experts aimed to simplify the language of the questionnaire and make it more colloquial, considering its future use in adolescent populations as well. In the back-translation, items maintained their meaning compared with the original instrument. Regarding face validity, the questionnaire was rated as "easy to understand" by all the respondents in a pre-test group of fifteen people. The final Brazilian Portuguese version of the IGDT-10 is available as supplementary material (appendix A).

3.2. Demographic data

The final sample consisted of 805 participants (female=530; 65,8%; mean age=36,0±13,0 years, range 18-72). Of those, 124 responded to the IGDT-10 retest (female=88, 70,1%; mean age=34,1±13,0 years, range 18-71) in an average time of 6 months after the first completion. The main sociodemographic data of the test and retest samples are presented in Table 1.

3.3. *GD prevalence and criteria endorsement*

Among all participants, 75,9% (n=611) did not respond positively to any criteria. "Escape" was the most frequently endorsed criterion (13.7%) in this sample, followed by "Continuation" (8.2%) and "Preoccupation" (7.9%). Based on the cutoff point of >5 criteria, 3% (n=24) of the sample were considered in risk for GD. Among these, "Escape" was the most commonly endorsed criterion (91.6%), followed by "Tolerance" (87.5%) and "Giving up other activities" (85.7%) (Table 2).

3.4. *Factor Structure and Reliability*

Bartlett's sphericity ($\chi^2(36)=1896.31$, $p<0.001$) and Kaiser–Meyer–Olkin (0.87) adequacy tests indicated that the data were appropriate for factor analysis. In EFA, the unidimensional model accounted for 72,9% of the common variance of the items. The CFA's model indicated optimal fit to the data [$\chi^2=38.444$, $df=27$, $CFI=0.995$, $TLI=0.993$, $RMSEA=0.023$ (0.000–0.039), $RMSEA$ p close=0.999 and $SRMR=0.055$]. All items had excellent loadings in a single-factor structure (Table 2). Regarding the internal consistency of the IGDT-10, ω_H was 0.84 and α was 0.95. For the test-retest reliability, the ICC was 0.59 (95%CI 0.49-0.68).

3.5. *Construct Validity*

The results of the bivariate and partial correlation analysis of IGDT-10 problematic status and sex, age, time spent gaming, self-perception of problematic gaming, problematic internet use, self-esteem, depression symptoms and disability are presented in Table 3.

Participants who answered positively to 5 or more symptoms on the IGDT-10 presented higher levels of disability ($mean=31.99\pm 20.07$, $median=31.58$) measured by

WHODAS 2.0 total score, when compared to those who scored positive to up to 4 symptoms ($mean=15.57\pm 14.19$, $median=10.53$). The difference between the two groups was statistically significant ($U=2940.5$; $p<0.001$) and showed moderate effect size ($r_{pb}=0.34$). The linear regression model showed that each 1-point increase on IGDT-10 score was associated with a 2.88 increase in WHODAS 2.0 score.

The symptom level network (Fig. 1) showed that “negative consequences” was the node which was most strongly connected with disability. Additionally, “loss of control” and “negative consequences” were the variables with the highest expected influence in this network, followed by “tolerance” and “continuation”. Edge accuracy, edge stability and centrality stability measures by the bootstrap method of the network model are presented as supplementary material (appendix B).

4. Discussion

The present study has found that the Brazilian version of the IGDT-10 has solid psychometric properties, including (a) unidimensional factor structure; (b) satisfactory internal consistency, adequate test-retest reliability; and (d) construct validity, demonstrated by the association with demographic, gaming, psychopathological variables and disability. This study also adds to the field by being the first to examine IGDT-10 temporal stability and to explore its construct validity using a standard disability measure such as the WHODAS 2.0.

The unidimensional factorial structure of the IGDT-10 was demonstrated using multiple techniques. The exploratory analysis suggested the retention of one factor, and the confirmatory approach presented optimal fit indexes for this one-factor solution. These findings are in line with previous psychometric research and have already been demonstrated by both EFA (Evren et al., 2020) and CFA (Király et al., 2017, 2019; Männikkö et al., 2019) approaches. To date, no validation study has evaluated the factor structure of IGDT-10 using both EFA and CFA conducted in independent subsamples within the same study (King, 2020).

We assessed IGDT-10 reliability based on internal consistency and temporal stability. The internal consistency was measured by both McDonald's asymptotic omega and Cronbach's alpha, and was found to be quite satisfactory. This is in line with previous psychometric works, although the alpha in our study presented a slightly higher value. However, we used Cronbach's alpha exclusively to facilitate comparison

with previous data, since McDonald's Omega had not previously been used to measure the internal consistency of IGDT-10. We favored McDonald's omega as it is more appropriate in situations where the variance of items composing a scale are not necessarily comparable, which is especially true in psychological research (Dunn et al., 2014). This is the first study showing that the stability of IGDT-10 is adequate, although with a lower magnitude when compared to other representative GD scales, such as the IGDS9-SF, GAS-7, or Lemmens IDG-9 (Yoon et al., 2021). This may in part be explained by the extended time interval elapsed for retesting, which occurred on average 6 months after the first application. Therefore, some changes in the symptomatology can be expected, particularly considering that we relied on a nonclinical sample susceptible to experience contextual variation in their gaming patterns.

IGDT-10 problematic status correlated with male sex, younger age, time spent gaming, self-perception of one's gaming pattern as problematic, problematic internet use and lower self-esteem, which is in alignment with previous studies (Evren et al., 2020; Király et al., 2017, 2019; Männikkö et al., 2019). However, one unexpected finding was the correlation with depressive symptoms, which turned out to be very weak (0.10) in the bivariate analysis and moderate but negative (-0.33) in the multivariate analysis. A possible explanation for this finding can be raised through the NA, which shows that low self-esteem acts as a bridge between depressive symptoms and GD. In partial correlations analysis, when two out of three variables show a positive correlation, a third spurious negative correlation can emerge as a residual of what is not shared by the other variables (Burger et al., 2022).

Exploring IGDT-10 construct validity from its association with disability, two findings are worth noting. First, the mean and median WHODAS 2.0 score of participants who scored positive for 5 or more IGDT-10 symptoms was equivalent to the 95th percentile of the general population, considering the normative data for the adult population disability worldwide (Üstün et al., 2010). These results are remarkably similar to those of Percy et al. (2016) in the validation study of the Personal Internet Gaming Disorder Evaluation-9, considering WHODAS 2.0 normative data for the Australian population (Andrews et al., 2009). The second is the recognition that the connection between the IGDT-10 with disability in the symptom level occurs via the "negative consequences" symptom. This finding is in line with previous studies that have already highlighted the diagnostic validity, clinical utility and prognostic value of

this symptom (Castro-Calvo et al., 2021; Ko et al., 2014; Lee et al., 2017). The identification that “negative consequences” plays a pivotal role in the maintenance of GD also supports that it should be assessed in a straightforward manner and with plain language, as done using IGDT-10.

Some limitations should be considered when interpreting the results of this study. First, our sample was not recruited using probabilistic procedures, which may hinder the generalization of these findings to the general population or even to a population of gamers. Second, information was gathered using self-report questionnaires, which can introduce social desirability and short-term recall biases. Third, since the scoring of the specific dimensions of disability in the 12-item version of the WHODAS 2.0 is not recommended, we did not assess the relationship between IGDT- 10 and different forms of disability. Future studies would benefit from assessing gaming- related disability by using the 36-item WHODAS 2.0 and considering its clinician- administered version. Fourth, as the number of extreme cases was low, EFA and CFA were not performed in independent subsamples, to avoid decreasing the power of the analysis. Finally, because of its cross-sectional design, we cannot infer causal relationships among the variables studied. Longitudinal studies may provide interesting information about the development and natural course of gaming-related disability.

5. Conclusion

The Brazilian version of IGDT-10 presented a unidimensional factor structure, with good internal consistency and satisfactory temporal stability. Participants who scored above the IGDT-10 cut-off point showed higher levels of disability than those who score below this threshold. Moreover, at the symptom level, the “negative consequences” criterion played a prominent role in the connection between the IGDT-10 and disability. The IGDT-10 is a brief, easy to understand, valid and reliable instrument, proving to be a suitable candidate for screening GD in future epidemiological studies in Brazil.

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Tabela 9 – Table 1 - Descriptive statistics of socio-demographic variables

	Total sample (N = 805)	Retest sample (N = 126)
Mean age in years (SD)	36.00 (12.96)	34.11 (12.98)
Women	530 (65.8%)	88 (69.8%)
Occupation (%)		
Studying only	150 (18.6%)	34 (27%)
Studying and working	216 (26.8%)	37 (29.4%)
Working only	376 (46.7%)	42 (33.3%)
Not working, not studying	63 (7.8%)	13 (10.3%)
Educational level (%)		
High school, incomplete	9 (1.1%)	--
Elementary School	14 (1.7%)	--
High school, complete	46 (5.7%)	7 (5.6%)
High school, complete + 1–3 years of study	105 (13.1%)	24 (19%)
High school, complete + 4–6 years of study	175 (21.7%)	28 (22.2%)
High school, complete + 7 or more years of study	453 (56.3%)	66 (52.4%)
Marital status (%)		
Single	231 (28.7%)	42 (33.3%)
Dating	129 (16%)	27 (21.4%)
Living together	132 (16.4%)	13 (10.3%)
Married	253 (31.4%)	31 (24.6%)
Divorced	53 (6.5%)	11 (8.7%)
Widowed	6 (0.7%)	2 (1.6%)

SD = standard deviation

Tabela 10 - Table 2 - IGDT-10 Pattern Coefficients and Item Endorsement

Items	Standardized Factor Loading (EFA)	Standardized Factor Loading (CFA)	Item Endorsement among all gamers (Total N = 805) n (%)	Item Endorsement among problem gamers (Total N = 24) n (%)
1. Preoccupation	.829	.834	63 (7.9%)	18 (75.0%)
2. Withdrawal	.849	.859	33 (4.1%)	16 (66.6%)
3. Tolerance	.908	.907	52 (6.5%)	21 (87.5%)
4. Loss of control	.794	.759	34 (4.3%)	13 (54.1%)
5. Giving up other activities	.885	.883	32 (4.0%)	18 (85.7%)
6. Continuation	.868	.854	65 (8.2%)	20 (83.3%)
7. Deception	.841	.836	27 (3.4%)	13 (54.1%)
8. Escape	.828	.808	109 (13.7%)	22 (91.6%)
9. Negative consequences	.879	.865	15 (1.9%)	10 (41.6%)

IGDT-10 = Ten-Item Internet Gaming Disorder Test; EFA = exploratory factor analysis; CFA = confirmatory factor analysis

Tabela 11 - Table 3 - Heatmap of bivariate and regularized partial correlations among risk of gaming disorder, disability, sex, age, time spent gaming, self-perception of problematic gaming, problematic internet use, self-esteem and depression symptoms

	Sex	Age	TSG	SPP	RSES	CES-D-10	PIUQ-SF-9	IGDT-10	WHODAS 2.0
Sex	–	-0,22	0,21	0,17	0,04	-0,07	-0,03	0,32	-0,03
Age	-0,19	–	-0,21	-0,02	-0,51	-0,27	-0,29	-0,31	-0,21
TSG	0,10	-0,10	–	0,47	0,25	0,21	0,22	0,38	0,13
SPP	0,00	0,21	0,33	–	0,12	0,18	0,34	0,61	0,16
RSES	-0,09	-0,34	0,08	-0,15	–	0,49	0,32	0,37	0,39
CES-D-10	-0,01	-0,06	0,07	0,20	0,36	–	0,41	0,10	0,48
PIUQ-SF-9	-0,17	-0,13	0,00	0,07	-0,04	0,24	–	0,46	0,43
IGDT-10	0,25	-0,14	0,03	0,53	0,27	-0,33	0,27	–	0,34
WHODAS 2.0	-0,06	0,04	-0,03	-0,10	0,09	0,33	0,17	0,22	–

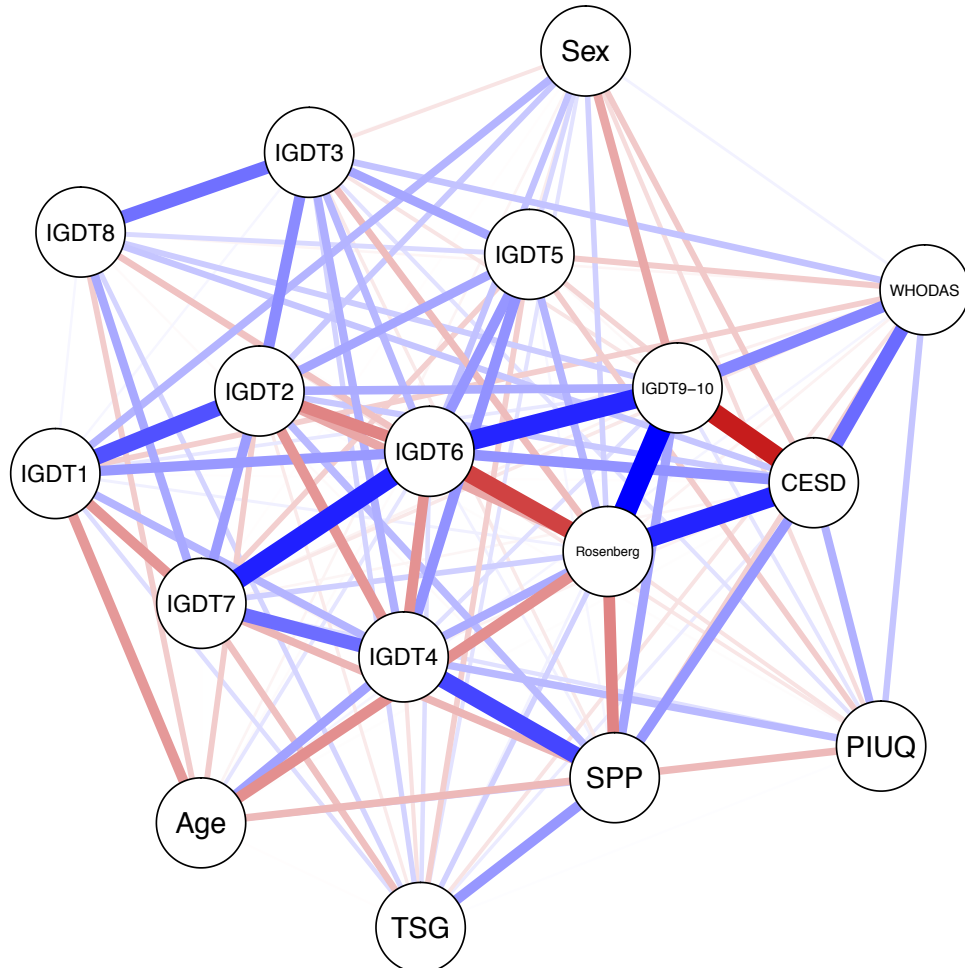
IGDT-10 = Ten-Item Internet Gaming Disorder Test; WHODAS 2.0 = World Health Organization Disability Assessment Schedule 2.0; PIUQ-SF-9 = *Problematic Internet Use Questionnaire – Short Form – 9*; RSES = Rosenberg Self Esteem Scale; CES-D-10 = Center for Epidemiologic Studies - Depression Scale – 10; SPP = self-perception of problem gaming; TSG = time spent gaming; Sex = male sex; Age = older age

* Bivariate correlation analyses are present in the upper diagonal while regularized partial correlation analyses are presented in the lower diagonal.

** The blue color indicates a positive correlation between the variables, while the red color indicates a negative correlation. The stronger the correlation, the more intense the coloring

*** For both analyses, the instruments with a well established cutoff point (IGDT-10, CES-D-10 and RSES) were treated as nominal variables, while the remainder (PIUQ-SF-9 and WHODAS 2.0) were evaluated in a continuous way.

Figura 4 - Figure 1 - Network analysis of IGDT-10 construct validity considering its association with disability, according to IGDT-10 specific symptoms



IGDT 1 = Preoccupation; IGDT 2 = Withdrawal; IGDT 3 = Tolerance; IGDT 4 = Loss of control; IGDT 5 = Giving up other activities; IGDT 6 = Continuation; IGDT 7 = Deception; IGDT 8 = Escape; IGDT 9-10 = Negative consequences.

WHODAS = disability (WHODAS 2.0); Sex = male sex; Age = younger age; TSG = time spent gaming; SPP = self-perception of problem gaming; PIUQ = problematic internet use (PIUQ-SF-9); Rosenberg = self-esteem (lower); CESD = depressive symptoms (CES-D-10).

* Nodes represent the variables, and the edges represent their partial correlations (or partial linear regression coefficients). These correlations can be positive (blue edges) or negative (red edges), and the greater the strength of the correlation, the thicker the edge.

** Edge accuracy, edge stability and centrality stability measures by the bootstrap method of the network model is presented in supplementary material.

Supplementary Material

Ten-Item Internet Gaming Disorder Test (IGDT-10) *

Por favor, leia as frases abaixo sobre jogos de videogame. O questionário se refere a jogos tanto online como offline, jogados em qualquer plataforma. Para simplificar, os termos “jogo” ou “jogar” são utilizados com esse mesmo significado.

Por favor, assinale na escala de 0 a 2 (0 = Nunca / 1 = Às vezes / 2 = Frequentemente) em que intensidade e frequência as frases abaixo se aplicaram a você ao longo dos últimos 12 meses.

	0	1	2
1. Quando você não estava jogando, com que frequência imaginou que estava jogando, ficou pensando em jogos anteriores ou em como seria o próximo jogo?			
2. Com que frequência você se sentiu inquieto, irritado, ansioso e/ou triste quando não pôde jogar ou quando jogou menos do que o habitual?			
3. Você sentiu necessidade de jogar com maior frequência ou jogou por mais tempo para ter a sensação de que tinha jogado o suficiente?			
4. Você tentou diminuir o tempo que passa jogando e não conseguiu?			
5. Você ficou jogando ao invés de encontrar seus amigos ou participar de atividades de lazer e passatempos que você costumava gostar?			
6. Você já jogou muito apesar de consequências negativas (por exemplo: dormir menos, não conseguir ir bem na escola ou no trabalho, discutir com familiares ou amigos e/ou negligenciar tarefas importantes)?			
7. Você já tentou esconder de sua família, amigos ou outras pessoas importantes para você o quanto você estava jogando, ou mentiu para eles sobre isso?			
8. Você já jogou para aliviar um sentimento negativo (por exemplo: desamparo, culpa ou ansiedade)?			
9. Você já arriscou ou perdeu algum relacionamento importante/significativo por causa do jogo?			
10. Você teve prejuízo no seu desempenho na escola ou no trabalho por causa do jogo?			

* Não é necessária autorização prévia para utilizar a "Ten-Item Internet Gaming Disorder Test". Apenas solicitamos que seja dado o devido crédito aos seus autores e que o presente artigo seja citado como referência.

Supplementary Material

Centrality analysis of network model

Figure 5 - Edge accuracy measures by the bootstrap method of the IGDT-10 specific symptoms' network model

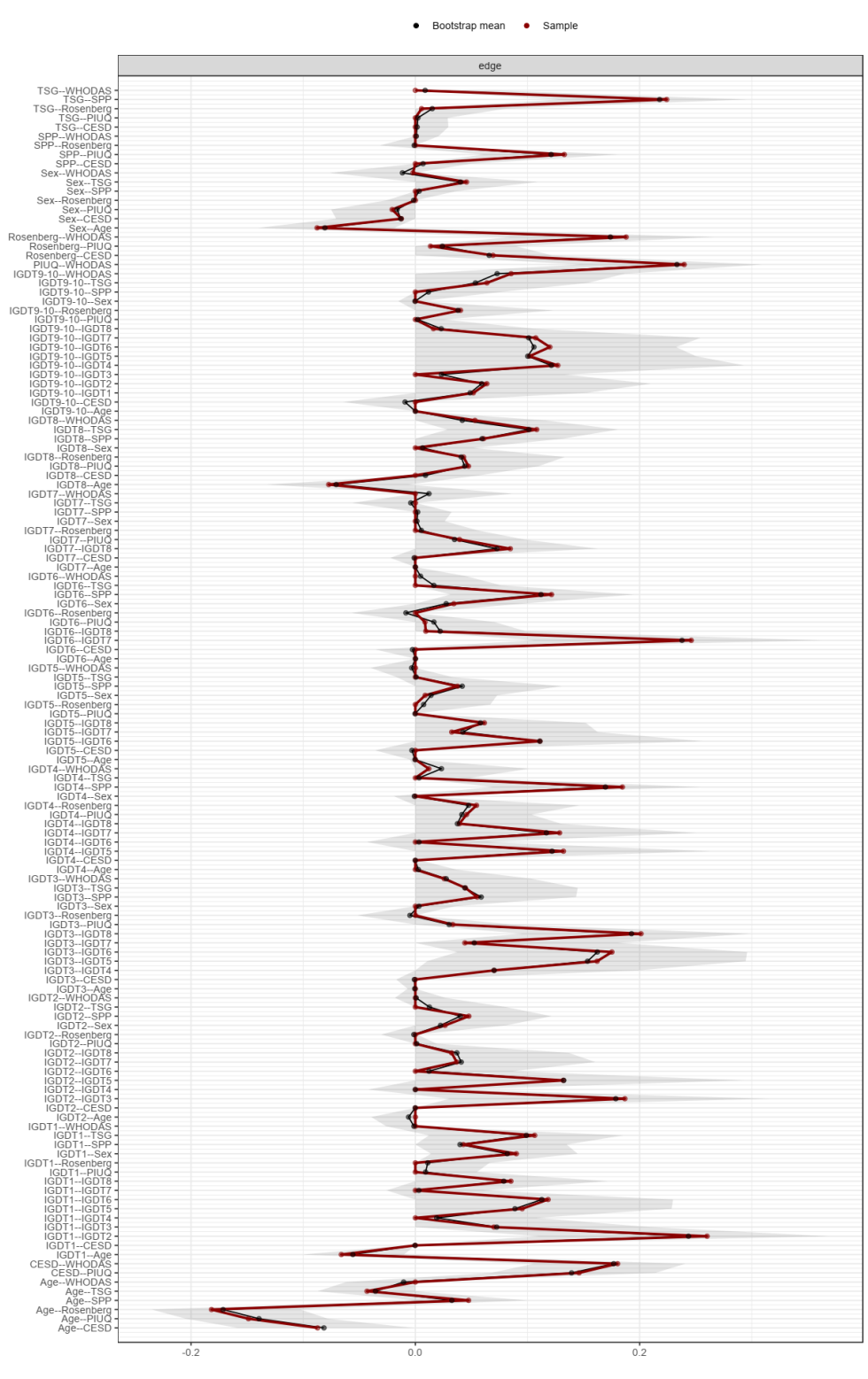


Figura 6 - Centrality accuracy measures by the bootstrap method of the IGDT-10 specific symptoms' network model

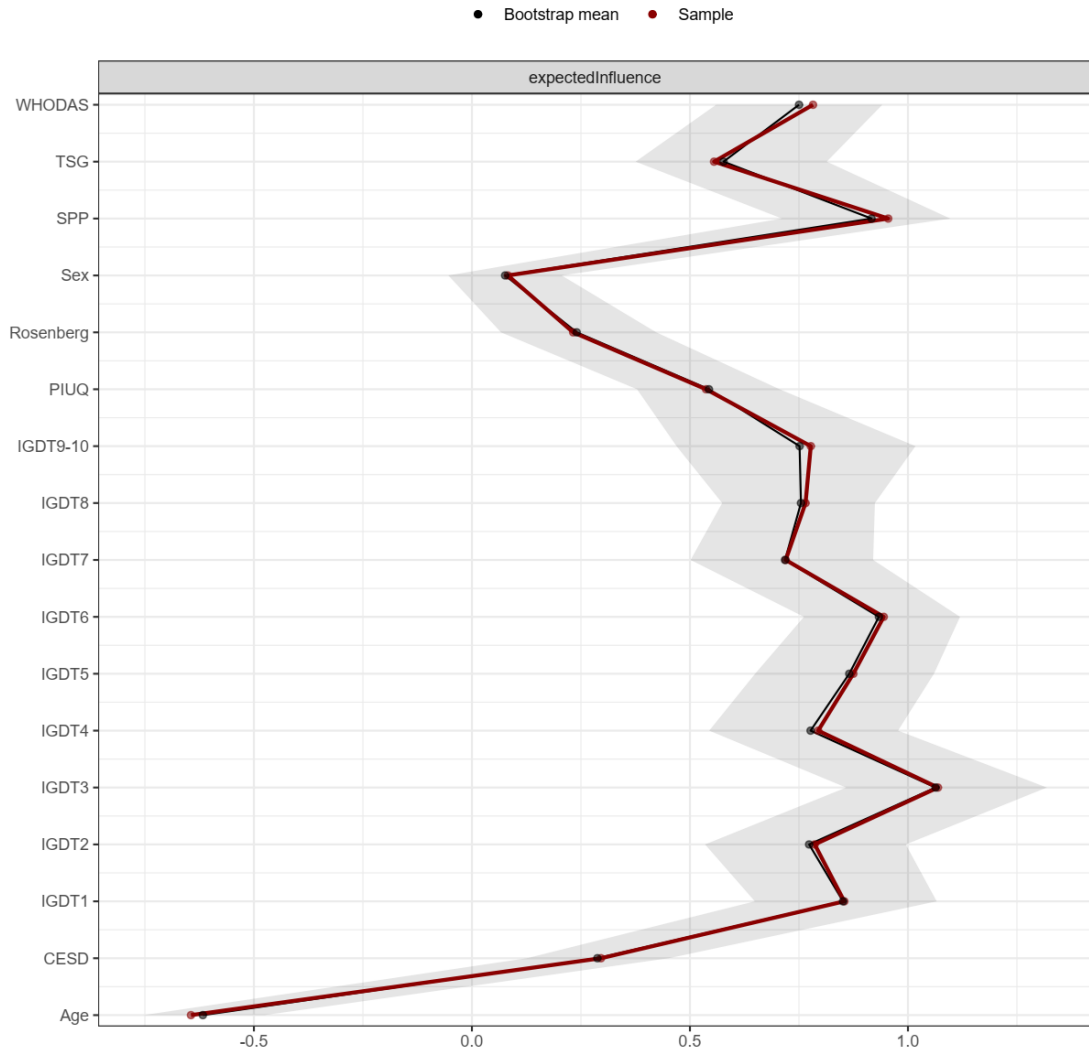
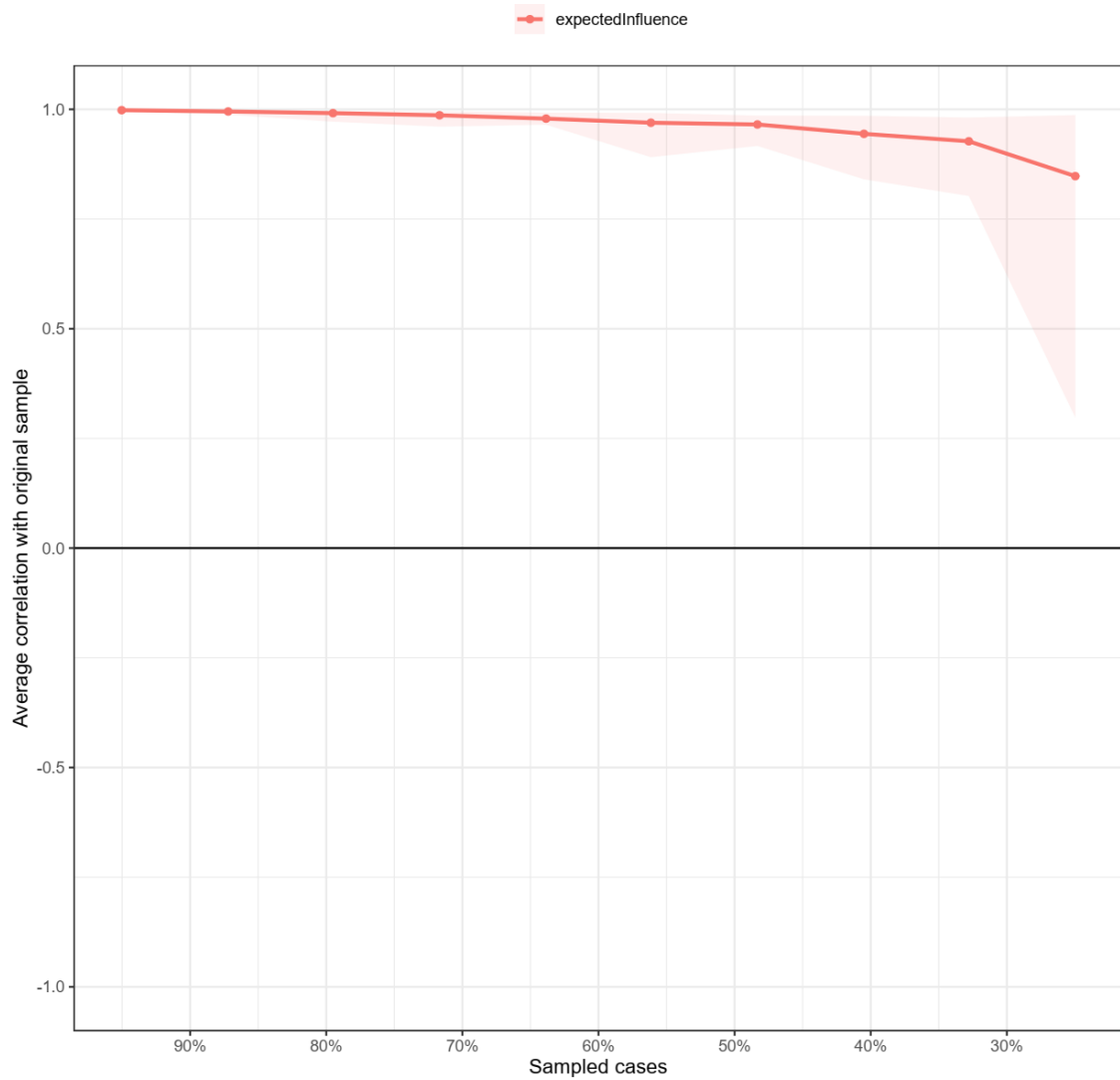


Figura 7 - Centrality stability measures by the bootstrap method of the IGDT-10 specific symptoms' network model



4 CONSIDERAÇÕES FINAIS

Ao longo desses quatro últimos anos, um candidato a subtítulo para a tese ruminava nos meus pensamentos: “*not a prevalence study*”. Essa negativa (vamos lá... Freud, 1925) estava tão explícita que não deixava muitas dúvidas sobre o que eu realmente queria fazer. Estudos epidemiológicos para estimar a prevalência de uso problemático de tecnologia, bem como a sua associação com outras condições de saúde física e mental e o seu custo para os serviços de saúde, devem ser uma prioridade se quisermos ter políticas públicas baseadas em evidências científicas sólidas.

Entretanto, o foco em avaliação psicométrica, que não era algo previsto no início deste projeto, acabou se construindo em função de uma necessidade concreta: nenhum dos instrumentos que seriam utilizados no estudo multicêntrico para avaliar uso problemático de tecnologia havia sido adaptado e validado para uso na população brasileira. A busca por informações sobre como realizar a adaptação cultural de um instrumento e a validação das suas propriedades psicométricas fez com que eu me deparasse com a minha profunda ignorância sobre o assunto, e, ao mesmo tempo, despertou uma curiosidade quase obsessiva que se conectou diretamente com muitas críticas que eu tinha sobre os estudos referentes ao uso de tecnologia.

São inúmeros os desafios e as incertezas ao se estudar fenômenos como o uso da Internet e de jogos digitais que se modificam numa velocidade muito grande, especialmente num país com dimensões e contrastes ainda maiores. Isso exige que os instrumentos de avaliação a serem utilizados, além de se fazerem compreender por pessoas de diferentes idades, localidades e com diferentes níveis de escolaridade, consigam captar adequadamente a experiência das pessoas com essas tecnologias para distinguir o uso saudável do uso problemático. Ao mesmo tempo são diversas as vantagens da utilização de instrumentos com propriedades psicométricas sólidas para avaliar o uso problemático de internet, tanto de modo geral como das atividades específicas realizadas online. Se considerarmos apenas os benefícios relacionados a prevenção, é possível realizar a detecção mais precisa e precoce de problemas relacionados ao uso das TICs em diversos contextos. Em nível individual, estes

instrumentos podem informar aos pacientes e suas famílias sobre quando buscar auxílio, e também guiar profissionais de saúde na avaliação destes transtornos. Em nível comunitário, bons instrumentos podem ser utilizados para rastrear o uso problemático de TICs nas escolas, incorporando-os facilmente a programas já existentes que investigam outros comportamentos relevantes na infância e adolescência. Em nível populacional, estimativas de prevalência geradas a partir desses instrumentos, assim como a avaliação de fatores de risco, podem orientar programas nacionais de prevenção mais específicos, a partir de correlatos demográficos e de saúde física e mental. Trabalhar para a disponibilização de instrumentos culturalmente adaptados para o contexto brasileiro e com propriedades psicométricas rigorosamente investigadas parecia ser uma etapa necessária antes da realização de futuros estudos populacionais.

No estudo 1 foram apresentadas a adaptação cultural e as propriedades psicométricas da versão em português brasileiro do *Problematic Internet Use Questionnaire – Short Form – 9* (PIUQ-SF-9). Este instrumento demonstrou estrutura bifator, com um fator geral e três dimensões específicas (obsessão, negligência e perda de controle). Sua consistência interna foi considerada boa e sua estabilidade temporal, adequada. A validade de constructo do PIUQ-SF-9 foi demonstrada a partir da avaliação simultânea da influência da idade, tempo de uso da Internet, autopercepção de uso problemático e sintomas depressivos.

O estudo 2 buscou avaliar e expandir as propriedades psicométricas da *Self-perception of Text-message Dependency Scale* (STDS). A análise fatorial confirmatória multigrupos confirmou estrutura de três fatores e demonstrou invariância de medida do instrumento para sexo e idade. A consistência interna foi satisfatória quando avaliada tanto pelo Omega de McDonald, quanto pelo Alfa de Cronbach. A validade de constructo do STDS foi demonstrada pela correlação das suas 3 dimensões com medidas de uso problemático de Internet (PIUQ-SF-9) e de smartphones (MPPUS). A análise de rede proporcionou insights sobre os sintomas mais influentes relacionados ao uso problemático de mensagens de texto.

No estudo 3 foram avaliadas as propriedades psicométricas da versão brasileira do *Internet Gaming Disorder Test – 10* (IGDT-10) e explorada a sua

associação com prejuízo. O IGDT-10 demonstrou uma estrutura unidimensional tanto na análise fatorial confirmatória como exploratória, com consistência interna satisfatória e estabilidade temporal adequada. Os participantes com escores acima do ponto de corte apresentaram níveis de prejuízo significativamente maiores quando comparados com aqueles com escores abaixo do ponto de corte do IGDT-10. A análise de rede permitiu identificar que o sintoma "consequências negativas" era o item mais relevante ao conectar o uso problemático de jogos digitais com prejuízo.

As evidências de validação destes instrumentos, obviamente, não pretendem nem podem ser consideradas como definitivas. Entretanto, já são minimamente suficientes para que esses instrumentos sejam bons candidatos a serem utilizados em futuros estudos sobre uso problemático de tecnologia no nosso país. Ah, lembra daquela história sobre estudos de prevalência que eu falei no início? Então, aí vai um *spoiler*: o PIUQ-SF-9 e o IGDT-10 serão utilizados para avaliar uso problemático de internet e de jogos digitais na 3ª edição do Levantamento Nacional de Álcool e Drogas (LENAD). Por ser um inquérito domiciliar de base populacional, desenhado com amostragem probabilística, permitirá que se obtenha, pela primeira vez, índices nacionalmente representativos de prevalência e fatores de risco destes transtornos no nosso país. Essas informações poderão embasar futuras políticas públicas de prevenção e tratamento para essas condições dentro da área da saúde mental.

To be continued..

APÊNDICE A – CONVITE PARA PARTICIPAÇÃO NA PESQUISA

Uso de Internet, telefone celular e jogos eletrônicos

1. Convite para participação em projeto de pesquisa

Este é um convite para preencher o questionário da pesquisa intitulada “Avaliação do uso problemático de internet, jogos eletrônicos e smartphones em uma amostra brasileira de adultos, e sua associação com traços de personalidade, mecanismos de defesa, estratégias de enfrentamento e vínculo parental”, cujos pesquisadores responsáveis são a Prof. Dra. Simone Hauck e o Dr. Daniel Spritzer (telefone 51-33598294), vinculados ao programa de Pós-Graduação em Psiquiatria da Universidade Federal do Rio Grande do Sul (UFRGS). O projeto foi aprovado pelo Comitê de Ética em Pesquisa do HCPA (telefone 51-33597640).

O objetivo do projeto é avaliar de que forma pessoas com mais de 18 anos utilizam algumas tecnologias como internet, mensagens de texto, telefone celular e jogos eletrônicos.

O questionário consiste de perguntas objetivas (de marcar). O tempo necessário para o preenchimento do questionário é de cerca de 40 minutos. As questões são sobre seu uso de internet, mensagens de texto, telefone celular e jogos eletrônicos, com perguntas sobre quanto tempo do seu dia você dedica a estas atividades, e qual o impacto que isso tem na sua rotina, por exemplo. Além disso, responderá questões sobre como você se relaciona consigo mesmo e com os outros, e sobre como lida com situações de conflito. Também haverá algumas questões sobre o uso de maconha.

Caso você precise fazer uma pausa no meio da pesquisa e voltar depois, é só retornar utilizando o mesmo aparelho (telefone celular, tablet ou computador) que utilizou para responder a pesquisa.

Você poderá, a qualquer momento, nos pedir para deletar seus dados. Para isso, escreva para pesquisatecnologiabrasil@gmail.com informando o seu código de identificação pessoal, que poderá ser criado no início do questionário.

Os dados coletados durante a pesquisa serão sempre tratados de forma absolutamente confidencial. Os resultados serão apresentados de forma conjunta, sem a identificação dos participantes.

A sua participação na pesquisa se dá através da ferramenta Survey Monkey®, sendo que ao responder e enviar o questionário ao final você está concordando em participar desta pesquisa.

APÊNDICE B – QUESTIONÁRIO DA PESQUISA

Uso de Internet, telefone celular e jogos eletrônicos

2. SOBRE MIM

Por favor, responda as seguintes perguntas sobre você:

1. Qual o seu sexo:

Feminino

Masculino

2. Qual a sua idade:

3. Sua ocupação:

Estudando (sem um trabalho paralelo)

Estudando e trabalhando

Trabalhando (empregado, profissional liberal, etc.)

Não trabalhando (momentaneamente desempregado, aposentado, afastado/em licença do trabalho,...)

4. Sua escolaridade:

<input type="radio"/> Ensino fundamental incompleto	<input type="radio"/> Ensino médio completo + 4 anos de estudo
<input type="radio"/> Ensino fundamental completo	<input type="radio"/> Ensino médio completo + 5 anos de estudo
<input type="radio"/> Ensino médio incompleto	<input type="radio"/> Ensino médio completo + 6 anos de estudo
<input type="radio"/> Ensino médio completo	<input type="radio"/> Ensino médio completo + 7 anos de estudo
<input type="radio"/> Ensino médio completo + 1 ano de estudo	<input type="radio"/> Ensino médio completo + 8 anos de estudo
<input type="radio"/> Ensino médio completo + 2 anos de estudo	<input type="radio"/> Ensino médio completo + 9 ou mais anos de estudo
<input type="radio"/> Ensino médio completo + 3 anos de estudo	

5. Sua situação conjugal:

<input type="radio"/> Solteiro(a)	<input type="radio"/> Casado(a)
<input type="radio"/> Namorando	<input type="radio"/> Divorciado(a)
<input type="radio"/> Morando com parceiro	<input type="radio"/> Separado(a)
<input type="radio"/> Em uma união estável	<input type="radio"/> Viúvo(a)

6. Quem mora com você? (você pode marcar mais de uma alternativa)

- | | |
|--|--|
| <input type="checkbox"/> Seu pai | <input type="checkbox"/> Sua namorada / seu namorado |
| <input type="checkbox"/> Sua mãe | <input type="checkbox"/> Seu filho(a)(s) |
| <input type="checkbox"/> Padrasto / madrasta | <input type="checkbox"/> Amigo(s) |
| <input type="checkbox"/> Seu(s) irmão(s) / irmã(s) | <input type="checkbox"/> Moro sozinho |
| <input type="checkbox"/> Sua esposa / seu marido | |

3. IDENTIFICADOR PESSOAL

Por favor, crie um código de identificação pessoal (ele deverá conter entre 6 e 10 caracteres, e ser composto por letras e números). Este código poderá ser usado caso você, em algum momento, nos peça para deletar seus dados. Por favor, faça essa solicitação através do email: pesquisatecnologiabrasil@gmail.com

7. Crie seu código de identificação

Uso de Internet, telefone celular e jogos eletrônicos

4. TELEFONE CELULAR

8. Que tipo de telefone celular você geralmente / predominantemente usa? (Se você tem vários celulares, por favor indique o que você mais usa)

- Smartphone (com acesso à Internet)
- Telefone celular (sem acesso à Internet)
- Eu não tenho telefone celular

9. Quantas horas/dia você passa no telefone celular? Por exemplo: 5 horas/dia

0 24

10. Na sua opinião, de acordo com o seu uso do telefone celular durante o último ano, você acha que faz um uso excessivo/problemático do telefone celular?

- Não
- Geralmente não
- Geralmente sim
- Sim

11. Para cada questão sobre seu uso de celular, por favor, escolha a resposta mais apropriada, sendo 1= "Totalmente falso" e 10 = "Totalmente verdadeiro"

	1 = Totalmente falso	2	3	4	5	6	7	8	9	10 = Totalmente verdadeiro
O tempo que eu passo no celular nunca me satisfaz.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu já usei meu celular para me sentir melhor quando eu estava me sentindo pra baixo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me pego usando o celular quando eu deveria estar fazendo outras coisas, e isso me causa problemas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Todos os meus amigos têm um celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 = Totalmente falso	2	3	4	5	6	7	8	9	10 = Totalmente verdadeiro
Eu já tentei esconder dos outros quanto tempo eu passo no celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu perco tempo de sono por causa do tempo que eu passo no celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu já recebi contas de celular que eu não tinha condições de pagar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quando fico sem sinal por algum tempo, me preocupo com a ideia de perder uma ligação e/ou mensagem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes, quando estou no celular enquanto faço outras coisas, eu me distraio com o uso do celular e não presto atenção no que estou fazendo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
O tempo que passo no celular aumentou nos últimos 12 meses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu já usei meu celular para falar com outras pessoas quando estava me sentindo sozinho.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu já tentei passar menos tempo no celular, mas não consigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho difícil desligar meu celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me sinto ansioso se eu não confiro as mensagens ou não olho meu celular por algum tempo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu frequentemente tenho sonhos com o celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meus amigos e minha família reclamam sobre o uso que faço do celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 = Totalmente falso	2	3	4	5	6	7	8	9	10 = Totalmente verdadeiro
Se eu não tivesse celular, meus amigos achariam difícil entrar em contato comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minha produtividade diminuiu como resultado direto do tempo que passo no celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu tenho desconforto físico e/ou dores que estão fortemente associados ao meu uso do celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me pego envolvido com o celular por mais tempo do que eu pretendia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Existem momentos em que eu preferiria ficar no celular a lidar com outras questões mais urgentes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequentemente me atraso para compromissos porque estou no celular quando não deveria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu fico irritado se tenho que desligar meu celular em reuniões, jantares ou no cinema.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Já me disseram que eu passo tempo demais no meu celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mais de uma vez eu tive problemas porque meu telefone celular tocou durante uma reunião, palestra, teatro ou cinema.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meus amigos não gostam quando meu celular está desligado.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me sinto perdido sem o meu celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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5. MENSAGENS DE TEXTO

As perguntas abaixo se referem ao seu uso de mensagens de texto ao longo do último ano.

12. Por favor informe aproximadamente com que frequência você usa cada serviço de mensagem no seu telefone celular por dia, em uma semana típica

	Nunca	Raramente (1 vez/dia)	Às vezes (2-3 vezes/dia)	Frequentemente (4-9 vezes/dia)	Sempre (mais de 10 vezes/dia)
SMS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facebook Messenger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telegram	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whatsapp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skype	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snapchat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outros (Windows Live Messenger, Line, ChatOn, WeChat, Viber, ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Na sua opinião, de acordo com o seu uso de mensagens de texto durante o último ano, você acha que faz um uso excessivo/problemático de mensagens de texto?

- Não
- Geralmente não
- Geralmente sim
- Sim

14. As afirmativas abaixo referem-se ao uso de mensagens de texto pelo celular, seja através do app do próprio telefone (SMS) ou através de algum outro app (ex: Whatsapp, Facebook Messenger, Telegram, Skype, Snapchat, etc.).

Por favor, assinale abaixo a opção que mais combina com o seu uso de mensagens de texto, de acordo com a seguinte escala:

	Discordo fortemente	Discordo	Não concordo nem discordo	Concordo	Concordo fortemente
Depois de enviar uma mensagem de texto, eu olho minha caixa de entrada meu telefone repetidamente para ver se eu recebi uma resposta.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Discordo fortemente	Discordo	Não concordo nem discordo	Concordo	Concordo fortemente
Eu me sinto desapontado se eu não recebo uma resposta para minha mensagem imediatamente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me sinto ansioso quando as pessoas não respondem imediatamente minhas mensagens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu olho minha caixa de entrada meu telefone com frequência pra ver se recebi uma nova mensagem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me sinto chateado se não recebo nenhuma mensagem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes envio mensagens enquanto estou conversando cara-a-cara com outra pessoa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes eu passo muito horas enviando e recebendo mensagens.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com frequência eu troco muitas mensagens num período curto de tempo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu troco mensagens mesmo enquanto estou falando com meus amigos.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho que digito rápido no celular.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu não consigo manter amizades sem mensagens de texto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu não consigo estabelecer novos relacionamentos sem usar mensagens de texto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho que meus relacionamentos iriam acabar se não fossem as mensagens de texto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Discordo fortemente	Discordo	Não concordo nem discordo	Concordo	Concordo fortemente
Sem mensagens de texto eu não teria como falar com os amigos que eu não encontro diariamente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sem usar mensagens eu não consigo dizer o que está na minha cabeça.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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6. USO DE INTERNET

15. Em geral, qual o dispositivo que você mais usa para acessar a internet?

- Computador (desktop ou notebook) Tablet
- Smartphone
- Outro (por favor, especifique)

16. Quantas horas/dia você passa na Internet (através de qualquer aparelho)?

Por exemplo: 5 horas/dia

0 24

17. Na sua opinião, de acordo com o seu uso de Internet durante o último ano, você acha que faz um uso excessivo da Internet?

- Não
- Geralmente não
- Geralmente sim
- Sim

18. As perguntas abaixo se referem ao seu uso de internet de uma maneira geral (não para trabalho ou estudos).

Ao responder cada pergunta, marque a opção que melhor descreve como você tem se sentido e se comportado nos últimos 6 meses:

	Nunca	Raramente	Algumas vezes	Frequentemente	Sempre
Com que frequência você deixa de realizar tarefas domésticas para ficar mais tempo online?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você sente que deveria diminuir a quantidade de tempo que você passa online?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você fica online quando deveria estar dormindo?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Nunca	Raramente	Algumas vezes	Frequentemente	Sempre
Com que frequência você tem vontade de diminuir a quantidade de tempo que você passa online mas não consegue?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você se sente tenso, irritado ou estressado se você não pode usar a internet pelo tempo que você gostaria no dia?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você tenta esconder a quantidade de tempo que você passa online?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você se sente tenso, irritado ou estressado se você não pode usar a internet por vários dias seguidos?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência você se sente deprimido, mal-humorado ou nervoso quando você não está na internet e esse sentimentos passam assim que você se conecta novamente?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Com que frequência as pessoas ao seu redor reclamam do tempo que você passa online?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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7. JOGOS ELETRÔNICOS

19. Em geral, qual o dispositivo que você mais usa para jogar?

- Videogame
 Tablet
 Computador (desktop ou notebook)
 Não jogo
 Smartphone
 Outro (por favor, especifique)

20. Quantas horas/dia você passa jogando (no videogame, computador, smartphone,...)?

Por exemplo: 5 horas/dia

0 24

21. Na sua opinião, de acordo com o seu uso os jogos durante o último ano, você acha que faz um uso excessivo/problemático dos jogos?

- Não
 Geralmente não
 Geralmente sim
 Sim

22. Por favor, leia as frases abaixo sobre jogos online. O questionário se refere a jogos online, mas para simplificar os termos "jogo" ou "jogar" são utilizados com esse mesmo significado.

Por favor, assinale na escala em que intensidade e frequência as frases abaixo se aplicaram a você ao longo dos últimos 12 meses.

	Nunca	Às vezes	Frequentemente
Quando você não estava jogando, com que frequência imaginou que estava jogando, ficou pensando em jogos anteriores ou em como seria o próximo jogo?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Nunca	Às vezes	Frequentemente
Com que frequência você se sentiu inquieto, irritado, ansioso e/ou triste quando não pôde jogar ou quando jogou menos do que o habitual?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nos últimos 12 meses, você sentiu necessidade de jogar com maior frequência ou jogou por mais tempo para ter a sensação de que tinha jogado o suficiente?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nos últimos 12 meses, você tentou diminuir o tempo que passa jogando e não conseguiu?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nos últimos 12 meses, você ficou jogando ao invés de encontrar seus amigos ou participar de atividades de lazer e passatempos que você costumava gostar?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Você já jogou muito apesar de consequências negativas (por exemplo: dormir menos, não conseguir ir bem nos estudos ou no trabalho, discutir com familiares ou amigos e/ou negligenciar tarefas importantes)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Você já tentou esconder de sua família, amigos ou outras pessoas importantes para você o quanto você estava jogando, ou mentiu para eles sobre isso?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Você já jogou para aliviar um sentimento negativo (por exemplo: desamparo, culpa ou ansiedade)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Você já arriscou ou perdeu algum relacionamento importante/significativo por causa do jogo?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Nunca	Às vezes	Frequentemente
Nos últimos 12, você teve prejuízo no seu desempenho na escola ou no trabalho por causa do jogo?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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8. AUTO-ESTIMA

23. Abaixo você encontrará 10 afirmativas sobre sentimentos, opiniões e reações. Por favor, leia cada afirmativa atentamente e indique o quão verdadeira cada uma delas é para você, de acordo com a seguinte escala:

	Discordo plenamente	Discordo	Concordo	Concordo plenamente
Eu sinto que sou uma pessoa de valor. No mínimo, tanto quanto as outras pessoas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho que eu tenho várias boas qualidades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Levando tudo em conta, eu penso que eu sou um fracasso.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho que sou capaz de fazer as coisas tão bem quanto a maioria das pessoas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu acho que eu não tenho muito do que me orgulhar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu tenho uma atitude positiva com relação a mim mesmo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No conjunto, eu estou satisfeito comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu gostaria de poder ter mais respeito por mim mesmo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes eu me sinto inútil.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes eu acho que não presto para nada.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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9. MEU HUMOR

24. Abaixo há uma lista de sentimentos e comportamentos. Por favor, assinale a frequência com que você tenha se sentido desta maneira na última semana, de acordo com a seguinte escala:

	Raramente ou nunca (menos que 1 dia)	Durante pouco ou algum tempo (1 ou 2 dias)	Ocasionalmente ou durante um tempo moderado (3 a 4 dias)	Durante a maior parte do tempo ou todo o tempo (5 a 7 dias)
Eu me senti incomodado com coisas que habitualmente não me incomodam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu senti dificuldade em me concentrar no que estava fazendo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me senti deprimido.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu senti que tive que fazer esforço para dar conta das minhas tarefas habituais.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me senti otimista com relação ao futuro.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me senti com medo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meu sono esteve agitado.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu estive feliz.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me senti sozinho.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu me senti desanimado.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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10. MINHAS ATITUDES

25. Abaixo você vai encontrar afirmativas sobre atitudes pessoais. Não existe resposta certa ou errada. Por favor, assinale o quanto você concorda ou discorda com as afirmativas, de acordo com a seguinte escala:

	Discordo plenamente	Discordo	Concordo	Concordo plenamente
Eu fico satisfeito em ajudar os outros e, se eu não puder fazer isso, eu fico deprimido.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu consigo não me preocupar com um problema até que eu tenha tempo para lidar com ele.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu alivio a minha ansiedade fazendo coisas construtivas e criativas, como pintura ou trabalho em madeira.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu sou capaz de achar bons motivos para tudo que eu faço.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu sou capaz de rir de mim mesmo com bastante facilidade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Se alguém me assalta e rouba o meu dinheiro, eu prefiro que essa pessoa seja ajudada ao invés de punida.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As pessoas dizem que eu costumo ignorar os fatos desagradáveis como se eles não existissem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu frequentemente ajo impulsivamente quando alguma coisa está me incomodando.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu fico fisicamente doente quando as coisas não estão indo bem para mim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu fico mais satisfeito com minhas fantasias do que com a minha vida real.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Discordo plenamente	Discordo	Concordo	Concordo plenamente
Há sempre boas razões quando as coisas não dão certo para mim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu resolvo mais as coisas sonhando acordado do que na vida real.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu não tenho medo de nada.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Às vezes, eu acho que sou um anjo e, outras vezes, acho que sou um demônio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu fico francamente agressivo quando me sinto magoado.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu sempre acho que alguém que eu conheço é como um anjo da guarda.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tanto quanto eu sei, ou as pessoas são boas ou más.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Se o meu chefe me repreendesse, eu poderia cometer um erro ou trabalhar mais devagar só para me vingar dele.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu conheço alguém que é capaz de fazer qualquer coisa e é absolutamente justo e imparcial.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu posso controlar os meus sentimentos se eles interferirem no que eu estiver fazendo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu frequentemente sou capaz de ver o lado engraçado de uma situação apesar de ela ser desagradável.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu sinto dor de cabeça quando tenho que fazer algo de que não gosto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me vejo sendo muito simpático com pessoas com quem, pelo certo, eu deveria estar muito brabo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Discordo plenamente	Discordo	Concordo	Concordo plenamente
Quando eu sei que vou ter que enfrentar uma situação difícil, eu tento imaginar como isso será e planejo um jeito de lidar com a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Se eu puder prever que vou ficar triste mais adiante, eu poderei lidar melhor com a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequentemente eu me dou conta de que eu não sinto nada em situações que deveriam me despertar fortes emoções.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manter-me muito ocupado evita que eu me sinta deprimido ou ansioso.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Se eu tenho um pensamento agressivo, eu sinto a necessidade de fazer algo para compensá-lo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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11. COMO EU LIDO COM DIFICULDADES

26. Existem muitas maneiras de se lidar com as dificuldades ou eventos de vida estressantes. Esses itens se referem a o que você geralmente faz ou como se sente quanto essas situações estressantes acontecem, de acordo com a seguinte escala:

	Não costumo fazer de jeito nenhum	Costumo fazer um pouco	Costumo fazer mais ou menos	Costumo fazer bastante
Costumo me dedicar ao trabalho ou outras atividades para me distrair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo concentrar meus esforços para fazer alguma coisa em relação à situação na qual me encontro.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo dizer a mim mesmo(a): "isto não é real".	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo consumir álcool ou outras drogas/medicamentos para me sentir melhor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo receber apoio emocional de outras pessoas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo desistir de enfrentar a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tomar alguma atitude para tentar melhorar a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo me negar a acreditar que essa situação tenha acontecido.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo dizer coisas para extravasar meus sentimentos desagradáveis.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo receber ajuda e conselhos de outras pessoas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo consumir álcool ou outras drogas/medicamentos para me ajudar a superar a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Não costumo fazer de jeito nenhum	Costumo fazer um pouco	Costumo fazer mais ou menos	Costumo fazer bastante
Costumo tentar enxergar a situação de outra forma para fazê-la parecer mais positiva.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo me criticar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tentar criar uma estratégia em relação ao que fazer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo receber conforto e compreensão de alguém.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo desistir de tentar enfrentar a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tentar enxergar algo de bom no que está acontecendo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo fazer piadas sobre a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo fazer coisas para pensar menos na situação como ir ao cinema, ver TV, ler, sonhar acordado(a), dormir ou ir às compras.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo aceitar a realidade do fato acontecido.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo expressar meus sentimentos negativos.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tentar encontrar conforto em minha religião ou crenças espirituais.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tentar obter conselho ou ajuda com outras pessoas sobre o que fazer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo tentar aprender a conviver com a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo pensar bastante sobre os passos que irei dar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Não costumo fazer de jeito nenhum	Costumo fazer um pouco	Costumo fazer mais ou menos	Costumo fazer bastante
Costumo me culpar pelas coisas que aconteceram.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo orar ou meditar.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Costumo ridicularizar a situação.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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12. VÍNCULO COM MÃE

27. Este questionário lista várias atitudes e comportamentos dos pais. Conforme você se lembra da sua MÃE até os seus 16 anos, assinale abaixo de acordo com a seguinte escala:

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Falava comigo com uma voz meiga e amigável.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me ajudava tanto quanto eu necessitava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me fazer as coisas que eu gostava de fazer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia emocionalmente fria comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia compreender meus problemas e preocupações.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era carinhosa comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gostava que eu tomasse minhas próprias decisões.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não queria que eu crescesse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava controlar todas as coisas que eu fazia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invadia minha privacidade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gostava de conversar sobre as coisas comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequentemente sorria para mim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tendia a me tratar como bebê.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia não entender o que eu necessitava ou queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava que eu decidisse coisas por mim mesmo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Fazia com que eu sentisse que não era querido(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Podia me fazer sentir melhor quando eu estava chateado(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não conversava muito comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava me fazer dependente dela.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ela sentia que eu não poderia cuidar de mim mesmo, a menos que ela estivesse por perto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dava-me tanta liberdade quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me sair tão frequentemente quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era superprotetora comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me elogiava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me vestir de qualquer jeito que eu desejasse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Este questionário lista várias atitudes e comportamentos dos pais. Conforme você se lembra da sua MÃE até os seus 16 anos, assinale abaixo de acordo com a seguinte escala:

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Falava comigo com uma voz meiga e amigável.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me ajudava tanto quanto eu necessitava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me fazer as coisas que eu gostava de fazer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia emocionalmente fria comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia compreender meus problemas e preocupações.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era carinhosa comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Gostava que eu tomasse minhas próprias decisões.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não queria que eu crescesse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava controlar todas as coisas que eu fazia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invadia minha privacidade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gostava de conversar sobre as coisas comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequentemente sorria para mim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tendia a me tratar como bebê.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia não entender o que eu necessitava ou queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava que eu decidisse coisas por mim mesmo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fazia com que eu sentisse que não era querido(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Podia me fazer sentir melhor quando eu estava chateado(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não conversava muito comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava me fazer dependente dela.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ela sentia que eu não poderia cuidar de mim mesmo, a menos que ela estivesse por perto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dava-me tanta liberdade quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me sair tão frequentemente quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era superprotetora comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me elogiava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Deixava-me vestir de qualquer jeito que eu desejasse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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13. VÍNCULO COM PAI

29. Este questionário lista várias atitudes e comportamentos dos pais. Conforme você se lembra do seu PAI até os seus 16 anos, assinale abaixo de acordo com a seguinte escala:

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Falava comigo com uma voz meiga e amigável.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me ajudava tanto quanto eu necessitava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me fazer as coisas que eu gostava de fazer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia emocionalmente frio comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia compreender meus problemas e preocupações.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era carinhoso comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gostava que eu tomasse minhas próprias decisões.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não queria que eu crescesse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava controlar todas as coisas que eu fazia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invadia minha privacidade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gostava de conversar sobre as coisas comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequentemente sorria para mim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tendia a me tratar como bebê.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parecia não entender o que eu necessitava ou queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava que eu decidisse coisas por mim mesmo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Muito parecido	Moderadamente parecido	Moderadamente diferente	Muito diferente
Fazia com que eu sentisse que não era querido(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Podia me fazer sentir melhor quando eu estava chateado(a).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não conversava muito comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tentava me fazer dependente dele.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ele sentia que eu não poderia cuidar de mim mesmo, a menos que ele estivesse por perto.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dava-me tanta liberdade quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me sair tão frequentemente quanto eu queria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Era superprotetor comigo.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Não me elogiava.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deixava-me vestir de qualquer jeito que eu desejasse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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14. MINHA PERSONALIDADE

30. O objetivo deste questionário de personalidade é que você descreva o tipo de pessoa que você é. Ao responder às perguntas, pense sobre como você habitualmente se sentiu, pensou e agiu ao longo dos últimos anos.

Por favor, responda Verdadeiro ou Falso para cada item.

Verdadeiro significa que a afirmação é geralmente verdadeira para você.

Falso significa que a afirmação é geralmente falsa para você.

Mesmo que você não esteja completamente seguro sobre a resposta, marque Verdadeiro ou Falso para cada questão. Não há respostas "certas ou erradas". Você pode utilizar quanto tempo quiser.

Ao longo dos últimos anos...

	Verdadeiro	Falso
Eu evito trabalhar com pessoas que possam me criticar.	<input type="radio"/>	<input type="radio"/>
Eu não consigo tomar decisões sem o conselho ou aprovação dos outros.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me prendo em detalhes e perco a noção do todo.	<input type="radio"/>	<input type="radio"/>
Eu preciso ser o centro das atenções.	<input type="radio"/>	<input type="radio"/>
As pessoas não reconhecem nem metade das minhas conquistas.	<input type="radio"/>	<input type="radio"/>
Eu faço de tudo para evitar que as pessoas que amo me deixem.	<input type="radio"/>	<input type="radio"/>
As pessoas já reclamaram que eu não mantenho em dia o meu trabalho ou os meus compromissos.	<input type="radio"/>	<input type="radio"/>
Eu já tive problemas com a justiça várias vezes (ou teria tido se tivesse sido pego).	<input type="radio"/>	<input type="radio"/>
Passar tempo com a família ou os amigos simplesmente não me interessa.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Eu percebo mensagens especiais nas coisas que acontecem ao meu redor.	<input type="radio"/>	<input type="radio"/>
Eu sei que as pessoas vão tirar vantagem de mim ou tentar me enganar se eu permitir.	<input type="radio"/>	<input type="radio"/>
Às vezes eu fico chateado.	<input type="radio"/>	<input type="radio"/>
Eu faço amizade com as pessoas apenas quando eu tenho certeza de que elas gostam de mim.	<input type="radio"/>	<input type="radio"/>
Eu geralmente estou deprimido.	<input type="radio"/>	<input type="radio"/>
Eu prefiro que outras pessoas assumam responsabilidade por mim.	<input type="radio"/>	<input type="radio"/>
Eu perco tempo tentando fazer as coisas muito perfeitas.	<input type="radio"/>	<input type="radio"/>
Eu sou mais "sexy" do que a maioria das pessoas.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me pego pensando sobre a ótima pessoa que eu sou ou serei.	<input type="radio"/>	<input type="radio"/>
Eu amo ou odeio as pessoas, sem meio termo.	<input type="radio"/>	<input type="radio"/>
Eu me envolvo em muitas brigas físicas.	<input type="radio"/>	<input type="radio"/>
Eu sinto que os outros não me entendem ou não me apreciam.	<input type="radio"/>	<input type="radio"/>
Eu prefiro fazer coisas sozinho do que fazer com outras pessoas.	<input type="radio"/>	<input type="radio"/>
Eu tenho a habilidade de saber que algumas coisas vão acontecer, antes que elas realmente aconteçam.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Eu frequentemente me pergunto se as pessoas que conheço são realmente confiáveis.	<input type="radio"/>	<input type="radio"/>
De vez em quando eu falo das pessoas pelas costas.	<input type="radio"/>	<input type="radio"/>
Eu sou inibido nas minhas relações íntimas porque tenho medo de ser ridicularizado.	<input type="radio"/>	<input type="radio"/>
Eu tenho medo de perder o apoio dos outros se eu discordar deles.	<input type="radio"/>	<input type="radio"/>
Eu tenho muitas falhas/defeitos.	<input type="radio"/>	<input type="radio"/>
Eu coloco meu trabalho à frente de estar com minha família, amigos ou me divertir.	<input type="radio"/>	<input type="radio"/>
Eu demonstro minhas emoções facilmente.	<input type="radio"/>	<input type="radio"/>
Apenas algumas pessoas especiais podem realmente me apreciar e compreender.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me pergunto quem eu realmente sou.	<input type="radio"/>	<input type="radio"/>
Eu tenho dificuldades em pagar minhas contas porque eu não fico em nenhum trabalho por muito tempo.	<input type="radio"/>	<input type="radio"/>
Sexo simplesmente não me interessa.	<input type="radio"/>	<input type="radio"/>
Os outros me consideram mal-humorado e "cabeça-quente".	<input type="radio"/>	<input type="radio"/>
Eu frequentemente percebo ou sinto coisas que os outros não percebem ou sentem.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Os outros vão usar o que eu disser contra mim.	<input type="radio"/>	<input type="radio"/>
Existem pessoas de quem eu não gosto.	<input type="radio"/>	<input type="radio"/>
Eu sou mais sensível a críticas ou à rejeição do que a maioria das pessoas.	<input type="radio"/>	<input type="radio"/>
Acho difícil iniciar alguma coisa se eu tiver que fazê-la sozinho.	<input type="radio"/>	<input type="radio"/>
Eu tenho um senso de moralidade maior do que as outras pessoas.	<input type="radio"/>	<input type="radio"/>
Eu sou o meu pior crítico.	<input type="radio"/>	<input type="radio"/>
Eu uso minha minha aparência para conseguir a atenção que preciso.	<input type="radio"/>	<input type="radio"/>
Eu preciso muito que as pessoas me notem ou me elogiem.	<input type="radio"/>	<input type="radio"/>
Já tentei me machucar ou me matar.	<input type="radio"/>	<input type="radio"/>
Eu faço muitas coisas sem pensar nas consequências.	<input type="radio"/>	<input type="radio"/>
Existem poucas atividades pelas quais eu tenho algum interesse.	<input type="radio"/>	<input type="radio"/>
As pessoas frequentemente têm dificuldade de entender o que digo.	<input type="radio"/>	<input type="radio"/>
Eu me oponho a chefes que me dizem como eu deveria fazer o meu trabalho.	<input type="radio"/>	<input type="radio"/>
Eu fico alerta/atento para descobrir o real significado daquilo que as pessoas estão dizendo.	<input type="radio"/>	<input type="radio"/>
Eu nunca contei uma mentira.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Eu tenho medo de conhecer pessoas novas porque me sinto inadequado.	<input type="radio"/>	<input type="radio"/>
Eu quero tanto que as pessoas gostem de mim que eu me ofereço para fazer coisas que eu preferiria não fazer.	<input type="radio"/>	<input type="radio"/>
Eu tenho acumulado muitas coisas de que não preciso mas não suportaria me desfazer delas.	<input type="radio"/>	<input type="radio"/>
Embora eu fale muito, as pessoas dizem que tenho dificuldade para chegar ao ponto.	<input type="radio"/>	<input type="radio"/>
Eu me preocupo muito.	<input type="radio"/>	<input type="radio"/>
Eu espero que as pessoas façam favores pra mim mesmo que eu usualmente não faça favores para elas.	<input type="radio"/>	<input type="radio"/>
Eu sou uma pessoa muito mal-humorada.	<input type="radio"/>	<input type="radio"/>
Mentir é fácil para mim e faço isso com frequência.	<input type="radio"/>	<input type="radio"/>
Eu não tenho interesse em ter amigos próximos.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente fico na defensiva/alerta para que não tirem vantagem de mim.	<input type="radio"/>	<input type="radio"/>
Eu nunca esqueço ou perdoos aqueles que me tratam mal.	<input type="radio"/>	<input type="radio"/>
Eu me ressinto daqueles que têm mais "sorte" do que eu.	<input type="radio"/>	<input type="radio"/>
Uma guerra nuclear talvez não fosse uma ideia tão ruim.	<input type="radio"/>	<input type="radio"/>
Quando estou sozinho, me sinto desamparado e incapaz de cuidar de mim mesmo.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Quando os outros não conseguem fazer as coisas corretamente, prefiro fazer eu mesmo.	<input type="radio"/>	<input type="radio"/>
Eu tenho dom para ser dramático.	<input type="radio"/>	<input type="radio"/>
Algumas pessoas pensam que eu tiro vantagem dos outros.	<input type="radio"/>	<input type="radio"/>
Eu sinto que minha vida é entediante e sem sentido.	<input type="radio"/>	<input type="radio"/>
Eu sou crítico com os outros.	<input type="radio"/>	<input type="radio"/>
Eu não me importo com o que os outros falam de mim.	<input type="radio"/>	<input type="radio"/>
Eu tenho dificuldades em me relacionar com os outros numa situação "cara a cara".	<input type="radio"/>	<input type="radio"/>
As pessoas frequentemente reclamam de que eu não percebo que elas estão chateadas.	<input type="radio"/>	<input type="radio"/>
Olhando para mim, as pessoas podem pensar que eu sou muito estranho, excêntrico ou esquisito.	<input type="radio"/>	<input type="radio"/>
Eu gosto de fazer coisas arriscadas.	<input type="radio"/>	<input type="radio"/>
Eu menti bastante neste questionário.	<input type="radio"/>	<input type="radio"/>
Eu reclamo bastante das minhas dificuldades.	<input type="radio"/>	<input type="radio"/>
Eu tenho dificuldades para controlar minha raiva ou meu temperamento.	<input type="radio"/>	<input type="radio"/>
Algumas pessoas têm inveja de mim.	<input type="radio"/>	<input type="radio"/>
Eu sou facilmente influenciado pelo outros.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Eu me vejo como econômico, mas outras pessoas me veem como "pão-duro".	<input type="radio"/>	<input type="radio"/>
Quando uma relação íntima termina, eu preciso me envolver com outra pessoa imediatamente.	<input type="radio"/>	<input type="radio"/>
Eu tenho baixa auto-estima.	<input type="radio"/>	<input type="radio"/>
Eu sou um pessimista.	<input type="radio"/>	<input type="radio"/>
Eu não perco tempo respondendo às pessoas que me insultam.	<input type="radio"/>	<input type="radio"/>
Estar no meio de pessoas me deixa nervoso.	<input type="radio"/>	<input type="radio"/>
Em situações novas, eu tenho medo de ficar envergonhado.	<input type="radio"/>	<input type="radio"/>
Fico aterrorizado de ficar sozinho e ter que cuidar de mim mesmo.	<input type="radio"/>	<input type="radio"/>
As pessoas reclamam que eu sou "teimoso como uma mula".	<input type="radio"/>	<input type="radio"/>
Eu levo o relacionamento mais a sério do que as pessoas com quem estou envolvido.	<input type="radio"/>	<input type="radio"/>
Eu posso ser desagradável com alguém em um minuto, e no minuto seguinte estar pedindo desculpas.	<input type="radio"/>	<input type="radio"/>
As pessoas me consideram arrogante.	<input type="radio"/>	<input type="radio"/>
Quando estou estressado coisas acontecem, como ficar paranóico ou ter um apagão.	<input type="radio"/>	<input type="radio"/>
Eu não me importo que os outros se machuquem, desde que eu consiga o que quero.	<input type="radio"/>	<input type="radio"/>

	Verdadeiro	Falso
Eu mantenho uma certa distância de outras pessoas.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me pergunto se minha mulher (marido, namorada ou namorado) está me traindo.	<input type="radio"/>	<input type="radio"/>
Eu frequentemente me sinto culpado.	<input type="radio"/>	<input type="radio"/>
31. Eu já fiz coisas por impulso que poderiam ter me colocado em apuros		
	Verdadeiro	Falso
	<input type="radio"/>	<input type="radio"/>
32. Se você respondeu "verdadeiro" para o item acima, por favor indique qual dos itens abaixo se aplica a você:		
<input type="checkbox"/> Gastar mais dinheiro do que tenho	<input type="checkbox"/> Usar drogas ilícitas	
<input type="checkbox"/> Ter relações sexuais com pessoas que mal conheço	<input type="checkbox"/> Comer muito de uma vez só	
<input type="checkbox"/> Beber demais	<input type="checkbox"/> Dirigir de forma imprudente	
33. Quando eu era criança (antes dos 15 anos), eu era de alguma forma um jovem transgressor, fazendo alguma das coisas mencionadas na pergunta abaixo		
	Verdadeiro	Falso
	<input type="radio"/>	<input type="radio"/>
34. Se sua resposta ao item acima foi "Verdadeiro", por favor indique qual dos itens abaixo se aplica a você:		
<input type="checkbox"/> Eu fazia bullying	<input type="checkbox"/> Eu passava noites fora de casa sem permissão	
<input type="checkbox"/> Eu costumava começar brigas com outras crianças	<input type="checkbox"/> Roubei coisas de outras pessoas	
<input type="checkbox"/> Eu usei alguma arma nas brigas que tive	<input type="checkbox"/> Eu provoquei incêndios	
<input type="checkbox"/> Eu roubei ou assaltei outras pessoas	<input type="checkbox"/> Eu quebrei janelas ou destruí propriedades	
<input type="checkbox"/> Eu fui fisicamente cruel com outras pessoas	<input type="checkbox"/> Eu fugi de casa durante a noite mais de uma vez	
<input type="checkbox"/> Eu fui fisicamente cruel com animais	<input type="checkbox"/> Eu comecei a faltar aula frequentemente ainda antes dos 13 anos	
<input type="checkbox"/> Eu forcei alguém a ter relações sexuais comigo	<input type="checkbox"/> Eu arrombei a casa, prédio ou carro de alguém	
<input type="checkbox"/> Eu mentia muito.		

15. USO DE MACONHA

As perguntas abaixo se referem ao uso de maconha nos últimos seis meses. Por favor, responda de modo mais completo e sincero possível (mesmo que você não tenha usado maconha nos últimos seis meses).

35. Você usou/fumou maconha alguma vez nos últimos seis meses?

- Sim
 Não

36. Com que frequência você usa/fuma maconha?

- Nunca / não-fumo
 1 vez por mês ou menos
 2-4 vezes por mês
 2-3 vezes por semana
 4 ou mais vezes por semana

37. Quantas horas você costuma ficar chapado num dia típico em que usa/fuma maconha?

- Não fumo
 Menos de 1 hora
 1 ou 2 horas
 3 ou 4 horas
 5 ou 6 horas
 7 horas ou mais

38. Nos últimos seis meses, com que frequência você percebeu que não conseguia parar de usar maconha depois de ter começado?

- Nunca / não-fumo
 1 vez por mês ou menos
 2-4 vezes por mês
 2-3 vezes por semana
 4 ou mais vezes por semana

39. Nos últimos seis meses, com que frequência você não conseguiu fazer o que era esperado por usar maconha?

- Nunca / não-fumo
 1 vez por mês ou menos
 2-4 vezes por mês
 2-3 vezes por semana
 4 ou mais vezes por semana

40. Nos últimos seis meses, com que frequência você dedicou grande parte do seu tempo tentando conseguir maconha, usando ou se recuperando dos efeitos da maconha?

- Nunca / não-fumo 2-3 vezes por semana
 1 vez por mês ou menos 4 ou mais vezes por semana
 2-4 vezes por mês

41. Nos últimos seis meses com que frequência você teve problemas de memória ou de concentração depois de usar maconha?

- Nunca / não-fumo 2-3 vezes por semana
 1 vez por mês ou menos 4 ou mais vezes por semana
 2-4 vezes por mês

42. Nos últimos seis meses, com que frequência você usou maconha em situações que poderiam ser fisicamente perigosas, como dirigir, operar máquinas ou cuidar de crianças?

- Nunca / não-fumo 2-3 vezes por semana
 1 vez por mês ou menos 4 ou mais vezes por semana
 2-4 vezes por mês

43. Você alguma vez já pensou em diminuir ou parar de usar maconha?

- Nunca / não-fumo
 Sim, mas não nos últimos seis meses
 Sim, nos últimos seis meses

Uso de Internet, telefone celular e jogos eletrônicos

16. MINHAS DIFICULDADES

44. Este questionário pergunta sobre dificuldades decorrentes de condições de saúde. Condições de saúde incluem doenças ou enfermidades, outros problemas de saúde de curta ou longa duração, lesões, problemas mentais ou emocionais, e problemas com álcool ou drogas.

Pense nos últimos 30 dias e responda as questões, pensando sobre quanta dificuldade você tem nas atividades a seguir. Para cada questão, por favor, marque uma resposta.

Nos últimos 30 dias, quanta dificuldade você teve em:

	Nenhuma	Leve	Moderada	Grave	Extrema ou não consegue fazer
Ficar em pé por longos períodos como 30 minutos?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cuidar das suas responsabilidades domésticas?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aprender uma nova tarefa, por exemplo, como chegar a um lugar desconhecido?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quanta dificuldade você teve ao participar em atividades comunitárias (por exemplo, festividades, atividades religiosas ou outra atividade) do mesmo modo que qualquer outra pessoa?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quanto você tem sido emocionalmente afetado por seus problemas de saúde?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concentrar-se para fazer alguma coisa durante dez minutos?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Andar por longas distâncias como por 1 quilômetro?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lavar seu corpo inteiro?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vestir-se?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lidar com pessoas que você não conhece?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manter uma amizade?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seu dia-a-dia no trabalho?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

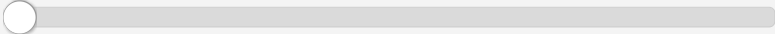
45. Em geral, nos últimos 30 dias, por quantos dias essas dificuldades estiveram presentes? (selecione o número de dias)

0 30

A horizontal slider bar with a circular knob at the left end (0) and a square box at the right end (30). The bar is currently at the 0 position.

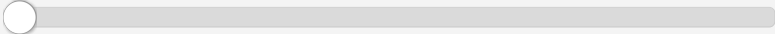
46. Nos últimos 30 dias, por quantos dias você esteve completamente incapaz de executar suas atividades usuais ou de trabalho por causa da sua condição de saúde? (selecione o número de dias)

0 30

A horizontal slider bar with a circular knob at the left end (0) and a square box at the right end (30). The bar is currently at the 0 position.

47. Nos últimos 30 dias, sem contar os dias que você esteve totalmente incapaz, por quantos dias você diminuiu ou reduziu suas atividades usuais ou de trabalho por causa de alguma condição de saúde? (selecione o número de dias)

0 30

A horizontal slider bar with a circular knob at the left end (0) and a square box at the right end (30). The bar is currently at the 0 position.

Uso de Internet, telefone celular e jogos eletrônicos**17. Muito obrigado por ter concluído o questionário!!!**

48. Se você quiser receber os seus resultados dos questionários de avaliação de uso de Internet, telefone celular e jogos eletrônicos, por favor deixe seu email no campo abaixo que lhe enviaremos esse material.

Se você percebeu algum sintoma e/ou sofrimento ao responder estas questões e precisar de alguma orientação sobre como buscar sobre recursos de atendimento na rede de saúde, por favor entre em contato conosco pelo email pesquisatecnologiabrasil@gmail.com. Da mesma maneira, nos escreva caso tenha interesse em saber mais informações sobre esta pesquisa.

Se você está procurando mais informações sobre o uso excessivo/problemático de tecnologias, por favor acesse www.dependenciadetechnologia.org. Trata-se de um website psicoeducativo com informações totalmente gratuitas, desenvolvido pelo Grupo de Estudos sobre Adições Tecnológicas (GEAT).

**APÊNDICE C – ARTIGO #4: THE PREVALENCE AND PREDICTORS OF
PROBLEMATIC MOBILE PHONE USE: A 14-COUNTRY EMPIRICAL SURVEY**

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*Aqui é apresentada a versão do manuscrito que foi inicialmente submetida para a revista, sem a revisão do editor.

Cross-cultural study on problematic mobile phone use among 14 countries worldwide
Abstract

This study examined (a) cross-cultural differences in estimates of Problematic Mobile Phone Use (PMPU) in adults across 14 countries worldwide and (b) whether personality and psychopathology variables predict PMPU. A total sample of 7,531 adults (69.6% women) with a mean age 25.7 (SD = 9.9) completed an online survey about PMPU, defense mechanisms, coping strategies, self-esteem, pathological personality traits, and depressive symptoms. The overall mean PMPU score was 104.3 (range 27-270) and 28.1% of the participants reported self-perceived PMPU. Women had significantly higher PMPU means and rates of self-reported PMPU. Consistent predictors of increased PMPU were younger age, more hours spent on mobile phone, maladaptive coping, immature and autistic defenses, depression, dependent, histrionic, and narcissistic personality disorders. Significant cross-cultural differences were found in means, self-reported rates, predictors of PMPU and gender differences. Cross-cultural differences in PMPU pave the way for evidence-based prevention and policy efforts at the public health level.

Keywords: smartphone dependence; mobile phone dependence; psychopathology; personality; cross-cultural research; behavioral addictions.

Introduction

The undisputable benefits of mobile phone use have recently been counterbalanced by a growing concern about the implications of their excessive use (Lopez-Fernandez, 2021). Although still not a distinct diagnostic category, there is accumulating evidence that excessive smartphone use can be considered problematic and can fulfil criteria of addictive behavior. A recent review has suggested that excessive smartphone use has been associated with psychiatric, cognitive, emotional, medical and brain changes (see review by Wacks & Weinstein, 2021) and contrasts largely older arguments that there is scarce evidence supporting excessive smartphone use as an addictive behavior (Billieux et al., 2015; Panova & Carbonell, 2018). By this mean, excessive smartphone use could be considered as a variant of the technology-mediated addictive behaviors (Wolf & Wolf, 2020) and has been considered as a public health concern by the World Health Organization (2015).

The interchangeable use of terms such as problematic, deregulated, or addictive, intensive or excessive or compulsive use, dependence or overattachment, smart/mobile phone (over)use (Panova et al., 2020) reflects the heterogeneity of the phenomenon (e.g., Billieux et al., 2015). Accumulated evidence has indicated association of excessive or Problematic Mobile Phone Use (PMPU) with a wide range of negative consequences in emotional and physical health, professional and social performance, and daily life in general, such as financial problems, risky driving, bedtime procrastination, sleep problems, anxiety, perceived stress, and depressive symptoms (see reviews Busch & McCarthy, 2021; Sohn et al., 2019). The term PMPU was coined by Billieux (2012) to describe one's inability to control the use of the mobile phone, which results in negative consequences in daily life. Although a clear cut-off point to determine problematic use has not yet been defined, and scholars argue about the criteria of PMPU (Harris et al., 2020), Billieux's (2012) definition clearly takes into consideration the resultant detrimental implications.

Prevalence rates

Research on PMPU started almost two decades ago (e.g., Bianchi & Phillips, 2005), and since then, studies have been conducted in adolescents and adults, with university students comprising most of the adult samples (see review of 290 studies on PMPU by Thomée, 2018). The majority of the studies so far have shown that the estimated PMPU prevalence rates vary widely (Billieux et al., 2015), ranging from 14.0 to 31.2% (median prevalence rate 23.3%) (see review Sohn et al., 2019). Taken together, studies have shown that approximately one in every four young adults exhibit PMPU.

Despite the recent increased attention, only a couple of large cross-cultural studies have been conducted so far. Lopez-Fernandez and colleagues have conducted the largest cross-cultural survey so far in 2,775 young adults from 10 European countries (Lopez-Fernandez et al., 2017). Participants from the Northern and Southern regions reported the highest perceived dependence on mobile phones, whereas the lowest was in the Eastern region. Highly dependent mobile phone users came from Belgium (3.9%), UK (3.5%), and France (3.4%). In their cross-cultural survey, Panova et al. (2020) included participants from non-European countries. They examined cross-cultural differences in 1,709 students coming from Spain, United States, and Colombia on smartphone use and its relationship with anxiety and depression. They found that 56.6% could be labelled as having 'occasional problems with mobile phone use' and 7.7% as having 'frequent problems with mobile phone use'. Spain had the lowest scores on problematic use of the mobile phone compared to the US and the Colombian samples, as well as the lowest scores on anxiety. Large cross-cultural studies are necessary to provide insights to the diverse prevalence rates and contributing factors of PMPU. Besides, the study of countries other than the United States and China that are the most frequently studied (Busch & McCarthy, 2021) need to be included.

Factors associated with PMPU

Available studies have demonstrated a wide range of demographic variables and psychological variables as risk or protective factors for PMPU. In their review, Busch & McCarthy (2021) indicated female gender, young age, and high education to be antecedents of PMPU. Other studies have shown

association between PMPU and personality traits, such as extraversion (Augner & Hacker, 2012) and low self-esteem (Fischer-Grote et al., 2019; Wolf & Wolf, 2020). Pathological personality traits, such as narcissistic (Servidio et al., 2021) and obsessive-compulsive disorder (Alavi et al., 2020; Wickord & Quaiser, 2022), and psychopathology symptoms, such as depression and anxiety (Panova et al., 2020; Pera, 2020; Thomée, 2018; Wolf & Wolf, 2020) have also been associated with PMPU.

Inconsistent findings on prevalence rates and contributing factors could be a result of methodological differences (use of different assessment instruments and cut-off scores to classify problematic users) (Laconi, et al., 2014; Lopez-Fernandez et al., 2012). Therefore, large cross-cultural studies are necessary to explore similarities and differences among several large samples. Therefore, the main objective of this study was to (a) compare estimates of prevalence rates of Problematic Mobile Phone Use (PMPU) in adults across 14 countries worldwide, and (b) explore the relationships of PMPU with socio-demographic, personality-related variables (defense, coping, and self-esteem), and psychopathological symptoms (pathological personality traits and depressive symptoms).

Material and methods

Participants and procedure

Participants were recruited through a website dedicated to the study, which was available online for six months. Only participants aged of 18 and over were recruited. Data was obtained through a convenience and snowball sampling procedure by each site investigator. They administered the questionnaire link to their students, colleagues, friends, and acquaintances through email and social media. The invitees were then kindly asked to spread the survey to their own contacts. Information about the aim of the study and an informed consent statement (e.g., anonymity and confidentiality, data manipulation, withdrawal) were provided at the first page of the questionnaire and prior to data collection. Participants who did not give their informed consent, did not complete 10% of the scales or of the items, were excluded, leaving a sample of 7,726 participants. Then, participants who did not own a mobile phone were excluded ($n = 195$, 2.5%). The sample that was included in all subsequent analyses enumerated 7,531 participants and came from Italy ($N = 869$), France ($N = 782$), Colombia ($N = 307$), Peru ($N = 422$), Ecuador ($N = 296$) and Chile ($N = 381$), Brazil ($N = 971$), Finland ($N = 251$), Turkey ($N = 393$), Romania ($N = 581$), Greece ($N = 1036$), Iran ($N = 242$), United Arab Emirates ($N = 663$) and Pakistan ($N = 333$). The detailed demographics of the overall sample and in each site are presented in Table 1. This study is in conformity with the 1964 Helsinki declaration and its later amendments and received the approval from the ethics committee of one of the participating universities [omitted for blind review].

Measures

Participants responded to a number of socio demographic (e.g., gender, age, professional status, educational level, and marital situation), phone use related questions (e.g., hours spent on mobile per day), and validated questionnaires related to the study variables (see below). The survey questionnaire was translated into each country's language (Italian, French, Portuguese, Finnish, Turkish, Greek, Romanian, Persian, Arabic, and Urdu) and back-translated into English to achieve **conceptual equivalence in each of the target countries**, consistently to the guidelines described by WHO (2020). If there were translated versions of the instruments in the target language, they were used in the present study.

Measures on phone use

The Mobile Phone Problem Use Scale (MPPUS; Bianchi & Phillips, 2005) was used to study problematic mobile phone use (MPU). It comprised of 27 items rated on a 10-point scale (1 = Not at all true to 10 = Extremely true). Total scores range from 27 to 270 and higher scores indicate more problematic mobile phone use. Cronbach alpha for the overall sample was .92.

A single item was also used to assess self-perceived problematic mobile phone use (SPMPU): "In your opinion, according to your online behavior over the past year, do you feel that you have a problematic mobile phone use?". Rated on a 4-point scale (No, Rather No, Rather Yes, Yes), the items

received a score from 0 to 3. A score higher than 3 was used as a cut-off score to discriminate self-assessed problematic users.

Personality measures

The Defense Style Questionnaire-28 (DSQ-28; Saint-Martin et al., 2013), comprised of 28 items rated on a 4-point scale from 1 (Totally agree) to 4 (Totally disagree), was used to assess defense styles. Total scores ranged from 28 to 112. Cronbach alpha for the overall sample was .81.

The Brief Coping Orientation to Problems Experienced Inventory (COPE; Carver, 1997), comprised of 28 items rated on a 4-point scale from 1 (Not at all) to 4 (Very much), was used to assess coping strategies. Items are allocated in 14 subscales of two items each (self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame). Subscale scores range from 2 to 8 and higher scores indicate higher frequency of use. Cronbach alpha for the overall sample was .85.

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), comprised of 10 items rated from 1 (Totally disagree) to 4 (Totally agree), was used to assess self-esteem. Total scores range from 0 to 40. Scores lower than 25 indicate very low self-esteem, between 25-30 low self-esteem, 31-34 average self-esteem, 35-39 high self-esteem, and >39 very high self-esteem (Chabrol et al., 2004). Cronbach alpha for the overall sample was .81.

Psychopathology measures

The Center for Epidemiologic Studies-Depression Scale (CESD-10; Radloff, 1977) was used to assess depressive symptoms in the past week. It includes 10 items (three items on depressed affect, five items on somatic symptoms, and two on positive affect) rated on a 4-point scale (0 = Rarely or never, 3 = Most of the time or every time (5 to 7 days)). Items 5 and 8, which are positive affect statements, are reverse scored. The total score is produced by summing all items and ranges from 0 to 30. Scores equal or higher than 10 indicate depressive symptomatology (Andresen et al., 1994). Cronbach alpha for the overall sample was .78.

The Personality Diagnostic Questionnaire 4+ (PDQ-4+; Hyler, 1994), comprised of 99 True or False items, rated 1 or 0, was used to assess pathological personality traits, according to three clusters: Cluster A (paranoid, schizoid, and schizotypal), Cluster B (antisocial, borderline, histrionic, and narcissistic) and Cluster C (avoidant, dependent, and obsessional-compulsive). Several cut-off points have been proposed (Laconi et al., 2015). In the present study, the threshold of 30 was used (Bouvard, et al., 2011). Cronbach alpha for the overall sample was .92.

Data analysis

Internal consistency was examined with Cronbach' alpha. ANOVA, χ^2 and t-tests for independent samples were used to test differences. Pearson r was used to examine relationships between MPPUS and the study variables. The statistically significant variables were entered in hierarchical regressions analyses (stepwise method), which were performed to identify unique predictors of MPPUS for the whole sample and each sample separately. The following variables were entered in blocks 1, 2, and 3 respectively: sociodemographic variables (i.e., gender, age, professional status, educational level, marital situation, hours spent on mobile phone per day), personality variables (self-esteem, defense mechanisms, adaptive/maladaptive coping), and psychopathology variables (10 personality disorders/3 clusters) and depression. SPSS 21.0 was used to perform all analyses and the significance level was set on $p < .05$.

Results

Descriptive results

Most participants owned a smartphone (91.9%), and they spent on average 5.51 (SD = 3.8) hours during a normal weekday. Only Pakistan participants owed a classic mobile phone in a higher percent than that of the smartphone. Colombian participants had the highest mean hours of phone use (6.1) and French

participants had the lowest (4.0). Descriptive statistics of the demographic variables for each sample are presented in Table 1.

The overall mean MPPUS score was 104.3 (SD = 42.1) and 28.1% of the participants reported self-perceived problematic use (Table 2). Significant mean MPPUS differences were found among the 14 samples ($F_{(13, 7517)} = 80.717, p < .001$) with the samples from Pakistan (132.9) and UAE (132.9) having the highest mean scores and the French (80.7) and Italian (89.2) samples having the lowest scores. However, Chile (58.7%), Iran (57.0%), Colombia (52.1%), and Ecuador (48.3%) reported the highest percent of self-assessed problematic mobile phone use (SPMPU), whereas Pakistan (0.0%) and UAE (13.3%) the lowest.

Gender differences

Gender differences across countries can be seen in Table 3. Overall MPPUS mean score was significantly higher among women (106.6) than among men (98.2) ($t = -6.814, p < .001$). All European countries, except Turkey, and all Middle East countries (except Pakistan) had higher mean scores among women, with Peru, Finland, France, and Italy having statistically significant differences across gender. However, South America countries had higher mean scores among men (except Brazil), though not statistically significant, but Peru had significantly higher mean scores compared to those of the women. In the total sample, perceived problematic mobile phone use (MPPUS), as self-reported, was again higher among women than among men (71.1% vs. 28.9%; $\chi^2 = 4.505, p = .034$). Only Iran, Finland, and Italy perceived significantly higher rates of SPMPU.

Predictors of MMPUS

In the overall sample, problematic mobile phone use, as assessed with the MPPUS, was positively correlated with all study variables, with coefficients ranging from $r = .063$ for self-esteem to $r = .39$ for dependent personality traits ($p < .01$), and they were entered in the regression analyses. Two variables consistently and significantly correlated with MPPUS in all samples: borderline traits (from $.09, p < .05$ to $.42, p < .01$) and immature defense mechanisms (from $.13$ to $.42, p < .01$).

The hierarchical linear regression analyses, explaining the contribution of a number of predictors in MPPUS for the whole and for each sample, are presented in Table 4. Regression analyses showed that for the overall sample, the model explained 31.7% of the variance in the MPPUS [$R^2 = .242; F_{(8, 2105)} = 83.99, p < .001$], whereas for the countries R^2 ranged between $.034$ (Turkey) to $.377$ (Colombia). In the total sample, MPPUS score was predicted by (a) hours of using the phone daily, (b) age, (c) female gender, (d) marital situation, (e) schizoid and schizotypal personality disorder (Cluster A traits), (f) antisocial, histrionic, and narcissistic personality disorder (Cluster B traits), (g) avoidant and dependent (Cluster C traits), (h) depression, (i) both adaptive and maladaptive coping; and (k) all defense styles except denial.

Similarities were observed across the 14 countries with (a) hours of phone daily use being consistent predictor in 11 countries, (b) age (inversely) in 7, (c) female gender in 2 and male gender in 1, (d) marital situation (single) in 4, (e) schizoid (inversely) in 3 and schizotypal personality disorder in 4 (inversely in Romania) (Cluster A traits), (f) antisocial in 1, histrionic in 5, and narcissistic personality disorder in 5 (Cluster B traits), (g) avoidant in 2 and dependent in 8 (Cluster C traits), (h) depression in 9, (i) adaptive in 5 and maladaptive coping in 11, and (k) all defense styles (mature - inversely- in 6; neurotic in 4, immature in 11; and autistic in 8). Furthermore, educational level (inversely) was significant predictor in Chile, paranoid (inversely) and borderline personality disorder in Pakistan, denial (inversely) in Brazil, and self-esteem in Colombia.

Discussion

The main objective of this study was to explore and compare the prevalence of problematic mobile phone use (PMPU) among adult users across 14 different countries around the world, and to

assess the relationship of PMPU with socio-demographic, personality-related variables, and psychopathological symptoms.

Prevalence rates and gender differences

The overall self-reported prevalence rate (28.1%) of the perceived problematic mobile phone use (SPMPU) is within the rates already have been reported (14.0% to 31.2%; Wolf & Wolf, 2020) and slightly higher than the median prevalence rate (23.3%) (see review by Sohn et al., 2019). Cross-cultural comparisons revealed that the mean PMPU, as assessed with MPPUS, was less prevalent in the European region in comparison to all other regions; Middle East countries had the highest MPPUS scores. This finding is in line with the study by Panova et al. (2020) who found the US and Colombian samples having highest scores on problematic use of the mobile phone compared to Spain. Mean hours of use found in this study was lower than what has been found in a university student sample (Kaya et al., 2021).

Women had higher mean PMPU scores than men in 10 out of 14 countries with three out of the six European countries (i.e., Finland, France, and Italy) and one out of the five South American (Peru) having statistically significant higher score. Being female has been associated with PMPU in European (Lopez-Fernandez et al., 2017), Asian (Korean, e.g., Park et al., 2021; Bangladeshi, e.g., Islam et al., 2021) and South American samples (Brazilian, e.g., Laurence et al., 2020). In their review of 293 studies, Busch & McCarthy (2021) found that females are more prone to problematic smartphone use than men.

Relationship with socio-demographic, personality-related variables, and psychopathological symptoms

Not surprisingly, from the socio-demographic variables, hours spent during a normal weekday was a consistent predictor in nearly all but three samples (Ecuador, Pakistan, and UAE). This finding converged with others (Gokce & Ozer, 2021; Lopez-Fernandez et al., 2017) in revealing that increased use of cell phones is associated with higher scores on the Problematic Mobile Phone Use Scale. In line with the expectations (Busch & McCarthy, 2021) female gender and younger age were also associated with PMPU.

In the total sample, predictably, PMPU correlated positively with maladaptive coping strategies, immature, neurotic, and autistic defenses, negatively with mature defenses, and somewhat surprisingly, positively with adaptive coping strategies. Like the present findings, Vally et al. (2020) in young adult residents in the United Arab Emirates found problematic internet use to be predicted positively by maladaptive coping, the immature, and autistic fantasy defenses, as well as, by the mature defenses and negatively by adaptive coping. Consistent predictors of PMPU across the majority of the present samples were maladaptive coping (11 samples), immature (11 samples), and autistic defenses (8 samples). It seems plausible that people who experience difficulties and distress in real life encounters, try to cope with maladaptive ways, such as avoiding or denying the situation, distracting themselves, and thus resorting in PMPU (Gorday & Bardeen, 2022). Understandably immature (e.g., splitting, acting out, idealization, passive aggression) and autistic defense mechanisms (i.e., autistic fantasy and isolation) were predictors of PMPU. The unexpected positive association of PMPU with adaptive coping may be explained by the fact that potential shy, lonely, or anxious people consider beneficial the over-engagement of the mobile phone use as it may offer emotional support (an adaptive coping) or a safe offline environment (Gorday & Bardeen, 2022).

Abundant research evidence (Kaya et al., 2021; Panova et al., 2020; Pera, 2020; Wolf & Wolf, 2020) has shown depression to be associated with PMPU (as assessed with MPPUS), which was also shown in this study; depression was a significant predictor of PMPU in nine samples. All personality traits significantly correlated with and most of them were either positive predictors (antisocial, histrionic, narcissistic, avoidant, and dependent) or negative predictors (schizoid, schizotypal) of PMPU in the overall sample. However, only the dependent (Cluster C), the histrionic, and the narcissistic personality

disorders (Cluster B) were consistent predictors in most of the samples (8, 5, and 5 samples, respectively). Alavi et al (2020) have found that dependent personality disorder increased 3.1 folds the likelihood of mobile phone addiction and Direktör & Nuri (2019) found dependent personality beliefs to be significant predictors of smart phone addiction. It seems that suffering from dependent personality disorder, which is related to an intense fear of loneliness and/or abandonment and need to rely on others or substitutes (such as various addictions), increases the probability of PMPU. Also reasonably enough, narcissistic personality disorder has been associated with problematic smartphone use (Zerach, 2021; Servidio et al., 2021), vulnerable narcissism (i.e., being shy, inhibited, and anxious) has been associated with “phubbing” (phone snubbing) (Grieve & March, 2021) and grandiose narcissism (i.e., being bold, extraverted, assertive, and overconfident) has been associated with problematic Facebook or other social media use (Casale & Banchi, 2020).

Although in the bivariate correlations low self-esteem was associated with PMPU, it failed to enter into the regression model. However, it was a significant predictor of PMPU only for Colombia (as it was for problematic internet use; Laconi et al., submitted). Whereas the review by Wacks & Weinstein (2021) has shown excessive smartphone use to be associated with low self-esteem (among other variables), Elhai et al’s review (2017) concluded that self-esteem was inconsistently related to PMPU, and when associations were found, the effects were small to medium.

Limitations

Some limitations of this study should be reported. This is a cross-sectional study which disqualifies any causal inferences. The convenience sampling method may have decreased the representativeness of the samples (e.g., mostly women, young, well-educated) and may have affected the generalizability of the findings. The online recruitment and the self-report format of the questionnaire may have resulted in selection bias and social desirability, respectively. The specific use of the smartphone could have affected PMPU, which should be the aim of a future study. Other individual and contextual factors (e.g., social support) should be further studied.

Conclusions and implications

To authors’ knowledge, this is the largest cross-cultural study on PMPU among adults so far. The relationship between PMPU, personality-related variables, and psychopathology symptoms brings a new piece of evidence of the risk factors of PMPU. These results should be confirmed in other studies, particularly longitudinal ones, which could potentially clarify whether PMPU is a consequence of pre-existing mental health problems or a risk factor for future mental health problems. Since problematic internet use has been predicted by the same variables (i.e., Clusters B and C personality traits, immature and autistic fantasy defense mechanisms, non-adaptive coping strategies and depressive symptoms) in a French sample (Laconi et al., 2017), research should differentiate unique profiles between problematic internet and mobile phone use, potentially by taking into consideration specific uses of both.

PMPU is an evolving public health concern and as such, it should be a priority by healthcare providers and policy makers. The establishment of a commonly accepted definition and validated diagnostic criteria of PMPU are initially needed. Research should further differentiate sufferers from non-sufferers. Acknowledging the association of PMPU with a number of risk factors could help healthcare providers, parents and others being involved, to limit problematic engagement of people from various sociocultural contexts.

Conflict of interest: A.K., S.L., D.T.S., S.H., A.G., I.S., Z.V., O.T., M.V., S.M., J.R.D., N.M., O.C., G.S., R.A., D.Z., C.L.-C., & R.N.S. declare that they have no conflict of interest.

Informed Consent: All procedures followed were in accordance with the ethical standards of the Ethics Committee of the University of Timisoara in Romania (number UVT8170/16.04.2018) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants for being included in the study.

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Table 1. Descriptive Statistics (means and standard deviations or percentages) of the sociodemographic variables for the whole sample and each sample separately

	Total	Brazil	Chile	Colombia	Ecuador	Peru	Iran	Pakistan	UAE	Finland	France	Greece	Italy	Romania	Turkey
Age range	18-86	18-86	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76	18-76
Mean age (SD)	25.7 (9.9)	39.3 (13.6)	23.8 (8.7)	24 (6.5)	22.1 (6.5)	22.2 (6.6)	22.8 (7)	23 (7.5)	21.8 (5.6)	24.4 (8.2)	23.3 (6.1)	27.4 (10)	23 (6.2)	23.3 (7.6)	21.9 (6.2)
Gender n (%)															
Men	2292 (30.4)	254 (26.2)	259 (26.3)	205 (22.7)	258 (29.1)	297 (29.9)	220 (26.4)	154 (25)	307 (24.3)	216 (25.1)	372 (28.4)	313 (19.3)	649 (44)	354 (29.8)	262 (26.1)
Women	5239 (69.6)	717 (73.8)	724 (73.7)	697 (77.3)	628 (70.9)	695 (70.1)	612 (73.6)	463 (75)	954 (75.7)	646 (74.9)	936 (71.6)	1305 (80.7)	827 (56)	832 (70.2)	743 (73.9)
Professional situation															
Students	5104 (67.8)	371 (38.2)	757 (77.0)	728 (80.7)	744 (84)	784 (79)	712 (85.6)	517 (83.8)	1028 (81.5)	719 (83.4)	1009 (77.1)	915 (56.6)	1130 (76.6)	994 (83.8)	868 (86.4)
Active	2027 (26.9)	515 (53)	135 (13.7)	155 (17.2)	127 (14.3)	184 (18.5)	99 (11.9)	85 (13.8)	218 (17.3)	128 (14.8)	243 (18.6)	577 (35.7)	287 (19.4)	177 (14.9)	112 (11.1)
Inactive	400 (5.3)	85 (8.8)	91 (9.3)	19 (2.1)	15 (1.7)	24 (2.4)	21 (2.5)	15 (2.4)	15 (1.2)	15 (1.7)	56 (4.3)	126 (7.8)	59 (4)	15 (1.3)	25 (2.5)
Educational level															
< university	1122 (14.9)	48 (4.9)	53 (5.4)	37 (4.1)	26 (2.9)	26 (2.6)	29 (3.5)	26 (4.2)	120 (9.5)	183 (21.2)	86 (6.6)	26 (1.6)	401 (27.2)	349 (29.4)	26 (2.6)
< Master's	3791 (50.3)	152 (15.7)	595 (60.5)	618 (68.5)	613 (69.2)	719 (72.5)	493 (59.3)	342 (55.4)	779 (61.8)	418 (48.5)	850 (65)	385 (23.8)	725 (49.1)	450 (37.9)	732 (72.8)
< Ph.D.	1684 (22.4)	222 (22.9)	251 (25.5)	177 (19.6)	177 (20)	177 (17.8)	233 (28)	178 (28.8)	292 (23.2)	189 (21.9)	260 (19.9)	929 (57.4)	276 (18.7)	273 (23)	177 (17.6)
> Ph.D.	870 (11.6)	549 (56.5)	61 (6.2)	47 (5.2)	47 (5.3)	47 (4.7)	54 (6.5)	47 (7.6)	47 (3.7)	47 (5.5)	54 (4.1)	252 (15.6)	51 (3.5)	91 (7.7)	47 (4.7)
Other or missing	64 (0.8)	0 (0)	23 (2.3)	23 (2.5)	23 (2.6)	23 (2.3)	23 (2.8)	24 (3.9)	23 (1.8)	25 (2.9)	58 (4.4)	26 (1.6)	23 (1.6)	23 (1.9)	23 (2.3)
Marital situation															
Single	4983 (66.2)	454 (46.8)	784 (79.8)	763 (84.6)	776 (87.6)	842 (84.9)	710 (85.3)	528 (85.6)	1117 (88.6)	652 (75.6)	905 (69.2)	985 (60.9)	1091 (73.9)	765 (64.5)	916 (91.1)
In a relationship	2548 (33.8)	517 (53.2)	199 (20.2)	139 (15.4)	110 (12.4)	150 (15.1)	122 (14.7)	89 (14.4)	144 (11.4)	210 (24.4)	403 (30.8)	633 (39.1)	385 (26.1)	421 (35.5)	89 (8.9)
Phone use															
Classic	613 (8.1)	12 (1.2)	15 (3.9)	18 (5.9)	23 (7.8)	43 (10.2)	23 (9.5)	329 (98.4)	15 (2.3)	2 (0.8)	87 (11.1)	31 (3.0)	6 (0.7)	8 (1.4)	1 (0.3)
Smartphone	6918 (91.9)	959 (98.8)	370 (96.1)	289 (94.1)	273 (92.2)	379 (89.8)	219 (90.5)	4 (1.2)	648 (97.7)	249 (99.2)	695 (88.9)	1005 (97.0)	863 (99.3)	573 (98.6)	392 (99.7)
Hours per day	5.5 (3.8)	4.8 (3.4)	5.4 (3.7)	6.1 (4.3)	5.6 (3.9)	5.6 (4.2)	5.1 (3.9)	4.9 (3.7)	6.3 (4.1)	4.6 (3.4)	4 (3.4)	4.7 (3.3)	5.7 (3.7)	5.5 (3.7)	4.9 (3.3)

Note. UAE: United Arab Emirates

Table 2. Descriptive statistics and differences by country (ANOVA or χ^2) in Mobile Phone Problem Use Scale (PMPU) and self-reported problematic mobile phone use (SPMPU)

	Total	Brazil	Chile	Colombia	Ecuador	Peru	Iran	Pakistan	UAE	Finland	France	Greece	Italy	Romania	Turkey	F(p)/ $\chi^2(p)$
	(n=7,531)	(n=971)	(n=385)	(n=307)	(n=296)	(n=422)	(n=242)	(n=333)	(n=663)	(n=251)	(n=782)	(n=1,036)	(n=869)	(n=581)	(n=393)	80.72 (.000)
MPPUS	104.3 (42.1)	105.6 (42.1)	108.9 (41.1)	114.7 (39.3)	109.5 (39.8)	93.7 (42.4)	118.5 (48.4)	132.9 (18.2)	132.9 (46.7)	93.8 (37.4)	80.7 (34.0)	103.0 (34.4)	89.2 (37.7)	101.6 (46.2)	109.1 (40)	
SPMPU	2113 (28.1%)	308 (31.7%)	226 (58.7%)	160 (52.1%)	143 (48.3%)	158 (37.4%)	138 (57.0%)	0 (0.0%)	88 (13.3%)	45 (17.9%)	148 (18.9%)	190 (18.3%)	179 (20.6%)	192 (33.0%)	138 (35.1%)	788.77 (.000)

Note. MMPUS scores are means and standard deviations, whereas numbers for self-reported PMPU are frequencies and percentages; MPPUS: Mobile Phone Problem Use Scale; SPMPU: Self-reported problematic mobile phone use (response to a self-assessed item of problematic mobile phone use); UAE: United Arab Emirates; MPPUS Range of scores: 27 – 270; * $p < .01$; ** $p < .001$.

Table 3. Differences in Problematic Mobile Phone Use Assessments (MPPUS and SPMPU) across Gender (χ^2 and T-tests).

	Total	Brazil	Chile	Colombia	Ecuador	Peru	Iran	Pakistan	UAE	Finland	France	Greece	Italy	Romania	Turkey
	(n=7,531)	(n=971)	(n=385)	(n=307)	(n=296)	(n=422)	(n=242)	(n=333)	(n=663)	(n=251)	(n=782)	(n=1,036)	(n=869)	(n=581)	(n=393)
MPPUS	Men	101.8 (42.4)	112.2 (40.3)	115.7 (36.9)	111.7 (36)	99 (40.7)	112.1 (47.3)	133.8 (25)	129.6 (48.8)	76.2 (27)	76.6 (32.1)	98.7 (34.2)	85.6 (38.4)	97.5 (43.9)	112.3 (40.6)
	Women	106.6 (41.9)	107.6 (40.1)	114.5 (39.9)	108.2 (42)	90.5 (43.2)	121.9 (48.8)	132.6 (16.3)	133.9 (46)	100.1 (38.6)	82.7 (34.7)	103.8 (34.4)	94.1 (36.2)	103.8 (47.2)	107.8 (39.7)
	t (p)	-6.814 (.000)	-1.707 (.088)	1.019 (.309)	.744 (.458)	1.999 (.046)	-1.515 (.131)	.357 (.722)	-.994 (.321)	-4.649 (.000)	-2.343 (.019)	-1.767 (.078)	-3.300 (.001)	-1.569 (.117)	1.006 (.315)
SPMPU	Men	611 (28.9%)	64 (28.3%)	26 (16.3%)	53 (37.1%)	65 (41.1%)	34 (24.6%)	61 (18.3%)	24 (27.3%)	4 (8.9%)	42 (28.4%)	33 (17.4%)	89 (49.7%)	73 (38%)	35 (25.4%)
	Women	1502 (71.1%)	162 (71.7%)	134 (83.8%)	90 (62.9%)	93 (58.9%)	104 (75.4%)	272 (81.7%)	64 (72.7%)	41 (91.1%)	106 (71.6%)	157 (82.6%)	90 (50.3%)	119 (62%)	103 (74.6%)
	χ^2 (p)	4.505 (.034)	3.295 (.070)	.000 (.997)	.023 (.881)	1.289 (.256)	15.496 (.000)	---	.603 (.438)	8.571 (.003)	1.237 (.266)	.313 (.576)	5.638 (.018)	1.065 (.302)	.872 (.351)

Note. In the first panel numbers (MMPUS scores) are means and standard deviations, whereas in the second panel numbers are frequencies and percentages. MPPUS: Mobile Phone Problem Use Scale; SPMPU: Self-reported problematic mobile phone use (response to a self-assessed item of problematic mobile phone use); UAE: United Arab Emirates; MPPUS Range of scores: 27 – 270; * $p < .01$; ** $p < .001$.

Dependent	.146***	.206***	.187***	.154**	.174**	.195***	.198***	.073*	.188***
O.C.				.199***	.221***				
Depression	.083***	.136*	.169**	.118*	.214***	.156***	.169***	.161***	.114*
Coping									
Adaptive	.047***	.124***			.125*		.107***	.091*	
Maladaptive	.113***	.195***	.095	.130*	.118**	.005	.041	.006	.075
Defense									
Mature	-.034**	-.022				-.065	-.020		-.060
Neurotic	.023*	.070*	.173***		.144*	.034			
Immature	.091***	.078*	.110*	.126*	.178***	.140***	.134***	.091*	.189***
Denial		-.111***							
Autistic	.068***	.020		.164**	.073		.086**	.082*	.087*
Self-esteem	.022		.159***					-.037	
Adjusted R ²	.317***	.331***	.312***	.309***	.108***	.324***	.361***	.247***	.376***
					.250***	.383***			.034***

Note. O.C.=obsessive-compulsive; UAE: United Arab Emirates; * $p < .05$; ** $p < .01$; *** $p < .001$.

**APÊNDICE D - ARTIGO #5: A CROSS-CULTURAL EXPLORATION OF
PROBLEMATIC INTERNET USE, PATHOLOGICAL PERSONALITY TRAITS,
DEFENSE MECHANISMS, COPING STRATEGIES, AND SELF-ESTEEM IN 14
COUNTRIES**

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Cross-cultural exploration of problematic Internet use, pathological personality traits, defense, coping and self-esteem in 14 countries

Abstract

Objectives: The main objective of this study was to compare the estimates of Problematic Internet Use (PIU) from 14 countries around the world, by taking gender into account. The second objective was to explore the relationships between PIU and personality-related variables (pathological personality traits, defense, coping and self-esteem). **Methods:** Our total sample consisted of 7726 participants (30.8% of men, $n = 2378$), aged between 18 and 86 years old ($M = 25.55$; $SD = 9.8$). Recruited online, they completed several scales about their Internet use, defense and coping, self-esteem, and pathological personality traits. **Results:** Prevalence estimates of PIU ranged between 20.5% and 75% using the PIUQ-9, while self-perception of PIU revealed estimates from 2% to 60.1%, with gender differences. Two variables were systematically significantly correlated with PIU: borderline personality traits (from .09 at $p < .05$ to .42 at $p < .01$) and immature defense mechanisms (from .13 to .42 at $p < .01$). Dependent, avoidant, narcissistic, histrionic, and antisocial personality traits were positive predictors of PIU and self-esteem, paranoid and schizoid personality were negative predictors. **Conclusions:** This research highlights many cross-cultural differences. Its design also allows a better understanding of gender difference.

Keywords: Internet; Coping; Defense; Self-Esteem; Personality; Cross-cultural.

1. Introduction

Problematic Internet Use (PIU) can be defined “as an inability to control one's use of the Internet which leads to negative consequences in daily life” (Spada, 2014). Many debates have been raised on PIU, particularly since the introduction of Internet Gaming Disorder (IGD) in the third section of the DSM-5 (APA, 2013) bringing a lack of clarity and differentiation between online and offline behaviors, and also between Internet addiction and gaming addiction (Király et al., 2015).

The aetiology of PIU is not clearly known. It is still on debates whether PIU is the cause or the consequence of a prior difficulty or conditions (Caplan, 2010), such as low self-esteem (Mamun et al., 2020), immature defense mechanisms and maladaptive coping strategies (Ko et al., 2012), psychopathology (e.g., depression, anxiety) or personality traits (Roma et al., 2019). Pathological personality traits, which stabilize in early adulthood, have received scant research attention, but might be an important risk factor of PIU among adults. In previous studies, PIU has been related to schizotypal and schizoid traits of Cluster A (Laconi et al., 2015; Sepehrian & Lott, 2011), borderline, antisocial and narcissistic traits of Cluster B (Bernardi & Pallanti, 2009; Black et al., 1999; Fahaarani et al., 2019; Floros et al., 2014; Laconi et al., 2015; Wu et al., 2016; Zadra et al., 2016), and Cluster C with avoidant and obsessive-compulsive traits (Bernardi & Pallanti, 2009; Fahaarani et al., 2019; Floros et al., 2014; Mittal et al., 2007; Wu et al., 2016; Yeon, 2009; Zadra et al., 2016).

Cross-cultural investigations in Europe have revealed that less than 7% of the Internet users had PIU while a recent study in nine countries found higher estimates of around 25% (Laconi et al., 2018). A recent meta-analysis studied the prevalence rates of generalized internet addiction from 31 nations; weighted average prevalence was 7.02% (Pan, Chiu & Lin, 2020).

Gender differences have also been demonstrated, typically with men being at high risk, whereas many recent studies have highlighted the increasing PIU rates in women, depending on the cultural setting or moderators (Baloğlu et al., 2020). Inconsistencies in previous results on PIU have already been explained by methodological differences (Laconi et al., 2014), while cultural background undoubtedly exerts a significant impact on PIU and accounts for the observed differences (Arpaci et al., 2021; Laconi et al., 2018; Panova et al., 2021). Therefore, it seems particularly relevant to conduct a cross-cultural study to explore the similarities and differences between several samples.

The first objective of this study was to compare the estimates of PIU among 14 countries worldwide, including 3 South-Eastern countries (Iran, Pakistan and United Arab Emirates), 5 South-American countries (Chile, Colombia, Ecuador, Brazil, Peru) and 6 European countries (France, Greece, Turkey, Italy, Romania and Finland) and consider gender differences. The second objective was to explore the relationships between PIU and a number of variables (i.e., pathological personality traits, coping strategies, defense mechanisms and self-esteem) across samples.

2. Material and methods

2.1. Participants and procedure

Participants were recruited through an online website dedicated to the study, which was available for six months. Data was obtained through a convenience and snowball sampling procedure by each site investigator, who spread the survey site with the link within their academic institutions and through professional webpages and social media accounts and groups. The invitees were in turn encouraged to

spread the survey to their own colleagues, friends, acquaintances, and social media contacts. This study included data from Italy (Italian), France (French), Colombia, Peru, Ecuador and Chile (Spanish), Brazil (Portuguese), Turkey (Turkish), Romania (Romanian), Greece (Greek), Finland (Finnish), Iran (Persian), Emirates (Arabic), and Pakistan (Urdu). Only participants aged over 18 years were recruited. Information about the aim of the study and an informed consent statement (e.g., anonymity, confidentiality, and right to withdraw) were provided at first page of the questionnaire and prior to data collection. Participants who did not give their consent were excluded a priori and also those participants who did not complete all the scales. The final sample enumerated 7,726 participants. The detailed sociodemographic information of the overall and each sample can be seen in Table 1. This study is in conformity with the 1964 Helsinki declaration and its later amendments. The Brazilian form of this study was approved by a local research ethics committee. The entire study obtained the approval from the ethics committee of the University of Timisoara in Romania.

2.2. Measure

Participants responded to socio demographic questions (e.g., gender, age, professional and marital status) and a number of questionnaires (see below). If no translated version was available, translation in the target language (each country's language) and back-translation into English by two bilingual persons was obtained, comparison of the translated questionnaires with the original ones followed, modifications were made to reach consensus and produce the final translated version of each questionnaire.

PIU was assessed with the Problematic Internet Use Questionnaire-9 (PIUQ-9; Koronczai et al., 2011). Its nine items are rated on a 5-point scale, ranging from 1 (Never) to 5 (Almost always/Always). Participants scoring equal or above 22 were considered problematic Internet users. The PIUQ has good psychometric properties (Laconi, et al., 2014) with validated versions in French, Italian, Spanish, Greek and Turkish (Laconi et al., 2019). In the present study, the PIUQ-9 scale had satisfactory internal consistency in the overall sample ($\alpha = .87$) and for each sample; alpha coefficients ranged from $\alpha = .67$ for Pakistan to $\alpha = .90$ for Romania.

A single item was also used to assess self-perception of PIU "In your opinion, according to your online behaviour over the past year, do you feel that you have a problematic Internet use?". Rated on a 4-point scale (No, Rather No, Rather Yes, Yes), received a score from 0 to 3. A score equal or higher than 2 was used as a cut-off score to discriminate problematic users.

Self-esteem was assessed with the 10 items Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). Rated from 1 (totally disagree) to 4 (totally agree), self-esteem can be considered as very low (< 25), low (25-30), average (31-34), high (35-39) and very high (> 39). Scores lower than 31 suggested low self-esteem (Chabrol et al., 2004). In the present study, Cronbach' alpha was $\alpha = .81$ for the total sample.

The Defense Style Questionnaire-28 (Andrews et al., 1993) was used to assess 14 defense styles (of two items each). Its 28 items are rated on an 8-point Likert scale, reduced in a 4-point scale from 1 (totally agree) to 4 (totally disagree) for the present study. Total scores ranged from 28 to 112. The higher is the score, the higher the defense is used. Cronbach alpha was $\alpha = .81$ for the total sample.

Coping strategies were examined with the 28-item Brief Coping Orientation to Problems Experienced Inventory (COPE; Carver, 1997). Items are allocated in 14 subscales (self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral

disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame) and are rated on a 4-point scale from 1 (not at all) to 4 (very much). Fourteen subscale scores are produced with higher scores indicating higher frequency of coping strategies use. Subscale scores range from 2 to 8, with high scores indicating higher frequency of the coping strategy used. Cronbach alpha was $\alpha = .85$ in this study.

The Personality Diagnostic Questionnaire 4+ (PDQ-4+; Hyler, 1994) was used to assess pathological personality traits, according to three clusters: Cluster A (paranoid, schizoid, and schizotypal), Cluster B (antisocial, borderline, histrionic, and narcissistic) and Cluster C (avoidant, dependent, and obsessional-compulsive). The PDQ-4+ has 99 true/false items, which receive a 1 or 0 score. In the present study, the threshold of 30 was used (Bouvard, Vuachet, & Marchand, 2011). Cronbach' alphas of the whole scale were ranged from $\alpha = .89$ and $\alpha = .94$ in the present study.

2.3.Data analysis

Chi-square tests were used to assess gender differences for Internet use, as mean comparison. One way ANOVA was performed to compare PIUQ-9 mean scores across samples. Correlational analyses (Pearson r given the normality of the data) were conducted to examine relationships between the study variables for the whole sample. Similarly, independent and unique predictors of PIU (stepwise method) were studied among pathological personality traits, adaptive and non-adaptive coping strategies, mature, neurotic, immature, denial and autistic for defense mechanisms, and last, self-esteem for the total sample and each sample separately. Total adjusted R^2 were reported. Internal consistency was examined with Cronbach' alpha; a coefficient between .70 and .79 was considered "satisfactory", between .80 and .89 "good", and from above .90 "excellent" (Cicchetti, 1994). SPSS v. 23 was used to perform all analyses.

3. Results

3.1.Descriptive results and comparisons

Descriptive statistics of the demographic variables (age, gender, professional and marital status) for each sample are presented in Table 1. Table 2 presents gender differences in the PIUQ- 9 and self-assessment of PIU across each sample.

Significant mean PIUQ differences were found among the 14 samples ($F(13, 7712) = 88.285, p < .001$) with the French (16.68), Finnish (17.87) samples having the lowest mean scores and the Arabic (26.98) and Iranian (23.94) samples having the highest scores.

3.2.Correlation and regression analyses

In the total sample, PIUQ-9 scores were significantly correlated with all variables and the coefficients ranged from $r = -.14$ for self-esteem to $r = .41$ for dependent personality traits ($p < .01$). Two variables consistently and significantly correlated with PIUQ-9 in all samples: borderline traits (from .09, $p < .05$ to .42, $p < .01$) and immature defense mechanisms (from .13 to .42, $p < .01$).

Multiple linear regression analyses explaining the contribution of a number of predictors in PIU for the whole and for each sample are presented in Table 4. There were some significant differences between samples. The total variance ranged between 27.5% and 61.5% at $p < .001$.

4. Discussion

4.1. Psychometrics

A fair to excellent internal consistency suggested good psychometric properties for the PIUQ-9, as previous studies have demonstrated in European samples: France, Germany, Greece, Hungary, Italy, Lithuania, Poland, Spain, and United Kingdom (Burkauskas et al., 2020; Laconi et al., 2019) and in the Persian language (Eftekhar et al., 2019; Ranjbar et al., 2014). Internal consistency was not satisfactory for Pakistan. To our knowledge, there are no other psychometric exploration of the PIUQ in samples coming from the countries of the present study. One validation study has been published using the Brazilian data of the present research (Spritzer et al., 2021).

4.2. Prevalence estimates

Our first objective was to compare the estimate rates of PIU among Internet users from 14 countries around the world and explore gender differences. PIUQ-9 rates ranged from 20.5% for France to 75% for United Arab Emirates. These rates are higher than those reported in previous studies but in line with those rates (14 to 55%) found by a more recent cross-cultural study among nine European samples (Laconi et al., 2018), which used the same measure for PIU. This study reported PIU at around 38% (Greece), 33% (Turkey), 26% (Italy) and 25% (France). In the present research, they were 34% (17% for self-assessment), 44% (32%), 33% (18%) and 21% (28%), respectively.

The three South-Eastern countries had the highest mean scores of PIUQ-9 (23.37 to 26.98), while European countries had the lowest scores (16.68 to 20.99). South American countries had scores ranged from 19.53 to 22.99. These results highlight important cross-cultural differences, which have been explained by a previous study in terms of the different psychological needs between individualist (USA) and collectivist societies (Turkey) (Arpaci et al., 2021). Individualist countries would be more at risk of PIU, while in our study South-Eastern countries were more concerned. However, in a recent meta-analysis, prevalence of PIU was higher in Eastern society compared to Western countries (Pan et al., 2020). Therefore, other variables might better explain this result.

Self-perception of PIU revealed a higher proportion of problematic users than the PIUQ for France, Colombia, Brazil, and Chile. PIU ranged from 2% for Pakistan to 60.1% for Chile. On the other hand, the PIUQ-9 assessed much more potential problematic users than what was self-reported for the overall sample and particularly for Pakistan and UAE, followed by Greece, Italy, and Turkey. Nevertheless, it would be interesting to explore beliefs, attitudes and knowledge on PIU among general population in a cross-cultural way.

4.3. Gender differences

In six samples, the mean PIUQ-9 scores were higher among women than among men (Greece, Italy, Turkey, Iran, UAE, and Brazil), though only one (Italy) statistically significant. Given that gender difference in Brazilian sample was very low, it can be suggested that among South America, there are not or few gender differences. Italian women had significant higher PIUQ-9 scores than men whereas PIUQ screened more male problematic users than females in the Italian sample. Among Italian users, it could be argued that the cut-off of the PIUQ-9 should be gender-related, meaning lower for women. In this sample, more women admitted self-assessed problematic use than men, suggesting they felt exposed to PIU.

Significant gender differences were revealed in three other samples. Among the Peruvian, French and Pakistani samples, our results suggested men had higher PIUQ-9 scores than women. This could be related to the change of women profiles in Internet related activities and the raise of PIU scores among of these groups during the past years (Baloğlu et al., 2020; Lopez-Fernandez, Williams & Kuss, 2019).

Besides, it can support that women do not use Internet as much as men (Anderson et al., 2017; Dufour et al., 2017), maybe suggesting the necessity of a gender- specific assessment.

4.4. Relationships with personality traits

All personality traits significantly correlated with PIU (as assessed with the PIUQ-9) in the total sample. Narcissistic, histrionic, antisocial (Cluster B), dependent and avoidant (Cluster C) personality traits were positive predictors of PIU while schizoid and paranoid traits (Cluster A) were negative predictors. Given that schizotypal traits were not predictor of PIU, we can assume that Cluster A personality traits are not as much related to PIU than the other Clusters (Zadra et al., 2016).

Narcissistic, antisocial, avoidant traits have been frequently found as related to PIU in previous studies (Bernardi & Pallanti, 2009; Black et al., 1999; Faharani et al., 2019; Wu et al., 2016). Unexpectedly, borderline traits were not predictive of PIU in this paper while dependent traits concerned eight samples (even if systematically correlated). In only one study, dependent personality (Cluster C) was found to relate to PIU, among Asian girls (Wu et al., 2016). A previous study also highlighted that smartphone addiction was significantly related to dependent personality (Ok, 2016).

These exploratory results are certainly influenced by gender and culture and are consequently hard to clearly explain. For example, in Ecuador and Pakistan, no personality traits were significant, suggesting that other variables better explain PIU. In the Finnish sample, only one trait (obsessional-compulsive) was a predictor. Among Greek users, all and almost exclusively Cluster C traits were predictors of PIU scores.

4.5. Relationships with defense and coping

In the total sample, the PIUQ-9 correlated positively with the seemingly contradictory adaptive and non-adaptive coping strategies, and also with mature and immature defences. As expected (Milani et al., 2019), non-adaptive coping strategies and immature, autistic and neurotic defense mechanisms were the only positively predictors of PIU.

Differences across subsamples showed that PIU was related more to non-adaptive coping since non-adaptive coping correlated with PIU in all but Pakistan sample, whereas adaptive coping significantly correlated with PIU in six out of 14 subsamples (Brazil, Colombia, Peru, Iran, Italy, and Turkey). Trying to explain the link between PIU and adaptive coping, studies have shown potential benefits of internet use, such as sense of self-expression, competence, communication, entertainment, connectedness and belongingness within a social network, issues that may be a challenge in the offline world (Bannon et al., 2014; Thianthai, 2021).

Subsample differences were observed in the relationship between PIU and defense mechanisms. Autistic traits were predictor of PIU in nine sample and particularly in European countries. Neurotic defense was predictive of PIU only in the Brazilian sample, while mature defense only Pakistani. In Turkey, both adaptive and non-adaptive coping were significant.

Relationships with self-esteem

In the total sample, the PIUQ-9 correlated negatively with self-esteem. Interestingly, self-esteem did not significantly correlate with PIU among Pakistan, UAE, and France whereas positive correlations

were found for Chile, Colombia, Ecuador and Peru. Self-esteem was a poor negative predictor of PIU among the total sample by being only significant in Colombia (negatively) and in Romania and Italy (positively). Longitudinal findings revealed that low and high self-esteem have been described as risk and protective factors, respectively, depending on cultural differences (Anderson et al., 2017). Our findings confirmed this hypothesis.

4.6. Limitations

Some limits were related to sampling and recruitment bias (e.g., self-selection, online recruitment) and evaluating methods (e.g., validity of the used scales and their cut-off scores, self-report measures, lack of diagnosis). Some samples were not homogeneously distributed (gender, homogeneity of age, sample size, ...). This non-probability study did not aim to estimate the prevalence of PIU, but to use the prevalence for cross-cultural comparison purposes. This study should be replicated in more consistent and homogeneous samples. Besides, a number of other variables that were not included in the present paper could have provided a clearer picture of the PIU phenomenon (performed activities, time of exposure, depressive symptoms).

5. Conclusions

To our knowledge, this is the first large cross-cultural study on PIU among adults. This highlights the relationships between several pathological personality traits and PIU like no other previous study tried to. Besides, our results on the relationship between PIU and personality bring a new piece of evidence of what could influence PIU, and how cultural difference is a major concern. Personality traits appear to have a significant impact on PIU.

These results should be confirmed in further studies, particularly longitudinal ones. As many studies raised the importance of gender in PIU and given our results, recommendations for future practice would be to consider gender in research and clinical practice. Differences in terms of other psychopathology among them, as anxiety or depression are additional arguments. There is a need for empirical research to explore which factors impact PIU scores, trying to use a same assessment tool to allow comparisons.

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Compliance with Ethical Standards:

This study is in conformity with the 1964 Helsinki declaration and its later amendments. The Brazilian form of this study was approved by the Research Ethics Committee of the Hospital de Clínicas de Porto Alegre (protocol number 89702318.2.0000.5327). The entire study obtained the approval from the ethics committee of the University of Timisoara in Romania (number UVT8170/16.04.2018).

Conflict of interest:

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Table 1. Descriptive Statistics of the Socio Demographic Variables.

	South American countries						South Eastern countries				European countries				
	Brazil n = 975	Chile n = 386	Colombia n = 308	Ecuador n = 300	Peru n = 431	Total n = 7726	Iran n = 246	Pakistan n = 491	UAE n = 669	Finland n = 251	France n = 785	Greece n = 1037	Italy n = 871	Romania n = 583	Turkey n = 393
Age range	18-86	18-75	18-37	18-32	18-59	18-86	18-43	18-26	18-33	18-57	18-35	18-76	18-55	18-54	18-30
Mean age (SD)	39.3 (13.6)	24.9 (10.1)	20 (2.5)	20.1 (2.2)	20.9 (4.3)	25.5 (9.8)	22.2 (5.1)	20.7 (1.6)	20.6 (2.1)	27.7 (8.9)	23.7 (4.5)	30.6 (10.6)	55.9 (4.9)	23.7 (7.8)	20.1 (1.9)
Gender n (%)															
Men	2378 (31)	110 (28)	55 (18)	114 (38)	162 (38)	2378 (31)	89 (36)	130 (26)	160 (24)	66 (26)	253 (32)	166 (16)	501 (57)	206 (35)	111 (28)
Women	5348 (69)	276 (72)	253 (82)	186 (62)	269 (62)	5348 (69)	157 (64)	361 (74)	509 (76)	185 (74)	532 (68)	871 (84)	370 (43)	377 (65)	282 (72)
Professional situation															
Students	5787 (68)	257 (67)	230 (75)	255 (85)	307 (71)	5787 (68)	222 (90)	487 (99)	533 (80)	207 (82)	551 (70)	405 (39)	619 (71)	488 (84)	354 (90)
Active	2039 (27)	53 (14)	74 (24)	45 (15)	115 (27)	2039 (27)	18 (7)	4 (1)	136 (20)	44 (18)	186 (24)	515 (50)	207 (24)	95 (16)	29 (7)
Inactive	400 (5)	85 (9)	4 (1)	-	9 (2)	400 (5)	6 (2)	-	-	-	48 (6)	117 (11)	45 (5)	-	10 (3)
Marital situation															
Single	5164 (67)	275 (71)	255 (83)	273 (91)	363 (84)	5164 (67)	211 (86)	483 (98)	613 (92)	129 (51)	424 (54)	477 (46)	573 (66)	242 (41)	391 (99)
In a relationship	2562 (33)	111 (29)	53 (17)	27 (9)	68 (16)	2562 (33)	35 (14)	8 (2)	56 (8)	122 (49)	361 (46)	560 (54)	298 (34)	341 (59)	2 (1)

Note. SD: Standard deviation; UAE: United Arab Emirates

Table 2. Differences in Problematic Internet Use Assessments across Gender (Chi2 and T-tests).

	Total n = 7726	Brazil n = 975	Chile n = 386	Colombia n = 308	Ecuador n = 300	Peru n = 431	Iran n = 246	Pakistan n = 491	UAE n = 669	Finland n = 251	France n = 785	Greece n = 1037	Italy n = 871	Romania n = 583	Turkey n = 393
Problematic users	3255 (42.1%)	351 (36%)	173 (44.8%)	151 (49%)	177 (59%)	170 (39.4%)	145 (58.9%)	316 (64.4%)	502 (75%)	65 (25.9%)	161 (20.5%)	356 (34.3%)	291 (33.4%)	224 (38.4%)	173 (44%)
Women	2269 (69.7%)	262 (74.6%)	122 (70.5%)	119 (78.8%)	107 (60.4%)	97 (57.1%)	99 (68.3%)	228 (72.1%)	387 (77.1%)	49 (75.4%)	100 (62.1%)	291 (81.7%)	141 (48.5%)	139 (62%)	128 (74%)
Men	986 (30.3%)	89 (25.4%)	51 (29.5%)	32 (21.2%)	70 (39.6%)	73 (32.9%)	46 (31.7%)	88 (27.9%)	115 (22.9%)	16 (24.6%)	61 (37.9%)	65 (18.3%)	150 (51.5%)*	85 (38%)	45 (26%)
Self-assessed prob. users	2161 (28%)	368 (37.7%)	232 (60.1%)	155 (50.3%)	141 (47%)	143 (33.2%)	139 (56.5%)	10 (2%)	79 (11.8%)	45 (17.9%)	222 (28.3%)	172 (16.6%)	156 (17.9%)	172 (29.5%)	127 (32.3%)
Women	1505 (69.6%)	276 (75%)	167 (71.9%)	124 (80%)	86 (61%)	80 (55.9%)	102 (73.4%)	9 (90%)	59 (74.7%)	34 (75.5%)	142 (64%)	137 (79.6%***	89 (57%***	105 (61.1%)	95 (74.8%)
Men	656 (30.4%)	92 (25%)	65 (28.1%)	31 (20%)	55 (39%)	63 (44.1%)	37 (26.6%)	1 (10%)	20 (25.3%)	11 (24.5%)	80 (36%)	35 (20.4%)	67 (43%)	67 (38.9%)	32 (25.2%)
PIUQ															
Women	20.63 (7.51)	19.59 (6.75)	21.38 (6.64)	21.68 (6.49)	22.8 (6.55)	19.09 (6.62)*	24.73 (8.53)	23.02 (6.26)	27.08 (7.51)	17.75 (6.57)	16.2 (6.61)	19.6 (7.52)	20.23 (6.75)***	19.8 (7.65)	21.24 (7.43)
Men	20.49 (7.37)	19.36 (6.74)	21.91 (7.18)	23.25 (6.91)	23.3 (5.7)	20.56 (6.32)	22.54 (8.85)	24.35 (6.65)*	26.67 (8.19)	18.2 (6.53)	17.69 (6.62)**	19.11 (7.08)	18.47 (6.69)	20.51 (6.99)	20.38 (7.19)

Note. SD: Standard deviation ; PIUQ: Problematic Internet Use Questionnaire ; * p < .05; ** p < .01; *** p < .001; the first two panels present percentages of whereas the last panel presents mean scores.

Table 3. Correlational Analysis between the PIUQ and Personality-Related Variables.

	Total n = 7726	Brazil n = 975	Chile n = 386	Colombia n = 308	Ecuador n = 300	Peru n = 431	Iran n = 246	Pakistan n = 491	UAE n = 669	Finland n = 251	France n = 785	Greece n = 1037	Italy n = 871	Romania n = 583	Turkey n = 393	
Cluster A traits																
Paranoid	.243**	.279**	.188**	.222**	.211**	.262**	.248**	.030	.053	.287**	.190**	.213**	.270**	.233**	.272**	
Schizoid	.183**	.170**	.177**	.071	.113	.140**	.111	.017	.155**	.243**	.138**	.154**	.155**	.052	.177**	
Schizotypal	.292**	.278**	.213**	.197**	.243**	.253**	.294**	.001	.084*	.308**	.279**	.274**	.331**	.262**	.317**	
Cluster B traits																
Antisocial	.309**	.232**	.285**	.194**	.204**	.308**	.196**	.025	.264**	.248**	.219**	.255**	.199**	.278**	.309**	
Borderline	.344**	.366**	.355**	.251**	.387**	.417**	.304**	.111*	.094*	.352**	.293**	.379**	.346**	.336**	.363**	
Histrionic	.345**	.260**	.219**	.303**	.299**	.242**	.309**	.058	.229**	.302**	.268**	.299**	.248**	.273**	.267**	
Narcissistic	.324**	.308**	.201**	.247**	.247**	.260**	.217**	.030	.220**	.315**	.272**	.289**	.234**	.266**	.375**	
Cluster C traits																
Avoidant	.320**	.332**	.311**	.344**	.348**	.366**	.266**	.046	.152**	.334**	.217**	.405**	.343**	.318**	.373**	
Dependent	.408**	.410**	.319**	.391**	.386**	.346**	.271**	.050	.342**	.469**	.324**	.437**	.342**	.355**	.424**	
Obses.-compulsive	.237**	.221**	.226**	.234**	.216**	.234**	.365**	.022	.323**	.367**	.205**	.291**	.272**	.205**	.311**	
Coping																
Adaptive	.132**	.188**	.095	.114*	.103	.120*	.178**	-.015	-.027	.085	-.003	-.031	.157**	-.020	.102*	
Non-adaptive	.287**	.115**	.464**	.311**	.371**	.376**	.395**	-.009	.301**	.285**	.220**	.363**	.303**	.422**	.331**	
Defense																
Mature	.085**	-.080*	.030	-.074	-.092	.066	.093	.198**	.008	-.047	.024	-.050	.034	.040	.114*	
Neurotic	.218**	.222**	.206**	.162**	.094	.188**	.259**	.111*	.189**	.015	.077*	.099**	.204**	.190**	.069	
Immature	.380**	.271**	.345**	.208**	.276**	.423**	.364**	.132**	.310**	.277**	.218**	.343**	.397**	.323**	.289**	
Denial	.138**	-.046	.257**	.077	.034	.165**	.191**	-.014	.030	-.002	.037	.001	.055	.060	.219**	
Autistic	.381**	.344**	.335**	.284**	.382**	.450**	.383**	.066	.287**	.440**	.221**	.379**	.365**	.415**	.179**	
Self-esteem	-.140**	-.319**	.113*	.233**	.244**	.215**	-.170**	-.022	-.028	-.304**	.054	-.324**	-.339**	-.339**	-.245**	

Note. PIUQ: Problematic Internet Use Questionnaire. * $p < .05$; ** $p < .01$.

Table 4. Multiple Regression Analyses Predicting Problematic Use (β statistics).

	Total n = 7726	Brazil n = 975	Chile n = 386	Colombia n = 308	Ecuador n = 300	Peru n = 431	Iran n = 246	Pakistan n = 491	UAE n = 669	Finland n = 251	France n = 785	Greece n = 1037	Italy n = 871	Romania n = 583	Turkey n = 393	
Cluster A traits																
Paranoid	-.036***	.040	-.149*	.035	-.041	-.031	-.055	-.120	-.128**	.067	-.041	-.066*	-.024	.095*	.006	
Schizoid	-.047***	.021	.032	-.066	-.010	-.150**	-.005	-.001	-.105*	-.065	-.004	-.052	-.021	-.136**	-.027	
Schizotypal	.004	-.020	-.088	-.028	-.003	.018	-.024	-.144	-.021	.028	.079	.014	.090*	-.010	.031	
Cluster B traits																
Antisocial	.054***	.045	.092	.010	-.014	.060	.047	-.039	.089	-.086	.107**	.054	.041	.075	.032	
Borderline	-.004	.062	.098	-.073	.138	.130*	-.051	.102	-.139**	-.023	.008	.018	-.049	-.093	.056	
Histrionic	.059***	.016	.063	.112	.037	-.026	.060	.090	.103*	.075	.064	.010	.029	.068	-.048	
Narcissistic	.079***	.082*	-.022	.124*	.092	.017	.102	.064	.071	-.081	.083*	.064	.070	.113*	.129	
Cluster C traits																
Avoidant	.082***	.020	.171*	.087	.0050	.111	-.015	.121	-.014	-.003	.042	.130***	.082*	.009	.110	
Dependent	.153***	.218***	.056	.161*	.117	.055	.287***	.048	.168**	-.020	.152***	.203***	.096*	.065	.168*	
Obsess.-compulsive	.013	-.006	.002	.049	.024	.027	.153*	.071	.137**	.269**	.039	.090**	.012	.001	.032	
Coping																
Adaptive	.023	.070	.037	.089	.138*	-.012	.110	-.044	-.061	-.064	-.050	.010	.022	-.003	.135*	
Non-adaptive	.078***	.032	.270***	.102	.089	.137*	.007	-.007	.132**	.290***	.074*	.063	.009	.157**	.115*	
Defense																
Mature	-.013	-.034	-.009	-.110	-.101	-.110	-.006	.173***	-.074	-.134	-.003	-.003	-.068	-.022	-.101	
Neurotic	.031*	.072*	.016	.114	-.018	.017	-.080	.067	.002	.053	-.023	-.019	.062	.066	-.064	
Immature	.178***	.045	.047	.022	.055	.234***	.103	.046	.253***	.120	.104**	.108**	.225***	.069	.090	
Denial	.019	-.076*	.155**	.010	.009	.048	.003	-.042	-.003	.030	-.002	.028	.001	-.023	.084	
Autistic	.139***	.119**	.068	.042	.225***	.183***	.302***	.051	.071	.203**	.097**	.151***	.083*	.182***	.009	
Self-esteem	-.069***	.001	.020	.157**	.099	.067	-.092	-.034	.006	-.035	.022	.051	-.163***	-.145**	-.071	
Total R ²	.548***	.508***	.558***	.522***	.546***	.590***	.615***	.275**	.514***	.569***	.452***	.554***	.539***	.548***	.526***	

Note. * $p < .05$; ** $p < .01$; *** $p < .001$