

Investigating the Prevalence and Presentation of Problematic Internet Usage in Clinical Populations

Simon Taylor

21063399

*Submitted to the University of Hertfordshire in partial fulfilment of the requirements of the degree of
Doctor of Clinical Psychology*

June 2025

Word count: 26,198

Acknowledgements

I would firstly like to thank Dr Debbie Marais and Professor Naomi Fineberg for their unending support and advice throughout the project. I could not have asked for more encouraging and energising supervisors that always had time and words of wisdom for me. You have not only helped me immensely in completing this project but have also inspired me to continue the research process moving forwards.

Thank you also to Shazia and Titian for their help with the statistics of the study. I really appreciate your unfaltering patience with my constant questions. I will take the skills and experiences you shared me with forward into future endeavours.

To my Expert by Experience Consultants, I am so grateful for your time and insights throughout the project. I also have so much admiration for all the participants that took part in the study, sharing their experiences, so I would like to thank every single one of them.

Finally, to my amazing fiancée Keziah, thank you for always supporting me and for all your helpful reminders when “it’s not that deep”. I can honestly say I would never have reached this point without you. On to the next exciting chapter together...

Abstract

In an increasingly digitalised world, public health concern surrounding problematic usage of the internet (PUI) has grown. Existing literature has investigated the rates of PUI in the general population as well as the risk factors in its development. People with mental health difficulties are considered a vulnerable group, with PUI rates of 19.36% recently reported in a meta-analysis, but PUI has received limited attention to date in the context of UK patients with mental health diagnoses. The aims of this study were: to explore the frequency of PUI in its various forms within a clinical population; its relationship with diagnosis and dimensions of impulsivity and compulsivity; the association between PUI and impairment of daily functioning.

Online surveys were distributed to 1,600 NHS patients with a psychiatric diagnosis who had consented to be contacted for research purposes, and responses were collected via Qualtrics. The study collected data on demographics, self-reported clinical diagnosis and used a series of validated self-report measures including assessing problematic internet use (Internet Severity Activities Addiction Questionnaire – ISAAQ-10), trait compulsivity (Compulsive Personality Assessment Scale-CPAS), trait impulsivity (Barratt Impulsivity Scale – BIS), and functional impairment (Work & Social Adjustment Scale-WSAS).

A total of 354 participants completed the study (90% questionnaires completed), of whom 39% reported a mood disorder, 16.4% an anxiety disorder and 11.3% a neurodevelopmental disorder. Fewer than 10% reported any other diagnostic grouping. Fifty-one participants (14.4%) exceeded the specified ISAAQ-10 threshold (score ≥ 34) for likely PUI, and the rate participants self-identified their usage as “problematic” also exceeded this. The likely PUI group had a mean age of 44.6 (S.D = 12.8) and 67% were female. No statistical association was found between diagnosis and PUI frequency. Unlike categorical diagnoses, dimensions of compulsivity and impulsivity both positively predicted PUI. Those with likely PUI and co-occurring mental health difficulties reported significantly greater impairment than those with solely a psychiatric diagnosis ($p \leq .001$). Only 12% reported being asked about their internet habits by clinicians during their mental healthcare.

Whilst there has been limited attention applied among UK patients with mental health diagnoses, roughly one in seven participants reported likely PUI using a validated scale, consistent with a recent meta-analysis. No particular diagnostic group was over-represented in terms of PUI rate, however the predictive power of trait compulsivity and impulsivity offers insight into the understanding of PUI and aligns with existing behavioural addiction models. Considering the additional functional impairment associated with PUI in people already impacted by mental health difficulties, clinicians

working in all fields of mental health support need to be vigilant and consider enquiring about PUI during routine care.

Contents

Acknowledgements	2
Abstract	3
List of Tables	8
List of Figures	8
1. Introduction	9
1.1. Epistemological Position	9
1.2. Defining Problematic Internet Usage	9
1.3. PUI Measures	10
1.4. Rates of PUI	12
1.5. Risk Factors / Development of PUI	15
1.6. Impacts of PUI	17
1.7. Clinical Interventions for PUI	19
2. Systematic Literature Review (SLR)	22
2.1. Overview	22
2.2. Rationale for Current SLR	22
2.3. SLR Research Question	23
2.4. SLR Methodology	23
2.5. SLR Results	28
2.6. SLR Synthesis	40
2.7. SLR Discussion	45
2.8. Rationale for Current Study	47
2.9. Aims & Research Questions	47
3. Methodology	49
3.1. Design	49
3.2. Participants	49
3.3. Sample	51
3.4. Measures	52
3.5. Ethical Issues	54
3.6. Consultation with Experts by Experience	55
3.7. Statistical Analysis Plan	55
4. Results	57
4.1. Results Structure	57
4.2. Study Variables	58
4.3. Frequency of PUI	59
4.4. Forms of PUI	60

4.5. PUI and Other Constructs	63
4.6. Impairment and PUI	64
4.7. Summary of Study Findings	65
4.8. Post-hoc Analysis.....	66
5. Discussion.....	67
5.1. Discussion Structure.....	67
5.2. Research Question 1: What is the frequency of PUI in clinical populations, who identifies it and how does it present?.....	67
5.3. Research Question 2: What is the relationship between PUI and diagnosis, compulsivity, and impulsivity dimensions?.....	77
5.4. Research Question 3: What is the impairment of functioning for those with PUI and comorbid mental health presentations?.....	83
5.5. Summary of Clinical Implications	85
5.6. Summary of Academic Implications.....	86
5.7 Study Limitations	87
5.7. Conclusion	87
5.8. Action Points.....	88
6. References	89
7. Appendices.....	107
Appendix A – Participant Information Sheet.....	107
Appendix B – Participant Consent from	109
Appendix C – Demographics & Diagnostic Information Survey.....	110
Appendix D – ISAAQ-10 (Internet Severity and Activities Addiction Questionnaire, 10-items), Part A & B	111
Appendix E- Compulsive Personality Assessment Scale.....	113
Appendix F – Barratt Impulsivity Scale (Short Form-15)	114
Appendix G – Work & Social Adjustment Scale	115
Appendix H – Proof of NHS Ethics Approval from Research Ethics Committee	117
Appendix I – Health Research Authority Approval	122
Appendix J – Letter of Sponsorship in Full from University of Hertfordshire	127
Appendix K – HPFT Letter of Access.....	129
Appendix L -End of Study letter to NHS HRA/REC	132
Appendix M – SPSS Outputs for Data Analysis	135

List of Tables

Table 1: <i>Inclusion and Exclusion Criteria</i>	24
Table 2: <i>PICO Searching Tool</i>	26
Table 3: <i>Data Extraction Table</i>	29
Table 4: <i>Critical Appraisal Skills Programme (CASP) Cross-sectional Checklist</i>	37
Table 5: <i>Critical Appraisal Skills Programme (CASP) Cohort Studies Checklist</i>	38
Table 6: <i>The Relationships Identified from SLR Synthesis</i>	41
Table 7: <i>Participant Inclusion & Exclusion Criteria</i>	50
Table 8: <i>Participant Completion Rate</i>	51
Table 9: <i>Demographic and Diagnostic Characteristics of Participants</i>	51
Table 10: <i>The Correlation Matrix for All Scale Variables in the Study</i>	58
Table 11: <i>The Measures of Internet Usage in the Study Population</i>	59
Table 12: <i>The Types of Internet Usage in the Sample (ISAAQ-B)</i>	61
Table 13: <i>The MANOVA Results of PUI Group Compared with Non-PUI Group in Forms of Internet Usage</i>	62
Table 14: <i>The PUI Frequency across Diagnostic Categories</i>	63
Table 15: <i>Summary of Hypotheses and Study Findings</i>	65

List of Figures

Figure 1: <i>PRISMA Flow Chart for Study Selection</i>	27
Figure 2: <i>Visual of Synthesis Relationship 1</i>	42
Figure 3: <i>Visual of Synthesis Relationship 2</i>	43
Figure 4: <i>Visual of Synthesis Relationship 3</i>	43
Figure 5: <i>Visual of Synthesis Relationship 4</i>	44
Figure 6: <i>Recruitment Flow Chart</i>	50

1. Introduction

1.1. Epistemological Position

The study has a post-positivist epistemological position to the understanding of knowledge. This was taken to acknowledge the positivist position of the observable existence of problematic internet use but hold a revised stance to the extent that these measures can provide an accurate representation of this phenomenon (Braun & Clarke, 2021). This post-positivist position recognises imperfection in this and the influence the researcher's values and culture have by combining the paradigms of positivism and interpretivism (Kock et al., 2008). This reflects in the study design with the adoption of quantitative survey measures of the appropriate observable constructs (PUI, Compulsivity, and Impulsivity) but also in the contextually influenced framing of the findings and subsequent conclusions produced by these within the study. It also aligns with the imperfect lens diagnostic categories offer, heavily influenced by context, hence the strive for transdiagnostic knowledge within the study.

This epistemological stance also acknowledges that the use of self-report data in the design is giving an approximation of objective reality and that the knowledge constructed upon this is methodologically constrained. It also recognises it is going through a subjective filter and therefore only approximating external reality (Panhwar et al., 2017).

1.2. Defining Problematic Internet Usage

The umbrella term problematic usage of the internet (PUI) is a recent attempt at conceptualising a wide array of excessive internet-based behaviours. It is characterised by persistent patterns of internet use, involving impaired control with starting, stopping, frequency or duration; priority given to this activity over other activities such as school, work, nutrition; and persistence or escalation of activities despite the negative consequences to domains of an individual's life (Fineberg et al., 2022). These forms of problematic internet use can include, but are not limited to, gaming, gambling, social media use, shopping, streaming, pornography, cyberhoarding or cyberchondria (Brand et al., 2020; Vismara et al., 2020). It was originally conceptualised as excessive internet use causing psychological, social, educational and/or occupational problems in an individual's life (Stein et al., 2021). The more recent definition moves the emphasis away from conceptualising it in regards to the specific time spent online, which is estimated to have increased since the Covid-19 pandemic, to more of a focus on loss of control (Chen et al., 2022). Other terms for PUI have been used within the research landscape such as compulsive internet use, internet addiction, and problematic smartphone use (Fineberg et al., 2018). However PUI has the benefit of not assuming

any mechanisms of causation underpinning the presentation (Fineberg et al., 2022). This is especially important in the evolving understanding of the phenomenon and the evolution of the internet's role in human life (Dell'Osso et al., 2021). The varying terminology is likely a combination of this implied aetiology but also the breadth of internet behaviours that PUI could result from (Laconi et al., 2014). This was the sentiment of the European Network for Problematic Usage of the Internet (EU-PUI) which stressed the importance of a shared conceptual framework for PUI to aid academic and clinical understanding (Fineberg et al., 2022).

PUI has more recently been conceptualised in the paradigm of behavioural addictions and where it fits within DMS-V and ICD-11 diagnostic framing (Dell'Osso et al., 2021). This has primarily been considered due to the growing concerns about PUI's impact on both individual and public health (World Health Organization, 2015), hence the push to better clarify its nosology. This is reflected in the new ICD-11 Gaming Disorder and Gambling Disorder diagnosis that specify online elements as well as the diagnosis of Other Specified or Unspecified Disorders Due to Addictive Behaviours that would encapsulate the breadth of internet related behaviours that could come under PUI (Brand et al., 2020). This approach has the benefit of aiding consistency of comparison in research populations by offering clearer clinical boundaries (Dell'Osso et al., 2021), something that has proved a regular challenge in PUI research thus far (Burkauskas et al., 2022). However, it also invites the problem of certain forms of PUI being more likely to qualify for diagnosis over others (Fineberg et al., 2022; Francesca & Kaye, 2017). It can be argued that certain forms of PUI lend themselves more to being outwardly understood as problematic based on societal values that permeate the diagnostic process (Kardefelt-Winther et al., 2017). Examples of this include problematic pornography viewing, shopping/buying, and social media use (Brand et al., 2020). This has a knock-on influence on our understanding of the umbrella term of PUI where specific forms take precedence and anchor conceptualisation within the realm of other addictions.

1.2.1. Summary

The umbrella term of PUI, despite its aforementioned critiques, offers research utility in its ability to capture the ever-evolving uses and forms of internet behaviours. The construct allows for some degree of standardised conceptualisation, without key assumptions of nosology impacting the developing understanding of PUI (Fineberg et al., 2022; Francesca & Kaye, 2017).

1.3. PUI Measures

Heavy criticism exists of current PUI measures regarding their lack of item-response theory, validation across suitable measures of impairment, and limited efforts to explore variation across different cultures and countries (Fineberg et al., 2022; King et al., 2020). One review of 45 PUI

measures found that just 17 had been evaluated more than once for their psychometric properties (Laconi et al., 2014). These methodological limitations have been acknowledged to have made advancement in the understanding of PUI difficult (Laconi et al., 2014; Lortie & Guitton, 2013). The difficulty and variance in measuring PUI also reflects in the conceptual heterogeneity across the literature (Laconi et al., 2014). PUI has been viewed in the paradigm of behavioural addiction (Lopez-Fernandez et al., 2013), as an impulse control disorder (Brand et al., 2016), or a combination of the two (Kim et al., 2013). This has permeated into how these constructs are measured in the research process (Laconi et al., 2014).

The most commonly used measure for PUI has been the Internet Addiction Test (IAT), which uses self-report Likert scales on compulsive use, preoccupation, behavioural and emotional changes and impaired functioning from the perspective of the individual (Moon et al., 2018). It had been validated in multiple contexts but has seen various thresholds used to determine if PUI is present or not in a given population (Ioannidis et al., 2018a). Previous versions of the IAT have also been criticized for outdated pathologising of common behaviours (Fineberg et al., 2022), such as asking if individuals form new relationships with others online (Young, 1998). More recent measures such as the Compulsive Internet Use Scale (CIUS; Meerkerk et al., 2009) offer a more contemporary measure of PUI with strong psychometric properties and validation in many languages (Lopez-Fernandez et al., 2019). These scales give a measure of general PUI whereas others have created scales specific to a particular type of internet-related behaviour (Fineberg et al., 2022). Examples of this include the Problematic Pornography Consumption Scale (Kor et al., 2014); Bergen Social Media Addiction Scale (Andreassen et al., 2017) and Cyberchondria Severity Scale (McElroy & Shevlin, 2014). Having these specific scales offers unique insights into the associations and risk of differing forms of PUI and can allow for comparison accordingly.

The Internet Severity and Activities Addiction Questionnaire (ISAAQ) is a novel measure that provides a demarcation point for general PUI and combines this alongside an additional scale of specific internet-related activities (Omrawo et al., 2023). Prior to this measure, measures took one of two routes to capture PUI due to the limited consensus on aspects that should be covered in measures (Spada, 2014). They either aim to capture a wide variety of problematic online behaviours in the umbrella of PUI and suffer major limitations as a result (Laconi et al., 2014b), or they isolate the measure to a specific type of PUI and external validation suffers (Kor et al., 2014). The approach of the ISAAQ looks to remedy this and support measuring PUI in both its generalised and specific nature (Ioannidis et al., 2018a).

1.3.1. Summary

There are significant critiques of existing measures of PUI (Fineberg et al., 2018; King et al., 2020), however more recent iterations, such as the ISAAQ, adjust for some of these limitations and offer additional utility (Omrawo et al., 2023). This utility in its dual ability to offer a measure of general PUI alongside identifying specific internet behaviours in a given population makes it uniquely helpful when investigating a specific population in their relationship to the internet.

1.4. Rates of PUI

It is generally accepted that PUI rates have gradually increased over time, likely due to the increased role the internet has taken in our lives since the early 2000s with the addition of the smartphone and a smoother interface between the digital world and reality (Stangl et al., 2023). Initial large scale epidemiological studies in Norway (Aboujaoude et al., 2006a) and the USA (Aboujaoude et al., 2006b) estimated the frequency in the general population to be 0.7% and 1.0% respectively. More recent meta-analyses suggest that PUI rate in the general population is now 6%-9.7% (Burkauskas et al., 2022). However it is not suggested that the increase in PUI is solely a representation of the increased time spent online (Masaeli & Farhadi, 2021). Instead, it is theorised that the greater exposure to online activities within a more digitalised age is increasing the incidence in those with psycho-social vulnerabilities to this presentation (Burkauskas et al., 2022).

Some meta-analyses have indicated demographic variance in rates of PUI, with general measures of PUI being higher in males and in those with an Asian racial-ethnic background (Meng et al., 2022). However, these are contested due to cross-cultural differences in measuring PUI (Baloğlu et al., 2020) and the emphasis of research on problematic internet gaming as a specific form of PUI, more common in males (King et al., 2020) over other forms. These gendered differences have also been evidenced in forms of PUI, with men more frequently represented in online gaming and pornography use whilst women expressed more in shopping and social media (Baloğlu et al., 2020). These findings are highly contested and argued to be explained by other factors (economic inequality, internet availability, sociocultural norms) and not gender itself (Anderson et al., 2017).

There does seem to exist wide variance in PUI rates between countries and age groups (Fineberg et al., 2022). This is suggested to be a reflection of the methodological and cultural differences across studies (Burkauskas et al., 2022). Frequency of PUI in adolescents has been more extensively researched (Spada, 2014); it has been found to be higher than in adult populations (Lozano-Blasco et al., 2022). Multiple factors are identified for this. Some research indicates that the role of PUI as an emotional regulation tool is higher in adolescent populations due to the shorter life experience to master others methods of regulating themselves (Drach et al., 2021). Furthermore,

newer age cohorts have been labelled as digital natives, which identifies younger generations who have grown up in the cyber age and this group have been associated with higher PIU rates (Wang et al., 2019) Others attribute the difference to adolescent brain development being more prone to all addictive behaviours and this not being specific to PUI (Dayan et al., 2010).

1.4.1. The Influence of Covid-19

There are concerns that the Covid-19 pandemic may have drastically increased rates of PUI, similar to other behavioural addictions (Masaeli & Farhadi, 2021). There are multiple risk factors presented by the pandemic that are reason for this concern. Increased psychological stress resulting from the unprecedented changes to modern life may have resulted in increased use of internet-based activities for emotion regulation (Király et al., 2020a). Lockdown restrictions removing alternate methods of regulation may have resulted in greater dependence on internet-based activity (Brooks et al., 2020a). Meta-analyses have found conflicting results of whether overall PUI rates increased during the pandemic (Burkauskas et al., 2022; Masaeli & Farhadi, 2021), but this could in part be attributed to the lack of consistency in measures (Laconi et al., 2014a). There has been some evidence of specific forms of PUI, such as Internet Gaming Disorder, being 1.5 times more prevalent since the Covid-19 pandemic began (Oka et al., 2021). Further clarity is needed as to whether this specific frequency increase is due to the more consistently applied criteria in the ICD-11, supporting the identification of this across populations compared to other specific forms of PUI that do not have this (social media, streaming, shopping).

1.4.2. PUI and Psychiatric Diagnoses

There is some evidence that PUI is higher in populations with a psychiatric diagnosis (Ioannidis et al., 2018a; Teng et al., 2021). However, these typically involve reviewing specific disorders compared with specific internet-related activities (Tiego et al., 2021). A recent meta-analysis found a pooled PUI rate of (N=5522) of 17.8% (95% CI: 13, 24) within psychiatric populations (Radhakrishnan et al., 2025). The analysis also found that mood disorders had the highest frequency of PUI compared with other diagnoses, suggesting a potential link between the experiences. The research acknowledged significant methodological challenges with comparison of measurements; with many studies using outdated scales that have since been revised, such as Young's Internet Addiction Test (Young, 1998). The analysis compared across countries however there were no studies included with the UK. This raises the question of where UK clinical populations fit into this picture. The comparison also highlighted a predominant research focus on online gaming as a specific form of PUI in clinical populations. This results in uncertainty as to whether alternate forms of internet use differ due to the sparsity of the evidence base. The meta-analysis also emphasises the need for

further investigation into the relationship between psychiatric diagnoses and PUI with more consistency in measuring rates and potential impacts (Radhakrishnan et al., 2025).

Although research of PUI in clinical populations is limited, some have drawn links to particular diagnostic categories over others (Bozkurt et al., 2013). Mood disorders have been observed at a greater co-occurrence with PUI than other mental health difficulties (Muñoz et al., 2022; Radhakrishnan et al., 2025). This suggests that there may be similar underlying processes that underpin the development of both. The role of emotion regulation is often cited as the underlying link between mood disorders and PUI (Karaer & Akdemir, 2019). Despite the abundance of evidence linking Mood Disorders to increased PUI presence compared with other diagnoses, further investigation is warranted to determine the extent to this relationship and how this can present across the breadth of internet activities encompassed within PUI. Furthermore, this association of PUI and Mood Disorders is attributed to difficulties in emotion regulation (Karaer & Akdemir, 2019), however to some degree these are present across a range of mental health difficulties. Limited evidence has compared diagnostic categories in terms of PUI presence and doing so would provide greater clarity on these associations.

1.4.3. PUI, Impulsivity and Compulsivity

Contrary to the evidence of Mood Disorders and PUI, others suggest that obsessive-compulsive disorders and neurodevelopmental conditions such as Attention-Deficit Hyperactivity Disorder (ADHD) are more closely related to the presence of PUI (Ghiaccio et al., 2025; Moretta & Buodo, 2021). Theorised explanations for this relation have included the roles of compulsivity and impulsivity in these diagnoses respectively (Brand et al., 2020). The incongruence of findings surrounding the links between mental ill health and PUI could therefore also be understood in underlying transdiagnostic dimensions, such as compulsivity and impulsivity, that impact PUI experiences (Dell'Osso et al., 2021). Impulsivity has been suggested as an internal trigger, driving an individual towards more PUI in particular forms of gambling or shopping (Di Carlo et al., 2021; Diotaiuti et al., 2022). This can be defined as the extent to which somebody has the thought to initiate a behaviour, in this case a form of internet use, and has difficulty in restraint of then performing that subsequent behaviour (Chen et al., 2017; Liu et al., 2019). Compulsivity traits have also been linked to specific forms of PUI such as excessive health forum use (Volpe et al., 2015), whereby an individual persists in a behaviour despite the negative outcomes for them. These underlying traits of an individual psychology could help better understand the presentation of PUI that is less fixed within diagnostic parameters.

Further exploration of these links is needed, as well as data within the UK, as it may be the case that these are contextually informed understandings. To date there has not been similar analysis performed within the UK. The dynamic relationship between mental health and PUI is something that needs greater clarity on factors that are comorbid between constructs and factors that are vulnerabilities or those that exacerbate.

1.4.5. Summary

PUI rates in the general population, although contested to some degree, are fairly well established at 6-9.7% (Burkauskas et al., 2022). Additional research has looked at frequency of PUI in sub-groups, predominantly in adolescents and geographic location alongside the influence of Covid-19 (Masaeli & Farhadi, 2021; Meng et al., 2022; Spada, 2014). Some efforts have been made to examine the rates of PUI in vulnerable groups such as those with mental health difficulties, however these have typically taken the form of specific diagnoses compared with specific forms of PUI (Tiego et al., 2021). Recent findings have estimated a PUI rate of 17.8% across psychiatric populations, however this is held with a degree of uncertainty due to methodological limitations (Radhakrishnan et al., 2025). The same analysis suggested a higher frequency of PUI within mood disorders, however further investigation would be needed to make this claim more concretely. Additional transdiagnostic factors such as impulsivity and compulsivity have been linked to increased PUI frequency (Dell'Osso et al., 2021) but further clarity is needed on this relationship in specific vulnerable populations.

1.5. Risk Factors / Development of PUI

There is some evidence for genetic factors contributing to PUI development (Fineberg et al., 2022). Evidence for this is presented in the hereditary frequency between individuals with PUI and their first-degree relatives (Sindermann et al., 2021; Tereshchenko & Kasparov, 2019). Some studies point to a direct serotonergic and dopaminergic system link to the vulnerability of PUI development, however there are conflicting results as to the extent of this (Cerniglia et al., 2020; Lee et al., 2008). Furthermore, the psychological and environmental factors present within these are acknowledged within the studies. Research into PUI and personality traits have explored associations with the 'Big 5' personality dimensions (Goldberg, 1992). It was found that agreeableness and conscientiousness were negatively correlated with PUI, whilst extraversion, neuroticism and openness were positively associated with it (Zhou et al., 2017b). This could therefore offer insight into the risk factors for PUI development in an individual.

A multitude of models have attempted to synthesise the related psychological factors to understand the aetiology and maintenance of PUI (Sánchez-Fernández et al., 2024). It also comes from a conceptual push to avoid the pathologising of common behaviours in the DSM-5 (Kardefelt-Winther

et al., 2017). As society becomes increasingly digitalised and engagement in a wide range of internet-based behaviours and leisure activities rises (Stangl et al., 2023), it is important to provide distinction between increased frequency of internet use and PUI (Kardefelt-Winther et al., 2017). Research seeking an understanding of the psychological models of PUI can help inform these distinctions and better support those negatively affected by PUI (Brand et al., 2020)

The Compensatory Internet Use Model suggests that problematic internet behaviours are an attempt to alleviate a negative mood state and cope with environmental stressors (Kardefelt-Winther, 2014; Kardefelt-Winther et al., 2017). This function would account for the array of evidence demonstrating the associations of depression, life stress and negative affect with PUI (Yang et al., 2022; Zhou et al., 2017a).

The cognitive-behavioural model also acknowledges excessive internet use as an attempt to cope with negative emotional states, however it offers an equal emphasis on the additional role of cognitions in the development of PUI (Davis, 2001). This alternate model of PUI views the role of emotion regulation strategies in PUI as necessary but not sufficient for the development of PUI (Davis et al., 2002). This hypothesises a causational model of PUI underpinned by the evidence of cognitive distortions being reliable predictors of PUI (Eşkisü et al., 2024; Kaval & Siyez, 2024; Özparlak & Karakaya, 2022). It suggests that PUI cannot be explained purely by the motivations for use but also by incorporating the perceptions of oneself and others whilst doing so. The synthesis of emotion regulation and cognitive appraisal as explanatory factors for PUI development could help better identify those with vulnerabilities to PUI and support treatment (Davis, 2001).

More recently the person-affect-cognition-execution interaction (I-PACE) model has been applied to understanding the causes of PUI (Brand et al., 2019). This suggests the aetiology of PUI is a combination of personality factors (Kayış et al., 2016) and a predisposing vulnerability to emotional distress (Ceyhan et al., 2018). It is the combination of these factors that present in dysfunctional coping strategies such as PUI (Sánchez-Fernández et al., 2024). Two strongly identified formation and maintenance factors of PUI identified in this model are inhibitory control and emotional regulation (Brand et al., 2022). Inhibitory control relates to the ability to exert influence over the initiation of internet related behaviours. Emotion regulation is theorised to relate to persisting with internet behaviours in an attempt to obtain positive feelings or alleviate negative moods. These attempts may persist despite the presence of negative outcomes, and may reflect as compulsivity in an individual (Brand et al., 2022).

All three of the aforementioned models have supporting evidence for their accuracy but fail to acknowledge any interpersonal factors that may help understand the causes of PUI (Diotaiuti et al.,

2022). This is likely a reflection of the medical model of addiction centring challenges within the individual (Fumero et al., 2018). A relational lens can also be applied to hypothesising the contributing factors to PUI development (Anderson et al., 2017). For example, family stress has been evidenced as a risk factor for the development of PUI in adolescents and adults (Mustafa et al., 2020). Furthermore, cross-culturally family relationships have been found to be both protective factors against the development of PUI and mediating factors of the negative associated impacts (Mikuška et al., 2020). In this context PUI can be understood as a reflection of one's relational dissatisfaction (Anderson et al., 2017) and the pursuit of this in the digital world.

1.5.1. Summary

In all these psychological models that explain the development of PUI, emotion regulation is acknowledged as offering some contribution to the functioning of behavioural addictions to varying degrees. This may be in the form of intrapersonal and interpersonal emotion regulation strategies. These are therefore two key variables to consider in relation to each other for understanding the formation and maintenance of PUI in vulnerable populations such as those with difficulties with emotion regulation.

The overarching concern with the studies framing these as risks is the cross-sectional design used in the majority of research. These identify associations and not necessarily contributing factors to the development of PUI. However, the research does frame them in this manner hence the subtitle used within this review. This methodological limitation extends to the subsequent section of impacts of PUI as studies struggle to identify causal links. The aforementioned associations between mental health difficulties and PUI have been observed in cross-sectional studies. For this reason, links are not causal and mental health difficulties are hypothesized as both risk factors and outcomes of PUI (Fineberg et al., 2022; Ioannidis et al., 2021).

1.6. Impacts of PUI

The impacts of PUI are increasingly seen as a public health concern as we shift further towards a digitalised society (World Health Organization, 2015). Public health bodies such as the World Health Organization have acknowledged the growing need to understand PUI and its impacts on populations. This is likely due to the increasing exposure of the internet to all facets of modern life presenting additional risk for individuals to develop PUI (Stein & Hartford, 2022). Hence the inclusion of new diagnoses in the ICD-11 that aim to improve recognition of the harms associated with PUI, and the additional 'online' qualifiers added to existing diagnoses such as Gaming Disorder and Gambling Disorder (Brand et al., 2020)

The framing of the impacts of PUI have been identified in physical, psychological and intrapersonal domains (Fineberg et al., 2022). Quality of life outcomes are negatively associated with the presence of PUI in various forms (Ayas & Horzum, 2013; Gorowska et al., 2022). Detrimental physical outcomes have been demonstrated in reduced physical activity (Thomas et al., 2020), cardiovascular stress reactions and musculoskeletal pain and discomfort (Wacks & Weinstein, 2021). A strong association has been evidenced between sleep quality and PUI: a meta-analysis has found an odds ratio of 2.2 of sleep problems occurring alongside increasing PUI (Alimoradi et al., 2019). These poor health-related life outcomes are argued to be increased by the severity of the PUI observed (Machimbarrena et al., 2019).

Psychological impacts have been equally evidenced in those identified to have PUI. Significant co-occurrence of mental health difficulties such as depression, anxiety and OCD (Wacks & Weinstein, 2021) have been observed. There is also concern over the impact of PUI on existing mental health difficulties, an example being the overuse of online resources in those with disordered eating habits (Butkowski et al., 2019; Mingoia et al., 2017). Specific facets of online behaviours, that have not yet reached diagnostic status, such as excessive social media use, consumption of pro-eating disorder content and compulsive usage of online calorie counting and fitness applications are influencing factors within eating disorder symptomatology such as body dissatisfaction, drive-for-thinness and dietary restriction (Ioannidis et al., 2021). Although causal links are not yet known, there have been some limited attempts to complete prospective analyses of the relationship between PUI and disordered eating (Ioannidis et al., 2021). These have found that cumulative exposure to PUI in individuals over time is a factor contributing to the development of facets of diagnosable eating disorders, for example (Smith et al., 2013; Tiggemann & Slater, 2017).

Negative outcomes of PUI have also been explored in their effect on relationships to others in familial and social settings. Individuals with PUI have been shown to have stronger rates of loneliness in the context of familial relationships and wider social integration (Männikkö et al., 2020). Although this can be suggested to indicate that difficulty interpersonally is an impact of PUI, many argue that the relationship is more dynamic (Zhang et al., 2024). A meta-analysis of longitudinal studies suggests that over time PUI and loneliness seem to link in a vicious cycle, and indicates PUI as a possible starting point for this (Moretta & Buodo, 2020). Lived experiences of those with problematic pornography use echoes the relational difficulties previously outlined (Palazzolo & Bettman, 2020), with challenges in relationships and intimacy identified as functions of this. Additional emphasis has been placed on functions of the internet (escapism, communication, intimacy) that previously supplemented social engagement, now having fully replaced real world connections (Palazzolo & Bettman, 2020).

1.6.1. Summary

Although the impairment to life domains associated with PUI is well evidenced, there is further scope to investigate if this impairment is equally distributed across populations. It could be possible that populations with comorbid challenges may experience increased vulnerability alongside compounding negative outcomes. It is also notable that the studies investigating PUI outcomes are dominated by data gathered from adolescents and young adults, leaving older adults underrepresented (Fineberg et al., 2022). Further investigation is needed for outcomes of PUI for those outside these age cohorts.

1.7. Clinical Interventions for PUI

Services to support differing forms of PUI have developed around the world (Brown et al., 2021). Asian nations were at the forefront of this (e.g. South Korea, Japan, China) establishing specialist services, which may be due to the higher established frequency of PUI in these areas and the aligned focus of research (Pal Singh Balhara et al., 2019). Subsequently, services within the Western world were developed in the US and the UK. The first was the reSTART programme created in the US in 2012, which offers support for a wide breadth of PUI in the form of inpatient and outpatient services (Brown et al., 2021). The services are structured to support adolescents (13-18 years old) and young adults (18-30 years old) and have two focuses to make change (Roberts et al., 2022). They primarily focus on combining technology detoxification, abstaining from use for 45-90 days, and therapeutic interventions such as Cognitive Behavioural therapy (CBT), Acceptance and Commitment Therapy, and Mindfulness based stress reduction (Cash et al., 2012).

In 2019, the National Centre for Gaming Disorders (NCGD) was established within the National Health Service (NHS), differing from the US reSTART programme in targeting specific forms of PUI (Roberts et al., 2022). It remains the sole programme within the NHS supporting these individuals aged 13 and over, with the clinical contributions of a psychiatrist and clinical psychologist (Piper et al., 2024). This service offers individualised and group CBT as well as family therapy aimed at supporting severe or complex behavioural concerns that are harming the wellbeing of these individuals (Roberts et al., 2022). The population accessing this service from inception to 2022 was found to be 89.8% male (Sharman et al., 2022), which may be a result of targeting internet gaming as a specific form of PUI. The emphasis on gaming as a focus for the NCGD was two-fold: Internet Gaming Disorder was agreed to be added to the ICD-11 in 2019 (Long et al., 2022), but there was also the added concern of the role of gambling behaviours permeating the modern gaming industry (Newsgroove, 2019). The convergence of emotional regulation that gaming reportedly provides (Blasi et al., 2019), alongside the addicting neurological reward systems associated with random

reward (Larche et al., 2021), offer a uniquely detrimental vulnerability to developing brains (Zendle et al., 2019). The rate of occurrence was highlighted in a UK Gambling Commission report that found 31% children aged 11-15 had used “loot boxes”, an example of in game gambling activities (Drummond & Sauer, 2018) and may explain the focus on gaming services for PUI support within the UK.

Since the onset of the Covid-19 pandemic, additional public health concern over PUI resulted in publications of practical recommendations to diminish the risk of its development for individuals (Király et al., 2020b). This guidance has recommendations for general management of wellbeing alongside specific strategies to help prevent PUI development. It recognises mental health challenges as a potential vulnerability for PUI. Additionally, psychological interventions have been evidenced as support for PUI in the UK (Xu et al., 2021), with this typically taking the form of Cognitive Behavioural therapy (CBT) (Malak, 2018). In CBT, an individual with PUI is working on identifying and responding to cognitive distortions, managing emotional responses, and adapting their behavioural responses with the intention of reducing overall time spent online (Kuss & Lopez-Fernandez, 2016). Alternatively, Reality Therapy has been used to target impulsivity and its role in maintaining PUI (Diotaiuti et al., 2022). This aims to support individuals to choose alternative behaviours outside of internet use (Safari et al., 2021). Group and family therapy have been used within child and adolescent populations to support PUI (Chun et al., 2017). These interventions aim to explore the home environment that may be contributing to a person seeking solace in the digital world; improving communication and relationships within the system is the focus in this context (Xu et al., 2021; Yen et al., 2007).

Sports therapy has been proposed, both alongside psychological therapy and alone, and there is provisional evidence of effectiveness for this in both these applications (Thomas et al., 2020). This is suggested to be due to the decreased physical activity in those spending larger amounts of time online (Park et al., 2016). Pharmaceutical interventions have been applied in cases of PUI, with examples including antidepressants, antipsychotics and psychostimulants (Przepiorka et al., 2014). Most commonly used psychotropic drugs are those that are typically used to treat symptoms of depression, ADHD (Cash et al., 2012) and OCD (Bipeta et al., 2015). This is due to the interplay and comorbidities observed between these presentations (Roberts et al., 2022).

Despite the range of psychological support trialled for those struggling with the impacts of PUI, in the UK it does not appear to be routinely explored within an individual’s contact with mental health practitioners (Rifkin-Zybutz et al., 2023). Although it is difficult to estimate the rates at which PUI is discussed within clinical populations, there are recommendations to do so more frequently in child

and adolescent services (Derges et al., 2023). There is not clear evidence of the same push within adult services which may be an explanation for the limited provision available within the UK. Further investigation into the frequency and impact of PUI is needed within adult populations in the UK as well as greater clarity around the rates at which mental health practitioners are inquiring about this within clinical populations.

1.7.1. Summary

With a range of interventions being evidenced to support those struggling with PUI, it is also necessary to better understand any vulnerable groups in its development. If supporting cognitive appraisal and emotion regulation both individually and relationally have been demonstrated to reduce PUI, then greater clarity on those variables could support preventative measures. This is particularly prescient in the context of the Covid-19 pandemic and the unique challenges this presented. In order to facilitate any psychological provision for those struggling with PUI, the extent to which mental health practitioners consider an individual's relationship with the internet needs additional clarity. It would also help identify if there are vulnerable groups for PUI development as a result of existing difficulties with aspects of emotion regulation, compulsivity and impulsivity.

2. Systematic Literature Review (SLR)

2.1. Overview

This chapter presents a systematic literature review (SLR) of the landscape of knowledge surrounding the relationship of problematic usage of the internet (PUI) and emotion regulation (ER) in the context of the Covid-19 pandemic. The synthesis of this knowledge and its implications will inform the rationale for the empirical research study. The aim of the SLR is to form a robust understanding of the existing evidence base in order to better conceptualize, measure and intervene (Shaffril et al., 2021) for those affected by PUI.

2.2. Rationale for Current SLR

Existing literature indicates a relationship between PUI and ER (Koo & Kwon, 2014; Quaglieri et al., 2021; Shahidin et al., 2022). The formation of previously discussed models such as the Internet Addiction Components Model and Compensatory Internet Use model (Kardefelt-Winther, 2014; Kuss et al., 2014) are predicated on this link. A literature search revealed an ongoing pre-registered systematic review (Prospero Registration Number: CRD42023440801) reviewing the link of ER and PUI, however the current SLR presents a different focus of the review based on context.

Covid-19 and its associated lockdowns globally had a vast influence on use of the internet in personal, professional and education environments (Carroll & Conboy, 2020; Mouratidis & Papagiannakis, 2021). It demonstrated marked impact on both time engaged in online activities and on forms of internet use (Gjoneska et al., 2022). There is also evidence that the increased digitalization of daily activities has persisted in many domains despite the ending of Covid-19 restrictions (Polyakova et al., 2024). These changes in our relationship to the internet since the onset of Covid-19 lockdowns need re-examining. The Covid-19 pandemic also presented challenges to the emotion regulation of peoples across the world (Brooks et al., 2020b; Gritsenko et al., 2021), compounded by isolation, illness anxiety, existential threat related to pandemic, and the removal of typical coping strategies due to restrictions (Vindegard & Benros, 2020). This combination of influences was deemed a unique context offering new insights into the relationship between ER and PUI. For this reason the isolation of data gathered within this time can offer opportunity to further understanding of the constructs and their relationship, whilst implications of this knowledge can inform individuals, clinicians and policymakers (Lim, 2024).

2.3. SLR Research Question

The overall question of this SLR investigating the above aims is:

What was the relationship between emotion regulation strategies and problematic internet use during the Covid-19 pandemic?

2.3.1 SLR Sub-questions:

- With the unique emotional and social challenges of the Covid-19 pandemic, are there novel understandings we can gather during this context about ER and PUI?
- With the unprecedented exposure to increased internet use across populations in the pandemic, what is the role of ER in the transformation of this increased usage to PUI and vice versa?
- Is the relationship between ER and PUI consistent in the Covid-19 pandemic or does it vary between specific ER strategies?

2.4. SLR Methodology

2.4.1. Protocol and Registration

Prior to completing the systematic search or screening, the SLR protocol was pre-registered on Prospero (Registration number: CRD42024577937) on 8th October 2024. The SLR was reported in accordance with the updated “Preferred Reporting Guidelines for Systematic Reviews and Meta-Analyses” (PRISMA) (Page et al., 2021).

2.4.2. Protocol Deviations

Two deviations from the original protocol were made during the SLR process. Firstly, the wording of the sub-questions was changed to better address the focus of the project surrounding the main research question. The framing of the questions were adapted across the SLR process but the underlying substance and focus remain unchanged. Additionally, the SLR synthesis method was originally planned to be using Synthesis without Meta-analysis (SWiM) but this was substituted for narrative synthesis approach, based on Popay et al (2006) guidance, as this was deemed most appropriate to serve the aims of the SLR.

2.4.3. Search Strategy

A systematic search was conducted on Scopus, MEDLINE, and CINAHL Plus. Scopus was selected due to the interdisciplinary database offering content covering health, life and social sciences. MEDLINE was included to capture the breadth of health, biomedical literature and social science journals. CINAHL PLUS provides a source of information from allied health fields relevant to the subject.

Date restrictions were applied to the searches due to the focus on the impact of the Covid-19 pandemic. The dates were selected with database search filters, from January 2020- December 2024 inclusive and would be later restricted with further inclusion and exclusion criteria, shown in Table 1.

This time period was selected to account for the variations across the globe of when the pandemic and related restrictions finished (Sarker et al., 2023), a key contextual factor within the review questions, as well as allowing time for publication delays. Studies' inclusion dates were January 2020, when restrictions were first introduced, and up to May 2023, where the WHO declared the end of the global health crisis. The search was limited to those written in English and those that were peer-reviewed.

Table 1

Inclusion and Exclusion Criteria

	Inclusion	Exclusion
Population	Male and/or female and/or non-binary samples Populations with evidence of PUI Populations from any country	Populations under 18 years old
Intervention/Exposure	Studies about ER and PUI Studies that identify a specific form of these concepts	Studies unrelated to PUI or ER Studies related to only PUI or ER but not their association
Comparator/Context	Studies that collected data during the pandemic as defined by WHO (January 2020- May 5th 2023 inclusive) Studies that were published outside the defined date as long as data was collected within it	Studies prior to the onset of Covid-19 Studies that are using data collected outside of the pandemic timeframe
Outcome	Studies that offer insight into the relationship between emotion regulation and problematic internet use or specific forms of these	Studies with no reference or measure for problematic internet use

2.4.4. PUI Definition

PUI research has had challenges reaching a consensus conceptualisation. This review is using the umbrella definition agreed by the EU-PUI (Fineberg et al., 2018). PUI involves the wide array of excessive internet usage and it is characterised by persistent patterns of internet use. These patterns involve impaired control with starting, stopping, frequency or duration. It is further characterised in priority being given to this activity over other activities such as school, work, and nutrition. It also involves persistence or escalation of activities despite the negative consequences to domains of an individual's life (Fineberg et al., 2022; Stein et al., 2021). PUI covers a range of internet behaviours including gaming, gambling, social media use, shopping, streaming, pornography,

cyberhoarding and cyberchondria. Eligible studies would need to align with this definition and distinguish problematic use, not solely explore internet behaviours.

2.4.5. Emotion Regulation Definition

Across the literature a variety of definitions are applied for ER (Tull & Aldao, 2015). A consensus agreed definition is therefore not possible. For the purposes of this review, ER is defined as processes responsible for monitoring, evaluating, and modifying emotional reactions, especially in their intensity, onset and duration, to a manner that is socially tolerable and sufficiently flexible to accomplish one's goals (Thompson, 1994). These processes can be intrinsic, where it is managed internally, and extrinsic where ER is in relation to objects and others external to the individual. Similarly to PUI, the ER definition chosen has been used as an umbrella term to articulate the breadth of manifestations of monitoring, evaluating and modifying emotional reactions. Currently there is no consensus driven or empirically validated taxonomy of all specific strategies of ER (Koole, 2009), however literature on ER has been organised in a dual classification of targets and functions within Koole's integrative review of ER literature. Targets are the emotion-generating systems, whilst functions include satisfying hedonic needs, supporting specific goal pursuits and facilitating systems of personality traits. Eligible studies are those that meet the given ER definition directly or by offering a specific strategy of emotional monitoring and/or modification that adequately aligns with this definition and Koole's dual classification.

The umbrella term approach to PUI and ER aligns with the post-positivist stance of the research study. It recognises the inevitable constraints of our observations of reality (in this case PUI and ER) and the imperfect nature of the subsequent knowledge constructed.

2.4.6. Search Terms

A systemic search was conducted on Scopus, MEDLINE, and CINAHL Plus, accessed via the University of Hertfordshire. There were restrictions on data collection date, as outlined above, and the search was limited to the English language. The search terms were aligned with four main concepts and framed in the PICO search planning tool (see Table 2) (Eriksen & Frandsen, 2018). Although ER is listed under Outcome in this tool, it is not assumed to be the direction of effect and is a limitation of this structure. The search terms were iterated upon after scoping of existing literature and the terms used within these. This was done to refine terms to ensure relevant studies were included in the systematic search. "Well-being" variations were a resulting inclusion from this iteration but were filtered within study selection to ensure the inclusion criteria were appropriately met. With PUI being an evolving area of study, so too is the terminology used so variations were included. The initial search of databases took place on 9th October 2024.

Table 2*PICO Searching Tool*

	Search Terms
Population	Adult* OR student* OR worker
Intervention/Activity	“problematic internet use” OR “problematic usage of internet” OR “internet addiction” OR “problematic smartphone use” “internet dependency”
Comparison/Context	Covid* OR Covid-19 OR corona* OR pandemic
Outcome	“emotion regulation” OR “emotion dysregulation” OR “well being” OR “well-being” OR mental*

2.4.7. Study Selection

Search results were downloaded into Covidence, a reference management software. Duplicate results were removed and the researcher independently screened the studies in accordance with inclusion and exclusion criteria. The primary supervisor then reviewed relevant aspects of these selected studies with the researcher for alignment with selection criteria. Any conflicts were resolved via consensus and selected studies underwent full data extraction.

2.4.8. Search Process

The identification, screening, and selection of papers are displayed in the PRISMA flowchart in Figure 1 (Page et al., 2021).

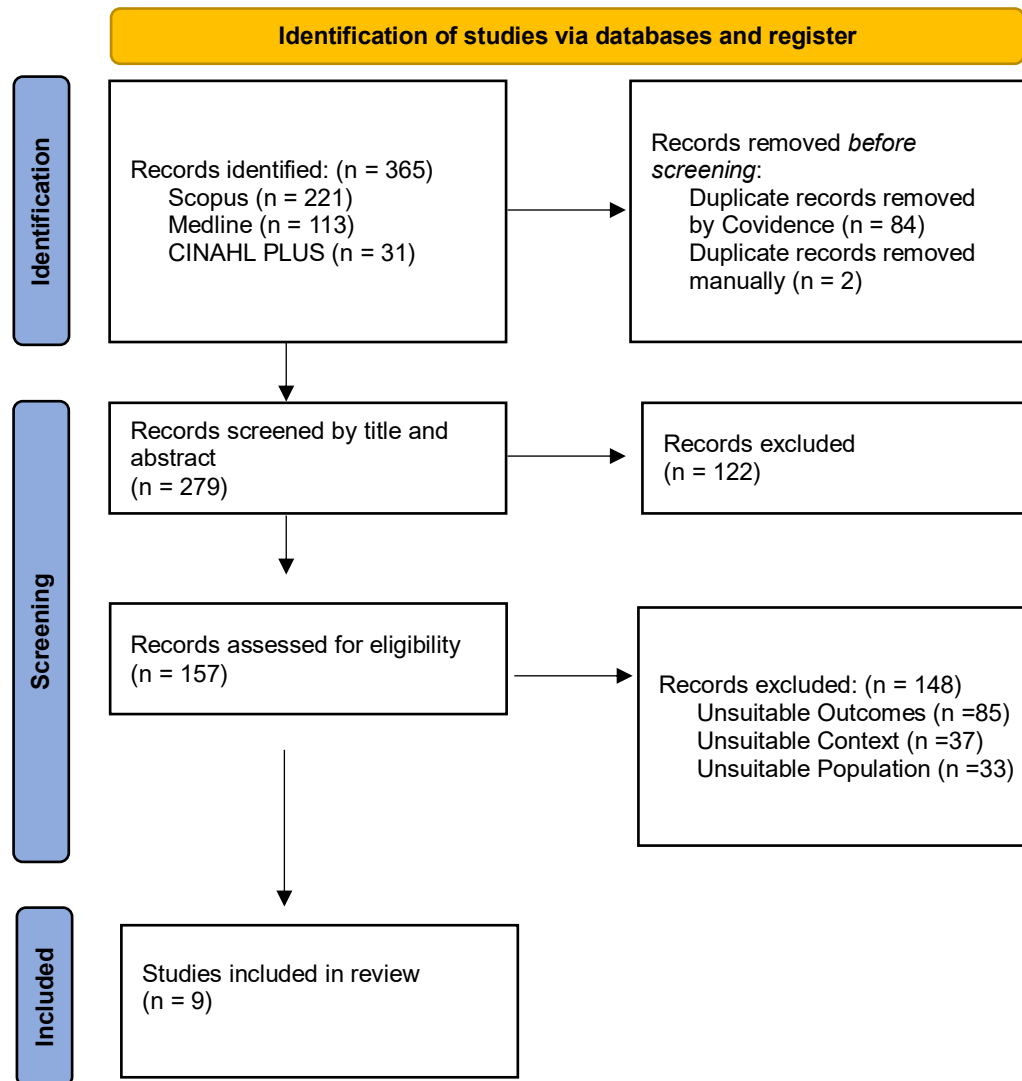


Figure 1

PRISMA Flow Chart for Study Selection

2.4.9 Synthesis Approach

The synthesis approach employed within the SLR is a narrative methodology. This used Popay et al (2006) guidance to provide structure and involved clustering findings from the eligible studies. The rationale for this clustering began methodologically with identifying those studies measuring overall ER capacity and those measuring a specific form of ER strategy, as outlined in the study ER definition. Clustering into these methodological groups then allows for reviewing the relationships between study variables in each study and tallying those with similar findings. This tallying identifies the most common observed trends in relationships with ER and PUI constructs. Themes that had more than 2 votes were included in the wider synthesis process and underwent further exploring of the relationships, as per Popay et al (2006) guidance. This was determined due to it meeting the threshold of being observed across eligible studies. Further outline of this process is detailed in section 2.6.1 and 2.6.2.

2.5. SLR Results

2.5.1. Data Extraction

Following the screening process, nine papers were identified as meeting eligibility criteria and these were selected for inclusion (see Table 3). This was a lower total than expected but was understood in the context of the limited timeframe the review question was exploring. The Covid-19 pandemic context is a significant limit to studies eligible. The screening process also had a recurring theme of studies comparing an emotion measure to PUI rather than a measure of ER; these were excluded from the final review. No further studies outside the specified search process were included within the review. The included studies underwent quality assessment and then data extraction. Data extraction was completed by the researcher and the outputs were reviewed by the primary supervisor. The researcher then completed the quality assessment and the outputs were reviewed by the primary supervisor.

Table 3*Data Extraction Table*

Study Number	Authors	Aim	Method	Measures of PUI & ER	Results	Conclusions	Strengths	Limitations
1	Yildiz, M. A., & Uslu, O. (2023).	To investigate the mediation of ER strategies on internet addiction and life satisfaction during the Covid-19 pandemic.	Cross-sectional; Online surveys. N = 357 (72% female, 18+ years old)	Young's Internet Addiction Scale (YIAS) – measure of general PUI. Emotion Regulation Scale (ERS) - This is direct measure of ER ability that also identifies specific strategies.	Positive significant relationship between PUI and Suppression (as a form of ER) ($r = .20, p < .01$). No significant relationship between Reappraisal (as form of ER) and PUI ($r = -.06, p > .05$). Negative relationship between suppression and life satisfaction ($r = .22, p < .01$). No relationship between reappraisal and suppression ($r = .09, p > .05$)	There is a significant positive relationship between suppression and PUI. As internet addiction levels in individuals increase, their life satisfaction levels are reduced through suppression as an emotion regulation strategy. Reappraisal as emotion regulation does positively impact life satisfaction, but is not a moderating factor between PUI and life satisfaction. Suggests reappraisal is not form of ER used to manage within those affected by PUI.	Not reported on.	Difficulty generalising conclusions due to demographic profile of sample. Extraneous variable identified as presence of psychiatric diagnosis. Data gathered is limited to a cross-sectional timeframe.
2	Cheng & Lau (2022)	To examine associations between social media addiction, relatedness needs and psychosocial problems	Cross-sectional; Online surveys. N = 1048 (US & UK, Aged 18-65, 46% men)	Bergen Social Media Addiction Scale (BSMAS) – measure of problematic social media use Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) - Relatedness needs are the specific	There was a significant positive relationship between relatedness need frustration and this form of PUI ($r = -0.70, p < 0.001$) There was a significant positive relationship between social media addiction and the two types of psychosocial problems ($r = 0.35, p <$	Supports idea that relatedness needs is a model of motivation for PUI behaviours in context of Covid-19. This supports claim that the pandemic restrictions offer increased dependence on online forms for relatedness needs but weak association with satisfying those needs	Not reported on.	Sample drawn from UK and US both with individualist cultures and this limits generalisability to wider and culturally diverse regions. Other psychological needs not accounted for may influence relationship of ER and PUI.

				extrinsic strategy for monitoring and managing emotions.	0.001 & $r = 0.21$, $p < 0.001$). Psychosocial associations were significantly strong enough to partly explain the significant positive associations between relatedness need frustration and the two types of psychosocial problems.	thus increasing psychosocial challenges.		Study cannot specify cognitive mechanism associated with ER and PUI due to self-report data gathered. Cross-sectional data at single time point unable to produce causal links.
3	Çimşir & Akdoğan (2024).	To investigate if inferiority feelings are associated with internet addiction through emotion regulation. Further aim was to determine if internet use in young adults had changed within the pandemic.	Cross-sectional; Online surveys. N= 443 (Turkey, university students; 18-28 years old)	Young's Addiction Scale (YIAS) – Measure of generalised PUI Difficulties in Regulation of Emotions Scale (DERS-16) - Direct measure of ER ability.	Inferiority feelings significantly predict difficulties in regulating emotions ($\beta=0.60$, $p<0.001$), Model of inferiority feelings combined with emotional dysregulation as a mediator explains 49% ($F [3-439]=46.48$, $p<0.001$) of the total variance in internet addiction, which was 46% ($F [2-440]=59.56$, $p<0.001$) with no mediator in the model Participants (89.4%) reported an increase in recreational Internet use during the pandemic, average daily increase of 2.58 hours.	The findings support that inferiority feelings are associated with a greater level of internet addiction both directly and indirectly through lower ability to regulate emotions. This suggests those with lower ER have increased PUI during the pandemic to modify existing inferiority feelings (present across diagnosis).	Not reported on	Accuracy could have been increased using Structural Equation Modelling that better account for measurement error. Social desirability may influence self-report data gathered. Demographic breakdown of sample make wider generalisations problematic. Cross-sectional design produce correlational evidence that cannot guarantee causal relationship built into specific mediation model.
4	Kang et al (2023)	To investigate internet	Cross-sectional;	Adult Internet Addiction Self-	PUI showed positive relationship with	Influence of Covid-19 may represent unique	Not reported on.	Traceable longitudinal data

		dependence and its influence on anger regulation.	Online surveys. N= 762 (South Korean, 50.35% male, 20-39 years old)	Diagnosis Simple Scale (KS-A) – Measure of generalised PUI. Behavioural Anger Response Questionnaire (K-BARQ) -Anger regulation is a specific form of an attempt to modify emotional reactions.	dysfunctional anger ($r = 0.318, p < 0.000$) Experience of negative emotion was found to be statistically significant moderator of positive relationship between PUI and dysfunctional anger response.	challenge of negative emotion, this may be amplifying relationship between PUI and emotion regulation (in this case anger response).		was required due to causal relationship being investigated via cross-sectional design. Study was limited to young adults, it is possible that there are generational differences. The study fails to provide a focus on gender differences.
5	Kavaklı et al. (2024)	To understand the influence of happiness and anger through emotion regulation and its influence on internet addiction during Covid-19 pandemic.	Cross-sectional; Online surveys. N= 324 (Turkey, University Students, 18-50 years old, 78.8% female)	Young's Internet Addiction Test (YIAS) - Measure of generalised PUI Difficulties in Emotion Regulation (DERS-16) - Direct measure of ER abilities.	Internet addiction was negatively related to happiness ($a = -0.26, p < .001$). This relationship was mediated by difficulties with ER (standardised indirect effect: $-.19, 95\% \text{ CI } [-.159, -.070]$). PUI was positively relationship with aggression ($a = 0.17, p < .01$), this was fully mediated by ER (standardised indirect effect: $.07, 95\% \text{ CI } [.008, .294]$).	PUI is negatively related to happiness and positively related to aggression and difficulties in ER. ER fully mediated relationship between PUI and aggression or happiness. ER directly associated with PUI and indirectly as is moderating factor in the psychological challenges of the pandemic (aggression).	Not reported on.	Unbalanced gender representation limits generalisability of findings. Correlational study design prevents identification of cause-effect relationship. Inability to differentiate between which contents of internet use may offer more robust findings.
6	Moniri et al. (2022)	To investigate the role of anxiety, fear of Covid-19 with internet addiction and	Cross-sectional; Online surveys. N= 1008 (Iran,	Young's Internet Addiction Scale (YIAS) - Measure of generalised PUI	The results shows that anxiety and fear of Covid-19 has a positive and significant relationship with both Internet addiction ($r = 0.32$) and	Self-compassion can act as a protective role against PUI within the pressures of the Covid-19 pandemic.	Not reported on.	Study performed on a student population and this impacts generalising results.

		the mediating role of self-compassion and emotion regulation.	University students)	Cognitive Emotion Regulation Questionnaire (CERQ) - Direct measure of intrinsic processes involved in monitoring and modifying emotion responses.	maladaptive cognitive emotion regulation strategies ($r = 0.17$), and it has a negative relationship with self-compassion ($r = -0.25$).	Maladaptive emotion regulation strategies are risk factors for PUI.		Data collection occurred online by convenience sampling which may bias results.
7	Montag et al. (2024)	To investigate links between internet use disorder, wellbeing, and the impact of Covid-19 on this.	Cross-sectional; Online surveys. N= 2498 (Germany, 50.8% female, 18-67 years old)	Compulsive Internet Use Scale (CIUS) – Measure of generalised PUI. Satisfaction with Life Scale (SWLS); Sofalising Scale - Measure of 'sofalising' is considered an extrinsic strategy for monitoring and modifying emotions.	Study variables (CIUS, SWLS, Sofalising) are robustly associated with each other. The first mediation model indicated the association between PUI and reduced wellbeing was partially mediated by Online Displacement (preferring online over offline contacts) ($\beta = -0.086$, Boot SE = 0.010, BCa 95% CI = $-0.107 - -0.065$) and social compensation ($\beta = 0.044$, Boot SE = 0.011, BCa 95% CI = 0.024–0.065). The second mediation model suggested that the increase in internet use during Covid-19 pandemic increased problematic usage.	The relationship between PUI and Wellbeing is more dynamic in the mediating roles of facets of sofalising. PUI has a negative effect on well-being and fully mediates the relationship between increased usage of the Internet due to Covid-19 and challenges presented to ER.	Not reported on.	Self-report data gathered may be subject to social desirability bias. Cross-sectional study design prevents any causal relationships being drawn. No differentiation between different online activities, changes to PUI may be more present in specific forms.
8	Wei (2024)	To investigate the relationship between self-	Cross-sectional; Online surveys.	Bergen Social Media Addiction (SMA) Scale - measure of problematic	Higher levels of positive self-compassion were found to buffer the effects of Smartphone Addiction	The study indicates that low capacity for self-compassion is a risk	Study offers valuable insights into practical interventions for PUI in college students.	Research population is limited to college students.

		compassion and internet addiction and understand the mediating role of gratitude in this.	N= 1131 (University Students in China, 54.15 female, mean age of 19.33)	smartphone/ social media use Self-Compassion Scale (SCS); Gratitude Questionnaire (GQ) – measures of a specific intrinsic strategy for monitoring and/or modifying emotional reactions.	(SMA), while greater levels of negative self-compassion were linked to a heightened risk of developing SMA. The study also highlighted that gratitude partially mediated the relationship between self-compassion and SMA. Specifically, positive self-compassion can alleviate SMA symptoms by fostering greater gratitude, whereas negative self-compassion may exacerbate these symptoms by reducing feelings of gratitude.	factor for developing and exacerbating PUI. The findings suggest clinical implications for building self-compassion and gratitude strategies as valuable forms of ER to support PUI in University students.		Cross sectional nature of study does not permit inference of causality. Reliance on self-reported questionnaires introduces a degree of subjectivity.
9	Jouhki et al. (2022)	To investigate if escapism predicts excessive online gambling, gaming or internet use over time during Covid-19 pandemic.	Cohort study; online surveys at 3 time points during pandemic (6-month intervals) N = 1022 (Finnish, 51% male, 18-75 years old)	Compulsive internet Use Scale (CIUS) – Measure of generalised PUI Motivation to Play in Online Games- Revised (MTPI-R) - Escapism is a form of extrinsic process of modifying emotional reactions.	Escapism had strong within-person effects on excessive gambling, $B = 0.18$, $p = 0.003$; excessive gaming, $B = 0.50$, $p < 0.001$; and excessive internet use, $B = 0.77$, $p < 0.001$ over time The between-person effect of escapism was demonstrated on excessive gaming $B = 0.91$, $p < 0.001$, and excessive internet use $B = 0.61$, $p = 0.036$.	The study suggests escapism is the method of ER that facilitates increase in PUI during societal events such as Covid-19 pandemic. Increasing escapism experienced by the respondents led to higher levels of all studied excessive online behaviours. PUI is the latest form of escapism from worries of Covid-19. Results emphasised the role of	Longitudinal design offers unique insight during Covid-19 restrictions that support contribution of this research. Use of hybrid bra models allows for examining within-person and between-person effects.	Singular location of data collection mean conclusions of adaptation to adverse social circumstances may vary across countries. Escapism measure was in context of gambling and gaming and not directly in PUI.

						changing external circumstances as a driver for escapism. Suggests support for other forms of ER to avoid PUI.		
--	--	--	--	--	--	--	--	--

2.5.2. Study Characteristics

Eight studies used a cross-sectional methodology. This was likely due to the study aims researching the prevalence and association of health outcomes with PUI (Kesmodel, 2018). This study design was also likely more common due to the capacity to investigate multiple outcomes and exposures collected at one point within the pandemic (Wang & Cheng, 2020). One study (Jouhki et al., 2022) adopted a longitudinal cohort design and this is considered to offer unique insights into the health outcomes of a group over time (X. Wang & Kattan, 2020). Sample sizes among eligible studies ranged from 324-2498 (Kavaklı et al., 2024; Montag et al., 2024) and ages ranged from 18-75 years old (Jouhki et al., 2022). Female presence in samples ranged from 49%-78.8% (Jouhki et al., 2022; Kavaklı et al., 2024).

The locations where research took place varied; Turkey was most frequent with three eligible studies (Çimşir & Akdoğan, 2024; Kavaklı et al., 2024; Yıldız & Uslu, 2023;). Other locations included US/UK (Cheng & Lau, 2022), South Korea (Kang et al., 2023), Finland (Jouhki et al., 2022), China (Wei, 2024), Germany (Montag et al., 2024) and Iran (Moniri et al., 2022). Measures used across the studies varied greatly but all were self-report measures. The most common measure for PUI was Young's Internet Addiction Test, with four studies using this (Çimşir & Akdoğan, 2024; Kavaklı et al., 2024; Moniri et al., 2022; Yıldız & Uslu, 2023). Additional common measures included the Bergen Social Media Addiction Scale and the Compulsive Internet Use Scale (Cheng & Lau, 2022; Jouhki et al., 2022; Montag et al., 2024; Wei, 2024).

The measures for the types of emotion regulation also varied among the eligible studies. The Emotion Regulation Scale (Yıldız & Uslu, 2023), Difficulties in Regulation of Emotions Scale (Çimşir & Akdoğan, 2024) and Cognitive Emotion Regulation Questionnaire (Moniri et al., 2022) were all used as general measures of ER. Alternatively, specific intrinsic and extrinsic strategies of ER were measured using scales such as the Socializing Scale (Montag et al., 2024) and the Behavioural Anger Response Questionnaire (Kang et al., 2023). The Self-Compassion Scale was used in tandem with the Gratitude Questionnaire (Wei, 2024). Four studies used a measure of general ER capacity within the sample (Çimşir & Akdoğan, 2024; Kavaklı et al., 2024; Moniri et al., 2022; Yıldız & Uslu, 2023), whereas the other 5 studies employed a measure of a specific ER strategy (Cheng & Lau, 2022; Jouhki et al., 2022; Kang et al., 2023; Montag et al., 2024; Wei, 2024).

2.5.3. Method of Quality Appraisal

The quality assessment of the studies was completed and the outputs reviewed by the primary supervisor. It used the Critical Appraisal Skills Programme (CASP) Cross-sectional and Cohort Studies Checklists. These checklists were chosen to offer a systematic approach to assessing methodological

rigour, validity of findings, and transparency of studies (Kesmodel, 2018). It is a crucial step in the synthesis of an evidence base within health and wellbeing (Dang et al., 2021). The appropriate CASP checklists were selected due to the designs of the eligible studies being cross-sectional and cohort in nature. The results of this appraisal can be seen in Tables 4 and 5.

Table 4*Critical Appraisal Skills Programme (CASP) Cross-sectional Checklist*

Study Number	Did the study address a clearly focused issue?	Did the authors use an appropriate method to answer their question?	Were the subjects recruited in an acceptable Way?	Were the measures accurately measured to reduce bias?	Were the data collected in a way that addressed the research issue?	Did the study have enough participants to minimise the play of chance?	How are the results presented and what is the main result?	Was the data analysis sufficiently rigorous?	Is there a clear statement of findings?	Can the results be applied to the local population?	How valuable is the research?
1	✓	✓	✓	✓	✓	?	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓	?	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
4	✓	✓	✓	✓	✓	?	✓	✓	✓	X	✓
5	✓	✓	✓	✓	✓	?	✓	✓	✓	X	✓
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	?
7	✓	✓	✓	X	✓	✓	✓	✓	✓	?	✓
8	✓	✓	✓	?	✓	?	✓	✓	✓	X	✓

Key:

✓ Criteria met

? Cannot tell/ not stated

X Criteria not met

Table 5*Critical Appraisal Skills Programme (CASP) Cohort Studies Checklist*

Study Number	Did the study address a clearly focused issue?	Was the cohort recruited in an acceptable way?	Was the exposure accurately measured to minimise bias?	Was the outcome accurately measured to minimise bias?	Have the authors identified all important confounding factors?	Have they taken account of the confounding factors in the design and/or analysis?	Was the follow up of subjects complete enough?	Was the follow up of subjects long enough?	What are the results of this study	How precise are the results?	Do you believe the results?	Can the results be applied to the local population?	Do the results of this study fit with other available evidence?
9	✓	✓	?	✓	✓	✓	✓	✓	See Table 3	✓	✓	✓	✓

Key:

✓ Criteria met

? Cannot tell/ not stated

X Criteria not met

2.5.4. Quality Appraisal of Studies

All of 9 studies, none met all criteria of the CASP checklists. Eligible studies were strong in recruitment, measures and aims, with only one study not meeting these criteria (Jouhki et al., 2022). Overall, the weakest areas evident in Table 4 and 5 are participant power, where there was limited reporting of the number of participants needed to sufficiently power analysis, and application of results to local population. Although the overall strength of included studies is demonstrated in most studies meeting all but 2 components, there are additional methodological considerations to be aware of in the synthesis of findings.

One limitation of the cross-sectional study designs used is the inability to offer causal links (Capili, 2021), which was evident across the included studies and therefore limited the interpretation of findings. Whilst the identified associations between health outcomes offers valuable insights into PUI, in isolation the conclusions remain hypotheses for further study (Wang & Cheng, 2020).

The eligible studies demonstrate a common difficulty with a reliance on convenience sampling in research practice (Novielli et al., 2023). All studies employed convenience sampling through online survey distribution. Although convenience sampling aids cost and time constraints it suffers risk of sampling bias (Haslam et al., 2024). This impacted the ability to apply findings within wider populations (Mweshi & Sakyi, 2020) and was demonstrated in the CASP checklist. An additional methodological consideration across eligible studies was the delivery of surveys in online formats, as all nine studies did. Delivering these measures online may introduce sample bias (Alessi & Martin, 2010). Within eligible studies, the context of this bias could be on rates of occurrence of PUI as it limits the sample to those with regular access to the internet. This selected for sample may represent a highly likelihood of PUI as a result.

The convenience sampling evident in all studies may also have contributed to the demographic make-up of the samples as well as limiting the ability to extrapolate findings (Emerson, 2021; Novielli et al., 2023). Four studies consisted solely of university students (Çimşir & Akdoğan, 2024; Kavaklı et al., 2024; Moniri et al 2022; Wei, 2024). Wei (2024) had students from three universities, the other three studies included students from only one location (Çimşir & Akdoğan, 2024; Kavaklı et al., 2024; Moniri et al 2022). Whilst Wei (2024) acknowledges this limitation within the study and presents conclusions as applicable to student populations, Moniri et al (2022) did not isolate conclusions to this group and applied them to wider populations. There were exceptions to this with Montag et al (2024), Jouhki et al (2022) and Cheng & Lau (2022) offering more diverse samples in age, occupation, and geographic factors. Furthermore, only one study provided a power calculation

to determine whether study sample sizes were sufficient for statistical analysis (Çimşir & Akdoğan, 2024). Moniri et al (2022) utilised Kerlinger's (1982) research on multivariate regression as an alternate benchmark and achieved this. It is best practice to report power calculations for full transparency for readers (Lakens, 2022).

With the exception of Montag et al (2023), all studies reported validation of their PUI measures, with Moniri et al (2022) specifying validation within Iran, the country where the study took place. Montag et al (2024) used a non-validated measure of internet usage but this was separate to the PUI measure used which was validated. Wei (2024) did not provide a clear statement of a validated measure however there was statistical evidence provided of no significant common method bias. Evidencing the absence of this bias removes its distortion of relationships between variables, therefore not contributing to measurement error. Agreement on the conceptualisation and subsequent measure of PUI is evolving (Fineberg et al., 2022) and the variance in the eligible studies reflects this. Wider consensus and specificity on types of internet use may need to be factored in within future research on the topic (Ioannidis et al., 2018b). There is an argument that combining scales is often used in analyses of psychological constructs where there are concerns that individual scales are too narrow to accurately capture concepts (McClure et al., 2024; McCrae, 2015).

Measuring capacity for emotion regulation as well as specific forms of ER are acknowledged to be heavily influenced contextually by culture (Matthews et al., 2021). This may reflect in the array of scales or specific forms of ER selected to be explored within eligible studies. The methodological choice to focus on ER capacity was consistent across all three studies carried out in Turkey and may also be evidence of the contextual influence of ER strategy choice.

2.6. SLR Synthesis

2.6.1. Method of Synthesis

With a lack of consistency of measures used for types of PUI and ER across the eligible studies, meta-analysis was not deemed appropriate (Popay et al., 2006). High levels of conceptual heterogeneity in forms of PUI and ER meant that combining standard effect sizes was inappropriate (Ruppar, 2020). A narrative synthesis was instead used to generate review findings using guidance by Popay et al (2006). This structure offers a process of four elements but does not mandate a sequence of its completion:

- Developing a preliminary synthesis of findings of included studies
- Exploring relationships in the data

- Developing a theory of how the relationship works
- Assessing the robustness of the synthesis

Popay et al (2006) specify that the process of these elements does not need to proceed in a linear fashion and they are revisited in an iterative manner. In the interest of transparency, this synthesis, like others adopting Popay's et al (2006) structure (Pugh et al., 2021), did not see it appropriate to develop a theory of how these relationships work. This was due to the development of theory being outside the scope of this SLR. Instead the element of exploring the relationships in the data was seen as a step that could contribute towards theory development.

2.6.2. Developing a Preliminary Synthesis of Findings

The associations and moderating influences of study variables within studies were extracted and listed in Table 3, aligning with Popay et al.'s (2006) tool of textual descriptions of studies. The process of the preliminary synthesis then continued using Popay et al.'s (2006) suggested tool of clustering and tallying. The groupings applied were methodologically based and involved clustering those studies that examined ER capacity and those that investigated a specific form of ER. Findings in each grouping were listed and tallied in their occurrence. This allowed the identification of recurring patterns across the studies that were present in relation to the review question. This preliminary synthesis generated findings across the eligible literature and are shown in Table 6.

Table 6

The Relationships Identified from SLR Synthesis

Synthesis Number	Relationship Identified
1	ER capacity moderated the relationship between PUI and quality of life during the Covid-19 pandemic.
2	Adoption of specific ER strategies were associated with higher or lower PUI occurrence during the Covid-19 pandemic.
3	ER capacity moderated the significant relationship between negative emotional experiences and PUI during the Covid-19 pandemic.
4	Internet use as an interpersonal ER strategy was associated with increased PUI presence during the Covid-19 pandemic but showed weak associations for meeting social needs.

2.6.3. Exploring the Relationships in the Data

The exploration of relationships element was guided by Popay et al.'s (2006) tool of concept mapping. This consisted of expanding on the associations in the preliminary synthesis but also producing visual representations of the relationships being explored. These aim to offer possible models by which the phenomena may be better understood, contributing towards theory development.

2.6.4. Synthesis Relationship 1

ER capacity moderated the relationship between PUI and quality of life during the Covid-19 pandemic, as shown in Figure 2. This relationship generated from the synthesis suggests that negative health outcomes associated with PUI continued in the pandemic, but that the impairment was significantly moderated by an individual's selection and implementation of ER strategies. Evidence for this theme was observed within mediation models using bootstrapped samples as well as within multiple regression analysis of PUI, ER strategies and quality of life measures (Montag et al., 2024; Yıldız,& Uslu, 2023). This suggests the relationship is more dynamic than simply that Covid-19 increased negative outcomes for individuals with PUI. Additional consideration is needed for the moderating effect ER strategies have for PUI health outcomes in the context of Covid-19.

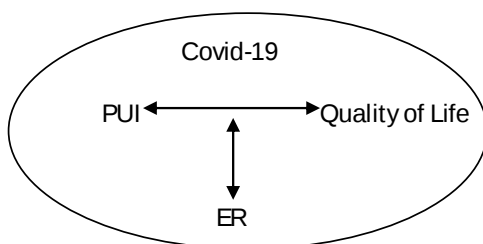


Figure 2

Visual of Synthesis Relationship 1

2.6.5. Synthesis Relationship 2

Presence of specific ER strategies was associated with higher or lower PUI occurrence during Covid-19 pandemic, as shown in Figure 3. This synthesis suggests that the relationship between ER and PUI differs depending on the specific ER strategies used. Positive associations occurred for PUI with escapism, suppression and relatedness needs frustration (Jouhki et al. 2022; Wei, 2024; Yıldız,& Uslu, 2023). This is supported by the rates of escapism as a form of ER increasing over time within the Covid-19 pandemic (Jouhki et al. 2022). In contrast, negative associations with PUI rates were found with self-compassion and gratitude as ER strategies (Moniri et al, 2024; Wei, 2024). These studies identified specific ER strategies that are significantly predicting PUI both positively and negatively depending on the specific strategy employed. This suggests that variations in functions and targets

of ER, as defined by Koole (2009), may influence likelihood of PUI development. This relationship could better inform psychological interventions.

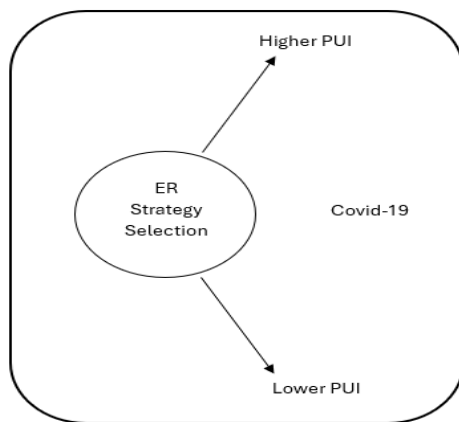


Figure 3

Visual of Synthesis Relationship 2

2.6.6. Synthesis Relationship 3

ER capacity moderated the significant relationship between negative emotional experiences and PUI during the Covid-19 pandemic (Kang et al, 2023; Kavaklı et al, 2024; Moniri et al, 2022), as shown in Figure 4. This theme suggests that existing negative emotional experiences and those initiated during the pandemic were associated with increases in PUI, however this relationship was moderated by an individual's measure of ER capacity. Direct evidence for this theme was demonstrated in the significant relationship between PUI and happiness ($a = -0.26, p < .001$) and PUI and aggression ($a = 0.17, p < .01$), being fully mediated by difficulties with ER (Kavaklı et al, 2024). This was further evident in specific Covid-19 anxiety levels moderating the relationship between PUI and ER (Moniri et al, 2022), suggesting that the pandemic offered unique existential fears influencing PUI rates.

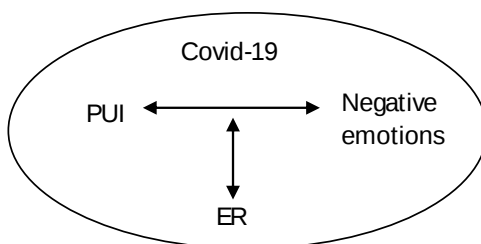


Figure 4

Visual of Synthesis Relationship 3

2.6.7. Synthesis Relationship 4

Internet use as an interpersonal ER strategy was associated with increased PUI presence during the Covid-19 pandemic but showed weak associations for meeting social needs (Cheng & Lau, 2022;

Jouhki et al, 2022; Montag et al, 2024), as shown in Figure 5. Relational ER needs were positively related to increased PUI, and in the context of Covid-19 restrictions these needs were replaced with online forms of communication and connection (Cheng & Lau, 2022). This online substitution had weak evidence of satisfying these needs (Montag et al (2024), which could explain excessive usage and development of PUI.

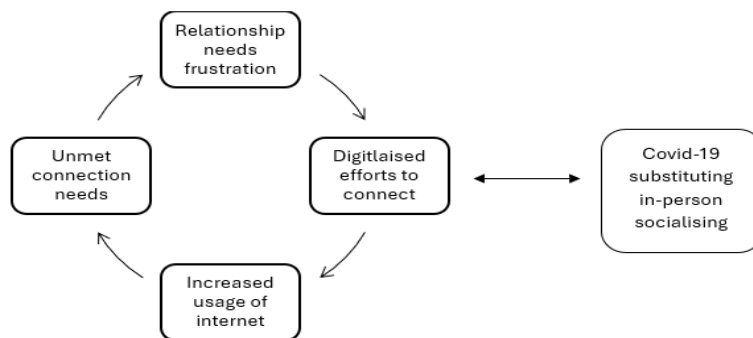


Figure 5

Visual of Synthesis Relationship 4

2.6.8. Assessing the Robustness of the Synthesis

In Popay et al.'s (2006) guidance, reflecting critically on the synthesis process is essential and should include consideration of both the quality of evidence used from eligible studies as well as limitations in the methodology of the synthesis itself.

A key part to assessing the robustness is reviewing the methodological quality of the included studies, and this critical appraisal is displayed in Tables 4 and 5. A number of considerations arise for the synthesis based on the quality of these studies. The lack of representativeness of samples impacts the generalisability of findings and cross-sectional designs produce associations that are correlational and not causal in nature. This is not to say associations are non-informative and can indeed have wider clinical and theoretical implications. The psychometric validity of measures used supports confidence in synthesised relationships. The critical appraisal, as part of the preliminary synthesis, was completed and the outputs reviewed with the primary supervisor to ensure adherence to Popay et al's (2006) structure.

The synthesis process can also be evaluated in regards to the tools used within the narrative synthesis as advised in the critical reflections tool in Popay et al's (2006) guidance. One limitation within the synthesis process was the use of tallying as it offers equal weight to findings across studies that may each hold differing statistical weight. The equally distributed unit of tallying neglects to consider the statistical strength of any given association when comparing eligible studies. This

approach may also prove challenging in the presence of oppositional findings, however this was not the case within this review. The value of the synthesis can further be demonstrated in its implications and contributions to the understanding of PUI and ER. These contributions must be held with the consideration that, as shown in Table 3, only one eligible study collected data from the UK (Cheng & Lau, 2022). This also reflected in the Critical appraisal checklists in Table 4 and results in limits to the application of this knowledge in more local populations.

2.6.9. Synthesis Conclusion

The unprecedented pressures of the Covid-19 pandemic have resulted in unique insights into the relationship between ER and PUI, as it presented particular social and emotional challenges and impeded individuals' typical ER strategies. These insights were observed in direct positive correlations between difficulties with ER and PUI occurrence. ER capacity also had an indirect influence in moderating the relationship between PUI and other study variables (quality of life, negative emotional experiences, fear of Covid-19). These findings have a number of clinical and research implications.

2.7. SLR Discussion

2.7.1. Clinical Implications

Research identifies a relationship between ER and PUI rates of occurrence. This association may indicate that those with difficulties in ER are more at risk of PUI, or that those with PUI are more likely to have challenges with ER. The role PUI may play in individuals' mental health is something that needs further clarity. Those more reliant on ER strategies such as suppression and online displacement of relatedness needs are also more vulnerable to PUI. Challenges with ER are common in clinical populations and therefore may result in these groups being at increased vulnerability to developing PUI than the general population. The eligible studies also indicate that the impact of Covid-19 may have exacerbated the pressures of general ER capacity and the particular ER strategies used with the introduction of specific Covid-19 related fears. This furthers the need for exploration of the role of PUI in clinical populations to better inform its expression and how those affected can be supported. The clinical implications extend to psychological support for those with mental health difficulties also engaging in PUI. If not considered, PUI could be maintaining challenges and exacerbating impairment across domains of life.

Additionally, the influence of ER strategies could play a role in support for PUI directly. This might be through simultaneously identifying at risk ER functions that are associated with increased PUI, whilst bolstering ER strategies with negative correlations with PUI (e.g., Compassion, Gratitude,

reappraisal). Therapies involving these components more concretely may prove useful for supporting those trapped in patterns of PUI. Examples of these would include: CBT with the role of re-appraisal (Clarke, 2022); Compassion Focused Therapy for practices in cultivating self-compassion (Gilbert, 2009); and Acceptance and Commitment Therapy for incorporating psychological flexibility and gratitude (Harris, 2019).

2.7.2. Research Implications

The offering of this synthesis is in a greater understanding of PUI and ER in the context of the Covid-19 pandemic. The unprecedented challenges to ER demonstrated in the pandemic were associated with increased PUI rates. This supports that solely increased time spent online during the pandemic is not sufficient to explaining growing concerns about increasing PUI frequency. This has implications for measures of PUI that incorporate time spent online as contributing factors for PUI and stresses the function of ER in this.

The use of umbrella terms within this SLR offered utility in synthesizing broader associations in PUI and ER during Covid-19. Future research could explore the specific forms of PUI or ER in relation to each other. The dominance of cross-sectional data in the current literature limits the conclusions to correlational relationships. Greater employment of alternate longitudinal methodological designs that control for extraneous variables may allow for more causal mechanisms to be identified.

The findings of this synthesis indicate that those with difficulties with ER are more at risk of internet use becoming problematic. This risk factor needs further clarification on how it presents in groups who may have challenges regulating their emotions, as well as groups who are more reliant on specific forms of ER that may impact rates of PUI. Individuals with mental health diagnoses can be seen as an at-risk population with greater challenges in ER capacity. Further understanding of how PUI presents in differing mental health diagnoses could be helpful to understanding how we can support those with PUI in the future.

2.7.3. SLR Limitations

There are a number of limitations to the SLR findings. One of these was the focus on publications written in the English language that may limit the breadth of included studies. Another limitation was in the synthesis process where vote tallying, as part of Popay's (2006) guidance, equally weighs data that may statistically vary. Additionally, there is very limited data collected with UK settings and this limits application of findings within a local context. Further research could help elucidate the application of these relationships within a UK healthcare setting.

2.7.4. SLR Conclusion

In conclusion, the systematic literature review has evidenced the dynamic relationship between ER and PUI during the Covid-19 pandemic and the role of the unique challenges this period presented.

The relationship between constructs was observed in their direct association as well as the moderating effect they have alongside other study variables. ER was evidenced to play a varying role in the translation of increased internet use to PUI. Additionally, the analysis demonstrated the role specific ER strategies played in protecting from PUI as well as contributing to its development. Future research could explore the relationship further in those with challenges with ER and how PUI presents within those populations.

2.8. Rationale for Current Study

The findings of this systematic literature review indicate that difficulties in ER are associated with increased risk of PUI. However, this is a correlational relationship and has not been further investigated in specific clinical populations. Additionally, the synthesis indicated that the association between PUI and quality of life is mediated by emotion regulation. This would also indicate that populations with challenges in ER could experience greater impact across domains of their life and this impairment requires consideration in the present study. Further research investigating this potential association in clinical populations is necessary to support those individuals. Furthermore, existing research currently has a limited understanding of PUI in clinical populations. It is dominated by specific diagnoses explored in relation to specific forms of PUI. Exploring PUI within clinical populations across diagnoses would provide clarity on this in its frequency and presentation. This insight would inform any additional or adapted support these individuals may require.

Impulsivity and compulsivity have both been evidenced as more common in clinical populations (Hollander et al., 2016; Hook et al., 2021), and have also been demonstrated as contributing factors to the difficulties of ER in this subgroup (Chamberlain et al., 2019; Tiego et al., 2019). The distinct lens of transdiagnostic factors, such as compulsivity and impulsivity, identified in existing research could offer novel insight into the presentation in PUI in this selected population. This is additionally appropriate as PUI is not a diagnostic category itself and therefore comparison to these transdiagnostic dimensions would offer further understanding. PUI is an evolving term and understanding its relation to multiple variables could better support our understanding of those vulnerable to its impact.

2.9. Aims & Research Questions

The broad aims of the study were to explore the frequency of problematic internet usage within a clinical population and how it presents within this group. This also included whether it was approached in their mental health support. The research aimed to explore how different types of PUI

present across psychiatric diagnoses as well as how PUI relates to dimensions of impulsivity and compulsivity. The research questions aimed to be explored were:

1. What is the frequency of PUI in clinical populations, who identifies it and how does it present?
2. What is the relationship between PUI and diagnosis, compulsivity, and impulsivity dimensions?
3. What is the impairment of functioning for those with PUI and comorbid mental health presentations?

To answer the above research questions, the following experimental hypotheses were proposed:

1. PUI frequency is higher in clinical populations than the general population
2. There is a significant association between the number of people self-identifying yes in problematic use of internet and scoring above the ISAAQ A demarcation point.
3. There are significantly more people who have not been asked about their internet usage during mental health support than those who have.
4. There is a significant difference in the forms of internet use in PUI vs non-PUI groups.
5. There is a significant increase in the frequency of PUI in mood disorders than other diagnostic categories.
6. There is a positive association between PUI, and impulsivity and compulsivity measures.
7. There is a significant difference in work and social impairment measures between the PUI and non-PUI populations.

3. Methodology

3.1. Design

The study was a cross-sectional investigation of the target clinical population using self-report measures. It aimed to gather quantitative data on the rates of PUI in this population; correlations between PUI, diagnostic categories, compulsivity, and impulsivity; and resulting impairment. With the research aims of this study being around frequency and relationships between constructs, a quantitative design was deemed necessary for appropriate investigation. In this context a quantitative study design supports empirical rigor that can enable academics, practitioners and policymakers to derive actionable insights from data that can be understood in the context of existing numerical data (Lim, 2024). Conclusions from this design, given the post-positivist stance, must also acknowledge the extent that these measures can provide accurate representation of this phenomena (Braun & Clarke, 2021).

3.2. Participants

Existing research has predominantly focused on PUI in the general population and in adolescent populations (Anderson et al., 2017; Durkee et al., 2012). Therefore, the current study chose to focus on PUI in adult clinical populations. The target population for recruitment was selected due to its utility in investigating the study aims. A purposive non-probability sampling approach was employed. The target population was selected to fit the category of “clinical populations” and consisted of adult individuals who have or have had an open referral to mental health services within Hertfordshire Partnership Foundation NHS Trust (HPFT). All 1600 adult individuals’ contact details were stored within a secure compiled HPFT database. They had consented to be contacted for research purposes and had given contact numbers to do so.

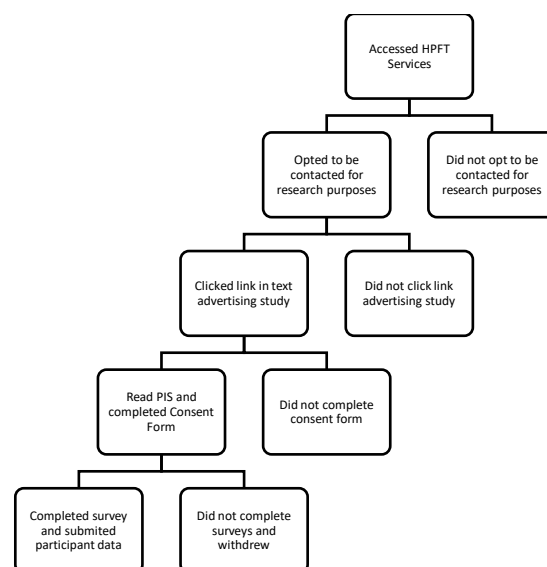
There were no exclusion criteria based on diagnosis within this population; it was agreed that accessing NHS support was the threshold for necessary indication of mental health distress. The inclusion criteria of being NHS patients does necessitate an additional filtering of those who have not only experienced mental health difficulties but have also accessed NHS support. This has been found to be inequitable across populations (Hui et al., 2020; Patel & Hanif, 2022). However, this was chosen for the purposes of the current study that is researching PUI in clinical populations and not the wider general population. All those in the population were aged 18 or older. Participants younger than 18 years were excluded from participation due to the focus of the study. Adolescent and child experiences of PUI were deemed empirically different from adult presentations, and the distinction was applied to strengthen specificity of findings.

Table 7*Participant Inclusion & Exclusion Criteria*

Inclusion	Exclusion
Open referral or previous open referral to HPFT mental health services	Not open to HPFT mental health services
Consented to be contacted for research purposes	No consent given to be contacted for research purposes
Psychiatric Diagnosis	No mental health diagnosis
Aged 18 or older	Below 18 years old

3.2.1. Recruitment

A mass communication text was sent by the HPFT Research and Development team to all 1600 individuals in the aforementioned database. This text contained brief details of the study and a link to the Participant Information Sheet (See appendix A) and Participant Consent Form (See Appendix B). Upon completion of the Participant Consent Form, participants could follow the link to the study survey which was hosted on the secure Qualtrics platform. This online recruitment method avoided direct interactions between current service users and treating clinicians and therefore bypassed potential power dynamics and supported autonomy of engagement (Bussu et al., 2021). The participant journey through to study contribution is shown in Figure 6.

**Figure 6***Recruitment flow chart*

3.3. Sample

An a priori power analysis was conducted using G*Power 3.1.9.7 to calculate the minimum sample size required to test the study hypotheses. With multiple hypothesis within the study, multiple calculations were performed and the largest reported. Results indicated that the largest required sample size to power the study was $N = 107$, for the hierarchical linear regression. The parameters included were a medium effect size of 0.15 (Cohen, 1992), at a significance criterion of $\alpha = .05$, with 2 tested predictors and 6 total predictors within the dataset. Therefore, the obtained sample size of $N = 354$ was adequate to test the study hypotheses.

The sample size varied depending on the completeness of surveys, as shown in Table 8. 354 participants completed 90% of the survey questions and this reflected in almost all surveys being completed fully. The WSAS was the exception to this due to an initial bug in Qualtrics, which was subsequently fixed. This resulted in 201 participants that completed all surveys in full. Therefore, to minimise deletion and prioritise the representativeness of the sample across analysis, $N = 354$ was used for all hypotheses apart from hypothesis 7. For that test, $N = 201$ was used as this total has no missing values and avoids additional bias. Participant data collected by the online surveys was exported from the Qualtrics platform to IBM SPSS Statistics (Version 27.0) for analysis (IBM, 2020).

Table 8

Participant completion rate

Stage	Total
Opened study link	524
Completed 90% of surveys (excluding WSAS)	354
Completed 100% of surveys	201

The analysed sample consisted of 354 participants included from the HPFT database for Hypotheses 1-6, and 201 participants for Hypothesis 7. The demographic data of the participants was collected within the surveys. The mean age of participants was 46.7 (SD = 14.2) and further demographic characteristics of participants are shown in Table 9.

Table 9

Demographic and Diagnostic Characteristics of Participants

Demographic	N (%)
Gender	
Female	236 (66.7)
Male	111 (31.4)
Gender non-conforming*	6 (1.7)
Prefer not to say	1 (0.3)

Ethnicity	
White or White British	312 (88.1)
Asian or Asian British	12 (3.4)
Black or Black British	8 (2.4)
Mixed or Multiple ethnic groups	9 (2.5)
Other Ethnic Group	7 (2)
Prefer not to say	6 (1.7)
Diagnostic Category	
Mood Disorders	138 (39.0)
Anxiety Disorders	58 (16.4)
Neurodevelopmental Disorders	40 (11.3)
Schizophrenia and Psychotic Disorders	26 (7.3)
Multiple Diagnoses	22 (6.2)
PTSD & Trauma Disorders	21 (5.9)
Personality Disorders	15 (4.2)
Unknown	14 (4)
Feeding or Eating Disorders	10 (2.8)
Obsessive and Compulsive Disorders	9 (2.5)
Other	1 (0.3)

*Category contains Trans-Male, Trans-female, Non-binary

3.4. Measures

3.4.1. Demographic and Diagnostic Information

Demographic data on age, gender and ethnicity were collected, as shown in Appendix C. Although not the primary variables of focus within the study, these were considered important in the context of PUI due to hypothesised influence on frequency and form of PUI (Fineberg et al., 2018). Each demographic component has been demonstrated to influence PUI in the wider population (Baloğlu et al., 2020; Ioannidis et al., 2018a; Omar et al., 2020) and therefore we gathered to identify the representativeness of the sample. Psychiatric diagnostic categories were gathered from self-report data within this survey and were grouped to align with DSM-V diagnostic categories to support statistical analysis. Due to the non-identifiable nature of participant data upon survey completion there was no connection to diagnostic information in the original database for comparison. Preservation of anonymity was prioritised over the limitation of accuracy of participants self-reporting diagnosis (Perkins et al., 2018). This limitation was therefore accepted and to mitigate it, specific examples were provided for each diagnostic category on the survey options to support accuracy of reporting.

3.4.2. Internet Severity and Activities Addiction Questionnaire (ISAAQ)

The ISAAQ consists of two parts (ISAAQ-A & ISAAQ-B) each being a 10-item test, and is a psychometrically robust measure of PUI, with high internal consistency (Cronbach's alpha =

0.93)(Dores et al., 2023; Ioannidis et al., 2023). It also has a robust unidimensional factor structure (Ioannidis et al., 2023). It is the newer iteration of the previous ISAAQ and has been revised following analysis through Item Response Theory (IRT) to optimise its item functioning (Ioannidis et al., 2023). ISAAQ-A offers a measure of PUI severity, whilst ISAAQ-B captures the span of differing forms of internet use. Whilst ISAAQ scores correlate moderately strongly with more established measures of PUI, such as Young's Internet Addiction Scale ($r=0.75$) and the Compulsive Internet Use Scale ($r=0.86$), it also offers the dual purpose of identifying forms of internet use for comparison. The two parts of the ISAAQ offer a six-point Likert scale (0= "Not at all" to 5 = "All the time") and can be found in Appendix D. It has a demarcation point of ≥ 34 (Omrawo et al., 2023), which indicates an individual's internet use is likely problematic.

3.4.3. Compulsive Personality Assessment Scale (CPAS)

The Compulsive Personality Assessment Scale is an 8-item test that offers a measure of presence and intensity of compulsivity in an individual (Fineberg et al., 2007), defined as the presence of habitual, persistent behaviours that are insensitive to negative consequences and exceed control attempts (Muela et al., 2022). It uses a 5-point rating scale to provide a total compulsivity score for each participant and can be seen in Appendix E. The higher the score, the higher trait compulsivity. The measure has an acceptable internal reliability, with a Cronbach Alpha value of $\alpha = 0.75$ (Stonciene et al., 2020). The components of the CPAS are consistent with DSM-V diagnostic categories for compulsive disorders (Gadelkarim et al., 2019), alongside the previously outlined diagnostic category questions, and this supported its use over other compulsivity measures.

3.4.4. Barratt Impulsivity Scale (BIS)

The Barratt Impulsivity Scale (version 11) is a widely utilised and validated measure of trait impulsivity (Hook et al., 2021), commonly defined as the heightened urgency of action, driven by positive or negative mood states that often involves suboptimal planning and a propensity for risky behaviours (Joyner et al., 2021). It has been demonstrated as having reliability and criterion-related validity across cultural samples (Vasconcelos et al., 2012) and has demonstrated a Cronbach's α of 0.837 (Tsatali et al., 2021). The measure is a 15-item scale that contains a 4-point Likert scale (1=Rarely/Never to 4 = Almost Always) as seen in Appendix F. The higher a participant's score the higher trait impulsivity. The measure has extensive history of application to clinical populations and is validated in this context (Stanford et al., 2009).

3.4.5. Work and Social Adjustment Scale (WSAS)

The Work and Social Adjustment Scale is a simple, reliable and valid measure of impaired functioning (Lundqvist et al., 2024). It consists of a 5-item test measuring across domains of

functioning on an 8-point Likert scale (0= Not at all, to 8 = Very Severely) (see in Appendix G). A total score of 0-9 indicates Low impairment, 10-19 is Moderate Impairment and 20-40 is Severe Impairment (Lundqvist et al., 2024). It has been demonstrated to have a Cronbach's α measure of internal scale consistency ranging from 0.70 to 0.94. It has a test – retest correlation of 0.73 (Mundt et al., 2002). It has been used in a variety of clinical populations and can be specified to impairment resulting from internet usage (Mundt et al., 2002; Mataix-Cols et al., 2005).

3.5. Ethical Issues

Ethical approval for the research project was granted by the NHS Health Research Authority and reviewed by the London - Camden & Kings Cross Research Ethics Committee on 24/09/24 (protocol number 24/PR/1055, see Appendices H and I). The University of Hertfordshire gave approval as sponsor (see Appendix J). Permissions from HPFT to access this population, as seen in Appendix K, follow completion of full NHS ethics procedures (IRAS Project ID: 343100). Prior to taking part, all participants reviewed the Participant Information Sheet (PIS) and Participant Consent Form (see Appendix A and B respectively). These documents assured confidentiality and right to withdraw until survey completion. This was highlighted to participants due to anonymity in their data meaning they could not be removed from the data pool once the survey results were submitted. The identifiable patient data (names, contact details) were held within the HPFT Research and Development team and were only accessible by staff with explicit permissions. All data collected via Qualtrics for the purposes of the current study was anonymous and stored in compliance with General Data Protection Regulation under the Data Protection Act 2018 (DPA, 2018). All data collected from these will be stored on the secure University of Hertfordshire One Drive platform for 5 years before being destroyed.

Accessibility was an important consideration due to the format of the surveys requiring smartphone access. While this may have created a technological barrier to access, this was deemed limited due to the focus on problematic internet use which requires regular access.

Due to the prioritisation of anonymity of responses, this did not allow for individualised feedback to be provided to participants. General feedback will be shared via the same process of recruitment, the HPFT Research and Development Team will send a mass communication with a link to the publication. To improve accessibility, the findings and learning will also be presented at the HPFT Patient and Carer Forum as part of dissemination.

3.6. Consultation with Experts by Experience

During the formation of the project, contact was made with Hertfordshire Mind to construct the project with Experts by Experience (EbE) input. This consultation was done in 1:1 meetings with 3 consultants and explored topics including what is important to consider for PUI in this population and what would problematic internet use look like to them. In all EbE conversations about how to conceptualise PUI, loss of control of usage and impact on other areas of life were prioritised over focusing solely on duration of time spent online. All EbE consultants made reference to aspects of their mental health impacting their relationship to using the internet and common themes of compulsions to engage arose in this. This supported the ISAAQ use as well as exploring PUI presentation outside of purely diagnostic framing by incorporating the BIS-11 and CPAS.

Once the initial pilot survey design was completed, two further EbE consultations provided insight into the burdensomeness of completion and offered opportunities to mitigate this. Greater clarity of instruction language was also achieved.

3.7. Statistical Analysis Plan

Hypothesis 1: PUI frequency is higher in clinical populations than the general population

A one-sample t-test allows the comparison of the frequency of PUI in study sample compared to general population prevalence.

Hypothesis 2: There is a significant difference between the number of people self-identifying yes in problematic use of internet and scoring above the ISAAQ-A demarcation point

A Chi Squared test allows for comparison of categories of = self-ratings of PUI (Yes/NO) to the ISAAQ-A demarcation point of ≥ 34 (PUI/Non-PUI).

Hypothesis 3: There are more people who have not been asked about their internet usage during mental health support than those who have.

Descriptive statistics demonstrate the percentage proportion of those who report they were asked about internet use and can be compared to proportion who reported they were not.

Hypothesis 4: There is a significant difference in the forms of internet use in PUI vs non-PUI groups.

A MANOVA calculation allows for comparison of variance in means between each subtype of internet activities in PUI and Non-PUI participants.

Hypothesis 5: There is a significantly higher frequency of PUI in mood disorders than other diagnostic categories.

A Chi Squared analysis allows for comparison of category of Mood Disorders compared to combined data of all other diagnostic categories. Expected counts offers insight in to difference in frequency.

Hypothesis 6: There is a positive association between PUI, impulsivity and compulsivity measures.

A hierarchical regression allows for insight into the independent contribution of measures of impulsivity and compulsivity in predicting ISAAQ-A scores, whilst controlling for age.

Hypothesis 7: There is a significant difference in work and social impairment measures between the PUI and non-PUI population.

A one-sample t-test allows for comparison of PUI and Non-PUI groups in their difference in means for WSAS scores.

4. Results

4.1. Results Structure

The results of the data analysis are grouped within seven sections. The initial section discusses the study variables. Then four sections (4.3, 4.4, 4.5, 4.6) contain results relating to study hypotheses 1-7, with the remaining two sections (4.7, 4.8) containing the summary of the main findings and the post-hoc analysis.

4.2. Study Variables

4.3. Frequency of PUI

Hypothesis 1: PUI frequency is higher in clinical populations than the general population

Hypothesis 2: There is a significant difference between the number of people self-identifying yes in problematic use of internet and scoring above the ISAAQ-A demarcation point

Hypothesis 3: There are more people who have not been asked about their internet usage during mental health support than those who have.

4.4. Forms of PUI

Hypothesis 4: There is a significant difference in the forms of internet use in PUI vs non-PUI groups.

4.5. PUI and Other Constructs

Hypothesis 5: There is a significantly higher frequency of PUI in mood disorders than other diagnostic categories.

Hypothesis 6: There is a positive association between PUI, impulsivity and compulsivity measures.

4.6. Impairment and PUI

Hypothesis 7: There is a significant difference in work and social impairment measures between the PUI and non-PUI population.

4.7. Summary of Study Findings

4.8. Post-Hoc Analysis

4.2. Study Variables

Although not directly used in the analysis of the study hypothesis, in the interest of transparency, Table 10 shows the Pearson's *r* correlations between all scale variables within the study. This is included to offer wider context to the specific comparisons made in investigating the study hypotheses. It also acknowledges the correlations between measures that are not directly explored within the study analysis due to the scope of the project aims.

Table 10

The Correlation Matrix for All Scale Variables in the Study

Variable	n	M	SD		1	2	3	4	5
1. Age	354	46.70	14	Pearson's <i>r</i>	-				
				p-value	-				
2. ISAAQ-A	354	20.47	11.206	Pearson's <i>r</i>	-.152	-			
				p-value	.004	-			
3. CPAS	354	12.35	6.134	Pearson's <i>r</i>	-.185	.438	-		
				p-value	<.001	<.001	-		
4. BIS	354	38.65	8.868	Pearson's <i>r</i>	-.065	.494	.363	-	
				p-value	.222	<.001	<.001	-	
5. WSAS	201	18.14	8.900	Pearson's <i>r</i>	-.027	.660	.389	.310	-
				p-value	.707	<.001	<.001	<.001	-

4.3. Frequency of PUI

As shown in Table 10, the mean ISAAQ-A score was 20.47 (SD = 11.206), whilst the ISAAQ-A has a demarcation point of ≥ 34 that indicates likely PUI and facilitates further sub-group analysis (Ioannidis et al., 2023). Table 11 shows: descriptive statistics of the ISAAQ-A measure, the frequency of participants reaching the ISAAQ-A demarcation point for likely PUI (≥ 34); the proportions of participants who self-identified their internet usage as 'problematic'; the proportions of those who have or have not been asked about their internet habits in previous mental health support. The combination of this information demonstrates the frequency of PUI from different measures (psychometric and subjective).

Hypothesis 1: PUI frequency is higher in clinical populations than the general population

A one-sample proportions t-test was employed to investigate differences in proportions of PUI in the study sample compared with observed prevalence of 9.7% in the general population (Burkauskas et al., 2022). The observed proportion of PUI in the clinical sample was 14.4% (N=51), which was significantly different from the established prevalence of 9.7%. The statistical test yielded a z-value = 2.992 ($p < 0.05$), indicating rejecting the null hypothesis. The proportion of PUI in the clinical sample was significantly higher than existing estimates of the general population. Further comparison of the frequency of PUI within this clinical population (14.4%) to rates in the general population will be explored within the discussion chapter as it requires comparison to wider literature of rates in the general population. For transparency, there was some variation in PUI rate with this being higher in the sample who completed 100% of survey questions (N=201), where the rate was 20.9%. This may represent those with a greater concern of their relationship to the internet feeling an increased motivation to complete the series of surveys compared to those less concerned. However, as discussed previously, the full sample rate was used in the analysis for this hypothesis.

Table 11

The Measures of Internet Usage in the Study Population

Measure	N (%)	Mean	SD
ISAAQ-A	354 (100)	20.47	11.206
PUI (≥ 34)			
Yes	51 (14.4)		
No	303 (85.6)		
Self-Identification			
Yes	80 (22.6)		
No	197 (55.6)		
Unsure	77 (21.8)		

Asked Before	
Yes	43 (12.1)
No	288 (81.4)
Unsure	23 (6.5)

The demarcation point (≥ 34) used within the ISAAQ-A scoring (Ioannidis et al., 2023) does not represent a clinical threshold, therefore there was additional consideration of those on the verge of likely PUI. Those on the verge of this threshold (scoring 30-33) was an additional 8.5% within the study sample (N=354). This highlights the importance of considering thresholds for PUI carefully as a minor change in this would result in a weighty change to the results.

Hypothesis 2: There is a significant difference between the number of people self-identifying yes in problematic use of internet and scoring above the ISAAQ-A demarcation point

A chi-square test of independence was performed to examine the relation between self-identification of PUI and those who reached the ISAAQ demarcation point (≥ 34). The relation between these variables was significant, $X^2 (2, N = 354) = 73.793, p = <.001$. There were significantly more in the PUI category (≥ 34 on ISAAQ-A) who identified their own internet usage as “problematic” than expected (observed N=34, expected N=12), with a moderate effect size (Cramer’s V = 0.457). This interpretation was considered in relation to thresholds suggested by Cohen (1988). A greater number of participants self-reported their internet usage as ‘problematic’ than was observed with the ISAAQ-A measure and demarcation point. This result accepts the experimental hypothesis and rejects the null.

Hypothesis 3: There are more people who have not been asked about their internet usage during mental health support than those who have.

The rates at which participants were asked about their internet usage during mental health support is shown in Table 11. Descriptive statistics allowed for the comparison of the percentage proportion of the sample who reported being asked about their internet use compared with those who denied being asked. A vastly greater proportion of participants had not been asked (81.4%) during previous mental health support and therefore the experimental hypothesis can be accepted. This suggests that internet behaviours are not often considered as part of routine psychiatric care.

4.4. Forms of PUI

The ISAAQ-B offers the additional insight as to the forms of internet use within the sample population. Streaming Media (2.87), Social Networking (2.86) and General Surfing (2.86) had the highest average reported usage respectively, whereas the lowest reported usage was in

Cyberbullying (0.13), Online Gambling (0.48) and Pornography (0.83) respectively. Data in brackets refers to the Mean score on the ISAAQ-B Likert scale across the sample, where the higher the number the higher rated frequency of use. The frequency of specific forms of internet usage are shown in Table 12.

Table 12

The Types of Internet Usage in the Sample (ISAAQ-B)

Form of Internet Usage	Mean	SD
Streaming Media	2.87	1.503
General Surfing	2.86	1.428
Social Networking	2.86	1.468
Online Shopping	2.59	1.363
Health & Medicine	2.32	1.307
Skill games & Time wasters	1.91	1.708
Gaming (Multiplayer)	1.08	1.645
Pornography	0.83	1.265
Online Gambling	0.48	1.038
Cyberbullying	0.13	0.514

*Not at all = 0, Rarely = 1, Occasionally = 2, Frequently = 3, Very often =4, All the time = 5

Hypothesis 4: There is a significant difference in the forms of internet use in PUI vs non-PUI groups.

A One-way MANOVA was conducted to determine whether there is a difference between those who met the ISAAQ-A demarcation point (PUI) and those who did not (Non-PUI) on scores in different forms of internet use on the ISAAQ Part B. There was significant difference in the combined analysis of all types of internet use on the ISAAQ-B (General Surfing, Internet Gaming & MMORPG, Skill games & Time wasters, Shopping, Gambling, Social Networking, Health & Medicine, Pornography, Streaming Media, Cyberbullying) based on the category of PUI and Non-PUI, $F(10, 354) = 10.181$, $p = <.001$; Pillai's Trace = 0.229, partial eta squared = 0.229. Pillai's trace was used due to the violation of the assumption of homogeneity of covariance (Ateş et al., 2019).

Table 13 shows the breakdown of each form of internet usage and shows that there was a significant difference in all forms of internet usage between the PUI and Non-PUI group ($p \leq .05$), other than the category of Pornography where there was no significant difference ($p = .099$). Forms of internet usage in Table 13 are listed as seen in the ISAAQ-B. This suggests that Pornography is the only specific form of internet usage where there is no significant difference in use between those with likely PUI and not. These results support the acceptance of the experimental hypothesis.

Table 13

The MANOVA Results of PUI Group Compared with Non-PUI Group in Forms of Internet Usage

Type of Internet Usage	PUI		Non-PUI		F(1,354)	Significance
	Mean	SD	Mean	SD		
General Surfing	4.16	1.084	2.64	1.362	57.362	<.001
Gaming (Multiplayer)	1.98	2.149	0.93	1.497	18.536	<.001
Skill-games & Time wasters	2.80	2.030	1.76	1.604	16.958	<.001
Online Shopping	3.76	1.380	2.40	1.259	50.176	<.001
Online Gambling	1.14	1.697	0.37	0.835	25.530	<.001
Social Networking	3.88	1.451	2.69	1.402	31.460	<.001
Health & Medicine	2.80	1.342	2.24	1.285	8.367	.004
Pornography	1.10	1.540	0.78	1.209	2.737	.099
Streaming Media	3.33	1.596	2.80	1.475	5.667	.018
Cyberbullying	0.27	0.850	0.10	0.430	4.953	.027

4.5. PUI and Other Constructs

Hypothesis 5: There is a significantly higher frequency of PUI in mood disorders than other diagnostic categories.

A chi-square test of independence was performed to evaluate the relationship between diagnostic categories (Mood Disorders compared with combined data of all other diagnostic categories) and PUI presence. The association between these variables was not significant, $\chi^2 (1, N = 354) = .850$, $p = .357$. This demonstrated that rates of PUI were not significantly different in the category of Mood Disorders compared to the combined responses of other diagnostic categories. Therefore the experimental hypothesis is rejected and the null hypothesis is accepted.

Although participant numbers were not sufficient to power comparison across diagnostic categories, Table 14 shows the variance of PUI frequency across the sub-groups.

Table 14

The PUI Frequency across Diagnostic Categories

Diagnostic Category	PUI Frequency (%)
Obsessive and Compulsive Disorders	2 (22.2)
Unknown	3 (21.4)
Multiple Diagnoses	4 (18.2)
Mood Disorders	23 (16.7)
PTSD & Trauma Disorders	3 (14.3)
Anxiety Disorders	8 (13.8)
Neurodevelopmental Disorders	5 (12.5)
Feeding or Eating Disorders	1 (10)
Personality Disorders	1 (6.7)
Schizophrenia and Psychotic Disorders	1 (3.8)
Other	0 (0)

Hypothesis 6: There is a positive association between PUI, impulsivity and compulsivity measures.

Hierarchical regression analysis was conducted to explore the impact, CPAS (compulsivity) and BIS (impulsivity) scores on ISAAQ-A (PUI) scores, whilst controlling for the effects of age. Age was controlled for due to the evidence base surrounding adolescent and young adult rates of PUI. An analysis of standard residuals was carried out, which showed that the data contained no outliers (Std. Residual Min = -2.785, Std. Residual Max = 3.155). Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern (Age, Tolerance = .966, VIF = 1.036; CPAS, Tolerance = .842, VIF = 1.187; BIS score, Tolerance = .869, VIF = 1.151). The histogram of standardised residuals indicated that the data contained approximately normally distributed errors, as did the normal P-P plot of standardised residuals, which showed points that were close to the line.

The scatterplot of standardised residuals showed that the data met the assumptions of homogeneity of variance and linearity.

A three step regression was employed, with step 1 being the control variable of Age. The model did significantly predict PUI score ($R^2 = .023$, Adj. $R^2 = .020$, $F(1, 354) = 8.361$, $p = 0.004$). Age, as a control, did significantly contribute to the prediction ($B = -.152$, $p = 0.004$) and accounted for 2.3% of the observed variance when added to the model.

In the second step, CPAS (compulsivity measure) was added to the model and it then significantly predicted PUI score ($R^2 = .197$, Adj. $R^2 = .192$, $F(2, 354) = 43.006$, $p < 0.001$). CPAS was a significant positive contribution to the prediction ($B = .424$, $p < .001$) and accounted for an additional 17.4% of the observed variance when added to the model.

In the third step, BIS (impulsivity measure) was added to the model and it continued to significantly predict PUI score ($R^2 = .326$, Adj. $R^2 = .321$, $F(3, 354) = 56.528$, $p < 0.001$). BIS was a significant positive contribution to the prediction ($B = .386$, $p < .001$) and accounted for an additional 13% of the observed variance when added to the model.

The results highlight that, accounting for age, the CPAS (compulsivity measure) and the BIS (impulsivity measure) significantly increase the prediction of PUI in this clinical sample. The results also indicate that the measure of an individual's compulsivity in the sample has a greater contribution to the prediction of PUI than the measure of their impulsivity. This finding accepts the experimental hypothesis and rejects the null hypothesis.

4.6. Impairment and PUI

Table 10 shows the significant correlation between ISAAQ-A score (PUI measure) and WSAS (impairment measure). However further analysis was completed to explore the differences in those reaching the demarcation point for likely PUI (≥ 34 on ISAAQ-A) and WSAS scores to test hypothesis 7. In the interest of transparency, the analysis was completed with all participants without any missing values in the WSAS ($N=201$); limitations of this approach are outlined in the discussion.

Hypothesis 7: There is a significant difference in work and social impairment measures between the PUI and non-PUI population

A Mann-Whitney U test was performed to evaluate whether impairment scores on the WSAS differed between PUI and Non-PUI groups. The test revealed that the total WSAS impairment scores were significantly higher in those in the PUI group ($Md = 27$, $N = 42$) compared with those in the Non-PUI group ($Md = 15$, $N = 159$), $U = 959.500$, $z = -7.103$, $p < .001$, with a large effect size ($r = 0.501$). This

finding suggests that, within this clinical population, the impairment to daily living for those with a mental health diagnosis and likely comorbid PUI is significantly higher than those with solely a mental health diagnosis. This determines that the experimental hypothesis is accepted and the null hypothesis rejected.

4.7. Summary of Study Findings

Table 15 is presented to summarise the results of each individual hypothesis and the corresponding research question it is aiming to address. This structure will continue into the Discussion chapter where the wider implications can be explored.

Table 15

Summary of Hypotheses and Study Findings

Research Question	Hypothesis	Study Result
What is the frequency of PUI in clinical populations, who identifies it and how does it present?	1. <i>PUI frequency is higher in clinical populations than the general population</i>	Accepted
	2. <i>There is a significant association between the number of people identifying yes in problematic use of internet and scoring above the ISAAQ-A demarcation point</i>	Accepted
	3. <i>There are more people who have not been asked about their internet usage during mental health support than those who have.</i>	Accepted
	4. <i>There is a significant difference in the forms of internet use in PUI vs non-PUI groups.</i>	Accepted
What is the relationship between PUI and diagnosis, compulsivity, and impulsivity dimensions?	5. <i>There is a significantly higher frequency of PUI in mood disorders than other diagnostic categories.</i>	Rejected
	6. <i>There is a positive association between PUI, Impulsivity and compulsivity measures.</i>	Accepted
What is the impairment of functioning for those with PUI and comorbid mental health presentations?	7. <i>There is a significant difference in work and social impairment measures between the PUI and non-PUI population</i>	Accepted

4.8. Post-hoc Analysis

Hypothesis 6: There is a positive association between PUI, impulsivity and compulsivity measures.

The initial hierarchical regression entered compulsivity first and then impulsivity due to the more abundant evidence base linking compulsivity to PUI than impulsivity. To account for any influence this may have on the significance of the predictive model, it is necessary to test the model in the alternate order. Hierarchical regression analysis was therefore conducted entering the variables in reverse order to detect changes to outputs when exploring the impact of age, CPAS (compulsivity) and BIS (impulsivity) scores on ISAAQ-A (PUI) scores.

The same three step regression was employed, with step 1 being the control variable of Age. This model did also significantly predict PUI score ($R^2 = .023$, Adj. $R^2 = .020$, $F(1, 354) = 8.361$, $p = 0.004$). Age did significantly contribute to the prediction ($B = -.152$, $p = 0.004$) and accounted for 2.3% of the observed variance when added to the model.

In the second step, BIS was added to the model and it then significantly predicted PUI score ($R^2 = .259$, Adj. $R^2 = .254$, $F(2, 354) = 61.189$, $p < 0.001$). BIS was a significant positive contribution to the prediction ($B = .486$, $p < .001$) and accounted for an additional 23.5% of the observed variance when added to the model.

In the third step, CPAS was added to the model and it continued to significantly predict PUI score ($R^2 = .326$, Adj. $R^2 = .321$, $F(3, 354) = 56.528$, $p < 0.001$). CPAS was a significant positive contribution to the prediction ($B = .284$, $p < .001$) accounted for an additional 6.8% of the observed variance when added to the model.

The reverse entering of variables resulted in no effect on the significant result on both impulsivity and compulsivity but did impact the observed variance for each when added to the model.

5. Discussion

5.1. Discussion Structure

This chapter will aim to explore the findings of the study and the wider clinical and research implications they present. It will highlight relevant methodological considerations when interpreting the findings and suggests future areas for investigation. It is structured around the experimental hypotheses, presented in the introduction chapter, as they relate to answering the overarching research questions. Following this are the clinical and academic implications, as well as overall study conclusions and action points.

5.2. Research Question 1: What is the frequency of PUI in clinical populations, who identifies it and how does it present?

Hypothesis 1: PUI frequency is higher in clinical populations than the general population

The PUI rate within this study sample was approximately one in seven (14.4%) and this was significantly higher in comparison to the estimated rate of 6-9.7% in the general population ($p < 0.05$) (Burkauskas et al., 2022). This maps on to a recent meta-analysis that found a pooled rate ($N=5522$) of PUI across psychiatric diagnosis of 17.8% (95% CI: 13, 24) (Radhakrishnan et al., 2025). This same review acknowledges the methodological challenges of establishing consistent PUI measurement and emphasises further need for standardised measuring of rates and impact. Included studies used comparable measures to the ISAAQ that was used within the present study. The most commonly included scale used was Young's Internet Addiction Test (IAT), shown to have good construct validity compared with the ISAAQ (Ioannidis et al., 2023; Radhakrishnan et al., 2025), however this was often the first and outdated IAT scale. The eligible studies did however methodologically align with the present study in the use of self-report measures. Of note, there were no eligible studies from UK based samples. This raises the question of where the UK fits into this picture; the present study offers contribution to this understanding. This UK sample showed an observed PUI rate consistent with those observed across other nations, suggesting a consistent vulnerability to PUI within clinical populations. It also indicates that the UK is not an exception to the observed pattern of increased PUI presence in clinical populations (Radhakrishnan et al., 2025). The pooled rates observed in these studies support the reliability of the findings of the present study as they fit squarely within the range of the referenced meta-analysis. Although comparison between results of differing measures should be done cautiously, it does demonstrate comparable findings to that of the present study suggesting that methods are somewhat consistent in identifying PUI. Furthermore, comparable PUI rates observed in clinical populations suggest the present study findings are less likely to be

anomalous. Establishing the findings of the present study in the context of the only wider meta-analysis of PUI in psychiatric populations then supports the confidence in comparison to rates of PUI estimated within the general population.

The rate in this UK-based sample of patients was approximately one in seven (14.4%) and therefore represented a larger frequency compared to those observed in the general population, which meta-analysis have estimated at 6-9.7% (Burkauskas et al., 2022). Although it is difficult to establish a definitive PUI rate of occurrence in the general population as a result of varying measures and methodological designs (Fineberg et al., 2022; King et al., 2020), this does allow comparison between the general population and this clinical sub-group. The results of this study, using the ISAAQ demarcation point of ≥ 34 as a threshold (Ioannidis et al., 2023), would indicate an additional vulnerability to developing PUI in clinical populations compared with the general population's rate of occurrence. This general population meta-analysis pooled data across the world but did not contain any eligible studies based in the UK (Burkauskas et al., 2022); therefore this is worth considering when comparing these results. Although there is some degree of uncertainty for the rate of PUI in the general population of the UK, nevertheless the study finding of 14% within the clinical sample appears to be higher than comparable estimates.

PUI has long been considered within addiction frameworks (Fineberg et al 2022) and therefore the rates of PUI observed in this UK clinical sample can also be compared to those of substance addictions. In the UK, smoking prevalence has decreased in recent years to around 15% compared with significantly higher rates in the 1990s (Reitsma et al., 2017). A proportion of this change attributed to a shift in societal values, the role of health promotion, and policy change (Opazo et al., 2022). The increased rate of tobacco smoking in those with mental health difficulties is well established and has remained the same despite the overall drop (Richardson et al., 2019; Taylor et al., 2023). Similarly, alcohol addiction has been observed to be twice as frequent within mental health populations compared to the general population (Puddephatt et al., 2022). Therefore it is unsurprising that reviewing smoking behaviours and alcohol intake is a routine part of mental health provision. With comparable rates of increased PUI in this study's clinical population, this raises the need to consider PUI in the same way and increase the routine screening for this within mental health populations. It also bolsters the framing of PUI in the framework of behavioural addictions. The comparison of PUI to smoking habits extends with the full magnitude of harms associated only presenting later when the addiction has taken hold. It can be argued that while the harms of alcohol misuse and smoking are more commonly recognised and supported now, a societal shift to understanding PUI in this way may be necessary to bring awareness in an increasingly internet dependent society.

Although it has been argued there is no coherent body of research into the rates of illicit drug use due to methodological limitations (Boden & Day, 2023), in 2024 the Crime Survey for England and Wales estimated that there were 610,000 (1.8%) people, aged between 16 and 59 years old, who were classified as frequent drug users (Office for National Statistics, 2024). Even if this is considered to be a conservative estimate for a substance addiction, this is comparatively lower than the observed PUI rates in this study's sample. However, this crime survey estimate is within the general population and there is evidence to suggest these rates of substance use addiction may be higher in clinical populations (Llopis & Matytsina, 2006; Preuss et al., 2021). This is therefore another example of where PUI frequency in clinical populations can be compared with other forms of addiction that are more frequently considered to inform preventative approaches.

The prevalence and outcomes of substance use addiction corresponds with the proactive screening guidance that occurs routinely in healthcare settings (Office for Health Improvement & Disparities, 2022). It also informs the Making Every Contact Count (MECC) initiative from NHS England which emphasises consistent and concise exploration of drug and alcohol use within clinical contacts (NHS England, 2022). The rates of PUI found in both the general population and increasingly within clinical populations, strengthens the call to extend this proactive screening approach used with drug and alcohol addictions to PUI as well (Stein & Hartford, 2022). Of note, population wide screening for addictions is not without its drawbacks and the potential for false positives should be also be considered (Maráz et al., 2015). Although there are pros and cons to the inclusion of broad addiction screening programmes, these have been focused on substance addictions and there has not been the same consideration for behavioural addictions (Pautrat et al., 2022). The results of the present study indicate further consideration of this for PUI is necessary.

A number of considerations arise from this finding of higher rates of PUI in clinical populations than in general populations. This finding offers correlational evidence for some of the theories surrounding PUI risk factors and maintaining functions. Inhibitory control and emotion regulation are two components that the wider literature has identified as playing a role in the formation and maintenance of PUI (Brand et al., 2022). These aspects are also identified as being impaired within a range of mental health presentations (Aslan et al., 2024; Breuer et al., 2024). Therefore if they do play a role in PUI, we would expect PUI rates to be higher within this population. With this study sample having higher observed rates of PUI it offers some correlational support to these components in their role in PUI as well as mental health presentations. Furthermore it strengthens the role this could play in supporting those with PUI across psychological interventions. As with all correlational links this must be interpreted cautiously, however future research could evaluate the effectiveness of interventions targeting these components and the influence this has on PUI.

The findings on PUI frequency within the sample were additionally concerning when considering there were a further 8.5% of the participants scoring just below the ISAAQ-A demarcation point (30-33 total in the ISAAQ-A). This combined with those who met or exceeded the demarcation point was a PUI rate of 22.9%. This demarcation point is not a clinical threshold, so having a significant proportion of individuals in the study sample being so close to this point is worth further acknowledgement. There is a sizeable proportion that are on the verge of likely PUI, according to their ISAAQ-A scores. For this group their usage may not meet all aspects of the aforementioned criteria of PUI as of yet but may develop into this in the future if not addressed. If proposed developmental contributors such as inhibitory control and emotion regulation (Brand et al., 2022) have impacted these individuals' relationships with internet use thus far, it stands to reason that this may progress to be more problematic in nature if unattended to. This is noteworthy with the finding that 81.4% of the sample were not asked about their internet usage during mental health support. It may be that increasing rates of PUI demonstrated across populations over time (Stangl et al., 2023) is capturing those of established thresholds but that there are additional swells of individuals just below rigid thresholds not accounted for in PUI research.

The implications of this are that there may need to be reconsideration of the thresholds of PUI measures, as has been done previously (Ioannidis et al., 2023), or that the binary of problematic vs non-problematic internet use needs re-considering entirely. As increasingly immersive internet activities evolve, those with internet use that is impacted by their inhibitory control and emotional regulation such as clinical populations may shift towards these problematic thresholds without significant individual and public health intervention (Fineberg et al., 2022). Although the binary of PUI groups compared with non-PUI groups offers insight into frequency with the sample, it must be held lightly with the non-clinical thresholds used within the PUI measure.

Hypothesis 2: There is a significant difference between the number of people self-identifying yes in problematic use of internet and scoring above the ISAAQ A demarcation point

The study found that the observed number of participants who self-rated their internet use as "problematic" was greater than the expected count of those who reached the ISAAQ demarcation point. This can be interpreted as the sample viewing their own internet use as problematic more than the ISAAQ picks up. Alternatively, it may be highlighting that the demarcation point was determined using general population samples rather than a clinical sample (Omrawo et al., 2023). If the former is accepted and the clinical population reported higher concerns about their internet use than even the chosen measure identified, it suggests that individuals are sharing the same concerns as public health institutes (Fineberg et al., 2022). This aligns with the recommendations

of the EU-PUI identifying the need for knowledge of intervention and support that can be provided, as well as additional consideration for policy changes (Fineberg et al., 2022). The NHS long term plan for behavioural addictions is an example of this within the UK (NHS England, 2019). Despite the shared concerns of public health institutes (Fineberg et al., 2022) and individuals impacted by PUI, the long term plan has been slow to make progress across any behavioural addictions. Although the 2019 plan set out to more appropriately support gambling addiction, 7 of the total 15 provisions for support in England were only established in 2024 and, despite this more recent expansion, referrals went up 130% between 2023-24. Furthermore, there is only one specialist service for gaming addiction which has seen increased referrals year on year since inception (Piper et al., 2024). More rapid policy response will be needed to support the growing amount of individuals struggling with the potential harms of PUI.

As mentioned, the finding of discrepancy between self-identification and those meeting the utilised ISAAQ threshold may alternatively imply that the demarcation point used may need reconsidering for measurement of PUI in this target population. The demarcation point for the ISAAQ has previously been acknowledged to need to be adjusted for particular sub-groups as emerging evidence and understandings are in flux (Omrawo et al., 2023). This is in particular focus following the impacts of Covid-19 (Ioannidis et al 2023). It may also suggest the need for future research into PUI in clinical populations to differ from existing self-report measure methodologies that dominate the existing literature (Radhakrishnan et al., 2025). Use of alternate observational methods such as software that directly measures use of differing forms of internet on devices could be employed alongside self-report measures and may mitigate some of the aforementioned limitations. The ongoing BootStRaP project, although still in the data collection phase, is an example of employing these observation techniques in conjunction with interviews and self-report measures to investigate PUI across 12 countries (ISRCTN59576080 - <https://doi.org/10.1186/ISRCTN59576080>). This combination of methods may provide further clarity on how PUI can present in clinical populations. There would however need to be additional ethical consideration of these measures.

The difference in self-identification and those reaching the demarcation point on the ISAAQ results in a number of considerations for measuring PUI both within the study and externally. Although both are self-reporting, there is the distinction of a construct of observable PUI being measured by the ISAAQ compared with the subjective appraisal of the satisfaction with one's own internet use. Despite there being outlined criteria for PUI (Fineberg et al., 2022), it does raise questions of its suitability if the concerns individuals have over their internet behaviours is significantly different than the measure used in the present study observes. Wider research has raised these concerns surrounding the appropriate measurement of PUI (King et al., 2020; Laconi et al., 2014),

although clarity of the construct of PUI has been better established. The components of PUI highlighted within the ISAAQ are the marked functional impairment and distress driven by excessive online activities (Ioannidis et al., 2023). This is in comparison to other measures that previously focused more primarily on quantity and frequency of internet use which are argued to be a reductive conceptualisation of a more complex relationship with PUI (Baggio et al., 2017). With this study aiming to explore the role of impulsivity and compulsivity, the ISAAQ remains the most suitable choice despite the aforementioned limitations. This supports the notion of PUI being its own construct, characterised by impaired control and negative consequence (Fineberg et al., 2022), distinguishable from an individual being dissatisfied with their internet use. This would therefore offer an explanation for participants rating their internet use more frequently as “problematic” than the ISAAQ calculated.

This finding could also be interpreted as a reflection of the study sample targeted. Negative bias in one’s perceptions and behaviours is observed across mental health presentations (Spătaru et al., 2024). It is possible that this may permeate into reporting on their relationship to the internet. This may be especially influential for those in the context of being contacted for the research by the NHS trust they received mental health support from, where their psychological experiences were deemed suitable for treatment. This problem saturated environment for participants may have influenced, to some degree, the subjective rating of their internet habits. This is not to say that clinical populations cannot offer a reliable perspective on their internet use but just that the potential bias may need to be considered in conclusions drawn. This limitation of self-reporting exists for the ISAAQ measure used as well, as they are rating the presence of a list of problems within their lives.

Hypothesis 3: There are significantly more people who have not been asked about their internet usage during mental health support than those who have.

The results from the study sample found that a vastly greater proportion (81.4%) had not been asked about their internet usage during mental health support than those who had. This finding suggests that relationship to the internet is not routinely considered within clinician and patient interactions. This finding cannot claim that internet behaviours are an entirely unconsidered domain of somebody’s mental health support. However, it does suggest that, even if clinicians may be factoring it into their work, it is not being openly discussed with patients. Wider research indicates that clinicians’ confidence in exploring internet usage with individuals varies, but that they do consider it within their understanding of an individual seeking support (Derges et al., 2023). However, findings

from the present study suggest these considerations need to be more openly and routinely raised in clinical support.

This finding is uniquely concerning given the frequency of PUI in the clinical sample within the study. There is an observed higher risk of PUI in clinical populations, who are also reporting greater concern about their use than even the psychometrically validated measures are picking up, whilst the vast majority are not being asked about it during mental health support. This gives fertile ground for any unacknowledged difficulties with PUI to become more ingrained and produce more lasting detrimental outcomes in domains of physical and mental health, scholastic and occupational attainment, social life and relationships (Ayas & Horzum, 2013; Gorowska et al., 2022).

There is a limitation that must be acknowledged in the interpreting of this low proportion of individuals who were asked about their internet use. The findings are relying on the recall of individuals for conversations within their mental health support that may have occurred at a significant time in the past. Wider research has also emphasised the importance of recognising this limitation in relying on patient recall (Twomey et al., 2021). This is further supported in the study findings where 6.5% were unsure as to whether they had been asked about PUI. Nonetheless, the high proportion of participants who had not been asked about their internet use is in part attributable to the absence of such screening.

It is widely understood that to support health behaviour change in clinical care, concise and consistent screening is needed, and that individuals may be unlikely to raise concerns if they are not prompted to do so (Office for Health Improvement & Disparities, 2022). It is therefore necessary for clinicians to be opening up these conversations and prompting consideration of internet usage within routine care. Some guidance has emphasised this point in other behavioural addiction areas already, such as the MECC initiative (NHS England, 2022). Further emphasis is needed to encourage people to share and feel supported, given the one in seven rate of PUI within this population. Screening measures are often used to support clinical judgement within mental health services, as solely relying on clinical judgement has been shown to be less effective (Makhni & Hennekes, 2023). If services were to consider using brief screening measures for PUI (such as ISAAQ or IAT), this may support the identification of PUI and give greater opportunity to support the negative health outcomes associated with it (Matsuzaki et al., 2023). Without clinicians routinely asking about PUI within mental health support, rates such as the 14.4% in this sample, may be considerably different. The combination of increased frequency observed in this study, alongside the limited exploration of it within clinical population, may be indicative of a larger group of individuals in need of targeted PUI support. More routine consideration would likely allow for more discovery of PUI in individuals and

facilitate the support needed. This does however raise the issue of screening for PUI without specialist provision for the range of PUI in the UK, with the exception of the national gaming disorder clinic and gambling services (NHS England, 2019). If PUI difficulties continue to go underreported and under-recognised in typical screening, those in need of service provision remain unidentified and the development of specialised support is unlikely. This may be having a cyclical effect with the lack of available support feeding back into the lowered rates of clinical consideration of PUI.

Hypothesis 4: There is a significant difference in the forms of internet use in PUI vs non-PUI groups.

The study results indicate that overall there was a statistically significant difference between the specific forms of internet use (set out in the ISAAQ-B) between those with PUI and those not meeting the PUI demarcation point. The overall use, across the 10 forms of internet use identified in the ISAAQ-B, was significantly higher in the PUI group than the non-PUI group, as expected. This can be further reviewed with regards to each form of internet use identified in the ISAAQ-B as the significant difference was not consistent across all forms individually. The analysis found that pornography viewing was the only exception to this overall finding and found no significant difference between the rates of this form of internet use between those in the PUI group compared with the non-PUI group. All other forms of internet use (General Surfing, Gaming (Multiplayer), Skill-games & Time wasters, Online Shopping, Online Gambling, Social Networking, Health & Medicine and Streaming Media, Cyberbullying) followed the trend of significant difference. This finding implies that the public health concern of PUI should be less focused on the specific content of the internet use but instead focus on the individuals relationship with that activity in regards to both control of use and persistence despite negative outcomes. This is contrary to the wider discourse of more pejoratively viewed internet forms such as gaming, cyberbullying and gambling (NHS England, 2019) compared with general surfing, online shopping and streaming media. This is despite the findings of this study, whereby the latter three were among the highest reported use. As the significant increased engagement was evident in all forms measured, other than pornography, this suggests that there are not specific forms of internet activities resulting in individuals being more prone to developing PUI than others.

One thing to consider when comparing forms of internet use on the ISAAQ-B is that, although 9 out of 10 were consistent with increased use in the PUI group, the proximity to negative outcomes is likely significantly different. Persistent use despite the presence of negative outcomes is a key component of PUI (Fineberg et al., 2022), and the outcomes are more starkly evidenced in some forms of internet use. Despite all forms having the capacity to produce negative health outcomes (Ayas & Horzum, 2013; Gorowska et al., 2022), more stigmatised activities such as online

gambling and cyberbullying have been evidenced to produce these more rapidly (Bowden-Jones et al., 2022; Peck et al., 2024) and therefore the proximity to these outcomes may differ despite them being among the lowest reported use comparatively. The immediacy of negative outcomes is likely different for problematic online-gambling compared with problematic online-gaming despite the comparable use in this sample. This should be considered when combining these forms of internet use within this finding. ISAAQ-B measures reported frequency of use but that is not sufficient for conceptualising this as PUI as it does not account for the other components such as persistence despite negative outcome and impaired control. Therefore the frequency of use of these internet activities may align but the likelihood other characteristics of PUI may still differ. Online gaming is another example of this, where the vulnerable groups for PUI in this form are young men and also neuro-divergent individuals (Piper et al., 2024). The immediate scholastic impacts of PUI in this form may have detrimental impacts on future opportunities. This may reflect in the greater clinical focus and provision, such as the inclusion of Gaming Disorder in the DSM-V and ICD-11 (Jo et al., 2019) and the formation of the National Gaming Disorder Clinic in the UK. PUI comprises of a number of components, including excessive use, impaired control and negative outcomes in domains of an individual's life. The findings of this study suggest that increased use is consistent across almost all of forms of internet use in PUI. Although this can be interpreted as no specific form of internet use being uniquely risky for clinical populations developing PUI, frequency of use is only one component of PUI. To make a more comprehensive claim regarding specific forms of internet use, future research would need to take a more nuanced consideration of this and incorporate individuals' levels of control and health outcomes related to different forms.

There are several ways to interpret the finding that pornography viewing had no significant difference in reported use across PUI and non-PUI groups. It may suggest a difference in the functioning of pornography use as a form of internet use that is separate to underlying behavioural addictions assumed in the other forms. Perhaps the increase in use of this form does not translate to this becoming problematic as defined under PUI as a result. Alternate theories have been developed to explain the drive for pornography use, such as the evolved variance in sex drive and desires for short term sexual pleasure (Burtăverde et al., 2021). This result may offer evidence of a difference in the underlying function that is better understood by evolved sexual variance than the behavioural addiction paradigm of the other internet forms observed.

Alternatively, the focus of the differences could be understood through the self-reporting methodology of the study design. Gathering data around pornography use is notoriously difficult due to the self-report bias of something culturally seen as taboo (Kohut et al., 2020). Alternative methodologies have found significant differences in self-reported use when compared with observed

use with tracking software (Kohut et al., 2020). Within the current study, the anonymous study design may have helped to alleviate this extraneous variable (King, 2022) but the extent to which this may have nonetheless affected the reporting within the sample is unknown. This could in part explain the lower reporting of use and the absence of a significant difference between PUI and non-PUI groups.

On the other hand, if more pejoratively viewed internet behaviours explained the difference in result for pornography, we would expect other more problematically viewed internet activities, such as gambling or cyberbullying, to be the same. However this was not the case in this study.

Cyberbullying, as it is understood today, is a more novel and negatively viewed form of internet use that came to attention in the US in the year 2000 (Finkelhor, Mitchell, & Wolak, 2000) and has become a serious concern in the UK (Macaulay et al., 2022). It was the lowest reported form of internet use in this study but despite this was significantly higher in the PUI group compared to non-PUI. This indicates that self-reporting bias as an explanatory variable is less likely as it was not consistent across comparative internet activities such as pornography and cyberbullying. This would also therefore suggest it is more likely that there is something unique about pornography compared to other forms of internet use in our understanding of PUI.

One further consideration in the measurement of cyberbullying in the present study is ambiguity in differentiating being the perpetrator or victim. The wording in the ISAAQ-B measure is, “Cyberbullying (includes exchange of insults, nasty texts/emails, unpleasant media, pranks)”. This framing of exchange may result in uncertainty for participants in whether they are being asked about being a perpetrator or victim of cyberbullying. The potential for significant difference in participant interpretation, ‘victim of’ vs ‘perpetrator of’, adds an unaccounted for variable in their likelihood of reporting this form of internet use due to the differing levels of stigma associated with each role. It is unclear the extent to which this may have affected the reported rates of this form of internet activity and therefore limits the reliability of this finding.

5.2.1. Research Question 1 Summary

The frequency of PUI in this clinical population is approximately one in seven, which has been demonstrated to be higher than observed rates in the general population. The results suggest an additional vulnerability in this sub-group to developing PUI and, when combined with evidence from later hypotheses, offers some evidence towards the role of emotion regulation and inhibitory control as explanatory factors for this. Although there are methodological limitations to hold when interpreting this, it is supported by the self-identification of usage as “problematic” by those same individuals. This suggests the concern about PUI in this group is shared with wider public health and

research organisations such as the WHO and EU-PUI. The rates of PUI observed in the present study are at least comparable to the rates of substance addictions in the UK, however PUI does not appear to be screened for as routinely as substance misuse within mental health services. The differences in PUI presentation extended to the forms of internet used within the sample. The significant difference in use between those with PUI and those without was consistently demonstrated across all forms other than pornography viewing. Possible explanations for these patterns were explored.

5.3. Research Question 2: What is the relationship between PUI and diagnosis, compulsivity, and impulsivity dimensions?

Hypothesis 5: There is a significantly higher frequency of PUI in mood disorders than other diagnostic categories.

The finding of this study was that there was no significant association between the diagnostic category of mood disorders and PUI frequency when compared to the pooled data of all other diagnostic categories. This offers evidence against the theorised stronger link between mood disorders and PUI presence (Muñoz et al., 2022). This prospective link was proposed due to the evidenced association between difficulties with emotion regulation and PUI (Brand et al., 2022) and the role of this within mood disorders. This hypothesis was also supported by the meta-analysis findings, outside of a UK context, of mood disorders showing a higher frequency of PUI compared to other diagnoses (Radhakrishnan et al., 2025). These links are correlational in nature and do denote a causal link, hence why this may not have been evidenced within the study sample, suggesting that those with a diagnosis of a mood disorder may not be more vulnerable. This finding implies that clinicians should not necessarily hold greater vigilance when supporting mood disorder diagnoses over others for the additional vulnerability of PUI development.

There is not a clear literature evidencing general PUI being significantly higher in particular diagnoses, however there are links demonstrated between specific forms of PUI and particular psychiatric diagnoses. Examples of this include increased presence of internet-gaming in ADHD and autistic populations (Piper et al., 2024) and increased compulsive use of health and medicine forums for those with health anxiety (Brown et al., 2020). Therefore, the conflicting results of the present study may suggest there is something contributing to increased rates of PUI in these populations that is distinct from the specific diagnoses given. It may also offer support for general PUI being less associated with particular mental health categories and more aligned with transdiagnostic dimensions of personality or phenotypes. This is consistent with previous research evidencing the associations of particular dimensions of personality and rates of PUI (Varchetta et al., 2023; Zhou et al., 2017). Extraversion, neuroticism and openness to new experiences have been found to positively

correlate in those with PUI (Zhou et al., 2017). These links have predominantly been established in adolescent and young adult populations and therefore may not be extrapolated to wider age groups or specific sub-groups, as was observed in the present study. These links are also reliant on there being a static nature of these personality traits and the assumption of consistency cross-culturally which is contested (Carlo et al., 2014). Future research could explore the longitudinal relationship between personality measures and PUI rates for further clarity on this.

Interpreting the observed lack of association between mood disorders and PUI compared to other diagnostic categories must be done whilst acknowledging the methodological limitation of the analysis. Comparison of each diagnostic category may have provided richer understanding of diagnostic links with PUI, however the statistical power to do so was pre-empted as a barrier to this. This was proven correct by the low observed frequency of many diagnostic categories which would be insufficient to statistically power such a broad comparison (Kang, 2021). For this reason, it was deemed appropriate to only compare mood disorders to the pooled data of all other categories to sufficiently power the analysis. In doing so it is acknowledged that this hinders the confidence with which the results can be interpreted. Future investigation could explore this link more extensively to more confidently determine if certain diagnoses are linked to higher general PUI rates.

Hypothesis 6: There is a positive association between PUI, impulsivity and compulsivity measures.

Unlike particular categories of psychiatric diagnoses, both the measures of impulsivity and compulsivity predicted PUI score. This suggests that, within this clinical population, those showing increased traits of impulsivity and compulsivity would be more likely to also present with PUI. This was also found when accommodating for the influence of age, a factor that has been linked with PUI presence (Ioannidis et al., 2018; Laconi et al., 2015). In clinical settings, this could allow for the closer consideration of more impulsive and compulsive presentations as they seem more likely to engage in PUI. Not considering PUI as a continuum of behaviours, distinct from diagnostic boundaries, may be contributing to the observed lack of routine checking of internet usage in routine clinical care. Clinicians may need to prompt further investigation for these individuals to uncover and support any difficulties appropriately.

This finding also supports shifting our understanding of PUI to a transdiagnostic framing of traits of impulsivity and compulsivity that extend into the internet. This is reinforced by the finding of no association between diagnosis and PUI frequency. This instead strengthens the notion that PUI may be an extension of existing psychological traits into the domain of the internet rather than a unique set of behaviours distinctly constructing PUI. Therefore, despite the fact specific behaviours online

are likely to evolve as new technology develops, this extension of psychological traits could aid our understanding and bolster attempts to support those impacted by the associated harms of PUI.

This aligns with the Research Domain Criteria (RDOC) initiative established by the National Institute of Mental Health in the US, which is aiming to foster a new research paradigm that is separate to current diagnostic systems (Cuthbert, 2022). Instead of a taxonomy based on frequency of symptoms, PUI could be understood and supported in terms of varying degrees of psychological and biological systems (Lilienfeld, 2014). Shifting focus away from PUI using the lens of diagnostic criteria, contrary to the case of gaming disorder (Piper et al., 2024), may allow for a more comprehensive understanding of development, support and prevention (Cuthbert, 2022). However, within an NHS healthcare context it may be necessary to contend with the diagnostic necessity to generate and organise service provision, which could be an argument for utility over accuracy.

Impulsivity was demonstrated to play a role in the prediction of PUI. This offers support to the inhibitory control theories for understanding PUI which recognises the inability to control the impulse to action link as a precursor to PUI development (Brand et al., 2022). This link is the extent to which somebody has the thought to initiate a behaviour, in this case a form of internet use, and has difficulty in restraint over then performing that subsequent behaviour (Chen et al., 2017; Liu et al., 2019). Within the context of PUI this may result in significant negative outcomes (Ayas & Horzum, 2013; Gorowska et al., 2022) and particular risk where these outcomes can be fairly immediate such as the case with gambling and cyberbullying (Bowden-Jones et al., 2022; Peck et al., 2024).

There is evidence that impulsivity is something that does decrease with age, typically throughout adolescent development (Diotaiuti et al., 2022). PUI is also higher in younger populations, raising the question of whether the relationship demonstrated in the present study between PUI and impulsivity may indirectly be identifying the role of age. However, the mean age of the sample was 46, with no participants under the age of 18, which supports the independent contribution of impulsivity in predicting PUI.

Clinical implications of the predictive role of impulsivity are its involvement in supporting those with difficulties of PUI. If impulsivity is playing a role in the development and/or the maintenance of an individual's PUI, then support aimed at managing this trait may support increased control of PUI. Therapies such as CBT and Dialectical Behaviour Therapy (DBT) offer strategies to intervene in impulsive tendencies (Aguilar-Yamuza et al., 2024). However there is limited evidence that these have a direct effect on change in measures of impulsivity among individuals treated for substance addictions (Loya et al., 2023). This is attributed to the lack of repeated measurement of impulsivity in these settings rather than conclusive evidence that impulsivity remains unchanged as a

characteristic. There has, for example, been provisional evidence of CBT targeting impulsivity and producing positive outcomes in specific forms of PUI (Tarrega et al., 2015). Therefore further exploration of this targeted treatment may prove helpful for those struggling with PUI.

Compulsivity also demonstrated a predictive capacity for PUI in this clinical population. The role of compulsivity in PUI has been evidenced in general populations (Chamberlain et al., 2018; Volpe et al., 2015) and the findings of this study support this. The predictive role of compulsivity may relate to internet use in the inability of an individual to terminate behaviours despite the presence of negative consequences (Ioannidis et al., 2016). Previously, investigations between PUI and compulsivity have been dominated by online-gaming (Liu et al., 2019), but this study's finding appears to extend the link across various forms of PUI that are identified by the ISAAQ. Treatment interventions can also be informed by this compulsivity finding. Exposure and Response Prevention and habit reversal therapies are interventions under the CBT framework that have been shown to reduce compulsive behaviours in a variety of mental health difficulties associated with high trait compulsivity (Sulkowski et al., 2013). These include OCD, trichotillomania (hair pulling) and some forms of eating disorders (Magson et al., 2021; Song et al., 2022). If compulsivity is showing to be a determinant of PUI then it stands to reason that psychological therapies targeting that aspect may prove helpful for those being impacted.

DBT and Acceptance and Commitment Therapy (ACT) are both therapeutic modalities that also offer support for compulsive tendencies, and have even been demonstrated as effective in the context of PUI (Aguilar-Yamuza et al., 2024). These findings have also suggested that although CBT is helpful across behavioural addictions, DBT and ACT show significant effectiveness in PUI, and therefore may highlight differing underlying mechanisms at play in its maintenance (Aguilar-Yamuza et al., 2024). Due to the limited number of studies and lack of longitudinal measures of compulsivity within them, further investigation is needed.

The present study may offer insight into the unique combination of impulsivity and compulsivity that inform PUI development compared to other behavioural addictions. During the post-hoc analysis of the hierarchical regression model, the steps of entering study variables were reversed for transparency and to test the robustness of the predictive model. This resulted in no change to the significance of the predictive model but did demonstrate considerable changes to the observed variance explained by compulsivity and impulsivity. Interpreting this must be done cautiously, but it may be indicative of a more dynamic interplay between compulsivity and impulsivity in predicting PUI. The understanding of PUI development may be better served by comparing the interplay of impulsivity and compulsivity rather than viewing their roles as discrete constructs. Combined

variance explained by compulsivity and impulsivity in the predictive model was 30.4%, and it could be the distinct combination of these traits as a phenotype that makes an individual particularly at risk of PUI development. These traits being higher in clinical populations (Hollander et al., 2016; Hook et al., 2021) being a potential explanation for the increased observed rate of PUI. The consistency of these relationships may suggest the combined impacts of trait impulsivity and compulsivity to be underlying explanations for both the mental health and PUI conceptualisations of distress.

This consideration of compulsivity and impulsivity traits in unison has been done in the general population, with one common factor analysis suggesting that the existence of underlying, correlated latent forms of these traits may impair functioning (Chamberlain et al., 2018). The traits, whilst distinct, were positively associated and combined to produce negative outcomes in quality of life. The results in the present study offer tentative support to the idea of a latent phenotype of trait impulsivity and compulsivity predicting PUI in clinical populations. Accepting this theorised link also offers support to existing models of PUI, such as the I-PACE model (Brand et al 2016), that emphasises the role of predisposing traits in an individual such as those suggested in the present study. The I-PACE model recognises trait impulsivity in the predisposing phenotypes in PUI development but also brings emphasis to the stabilisation and intensification of the excessive behaviours also characterised by PUI (Brand et al., 2016). The maintenance of the framework aligns with the persistence of the internet behaviours, despite the presence of negative outcomes, that is better understood through trait compulsivity. This dynamic interplay could help explain a shift in the driving force of PUI from the difficulty terminating the impulse to internet behaviour link, characterised by trait impulsivity (Liu et al., 2019), towards difficulty in terminating ongoing internet behaviours despite the presence of negative outcomes, characterised by trait compulsivity (Volpe et al., 2015). This further embeds the results of the present study in the existing literature surrounding PUI. However, to effectively substantiate this proposed shift, longitudinal methodology would be necessary to measure these traits over time in relation to PUI development and maintenance.

The I-PACE model also suggests that inhibitory control and emotion regulation play a major role in PUI (Brand et al., 2022). Trait impulsivity and compulsivity have been observed to negatively impact an individual's inhibitory control and emotion regulation (Borges & Naugle, 2017; Forsén et al., 2022; Leshem & Yefet, 2019). This correlational evidence, although worth consideration independently, is bolstered by the more recent revisions of the I-PACE framework more definitively identifying the role of compulsivity in understanding PUI (Brand et al., 2025). The present study finding the predictive capacity of trait compulsivity for PUI, reflects in the cognitive rigidity and attentional bias identified in the I-PACE model. The observed combination of trait impulsivity and compulsivity, whilst not being

the sole explanatory factors for PUI development, offers noteworthy contribution to understanding its determinants. The increased presence of these traits in clinical populations (Hollander et al., 2016; Hook et al., 2021) may therefore offer understanding as to why the PUI rate was observed as higher in this sub-group.

A methodological consideration for this is contending with whether the relationship identified relates to impulsivity and compulsivity with the mental health diagnoses rather than with PUI co-occurrence. Some diagnoses, such as those under the category of OCD, demonstrate more compulsivity than others and may contribute to this relationship. Comparison of the PUI and Non-PUI group does to some extent control for the effect of mental health diagnosis on impulsivity and compulsivity findings. However, we cannot fully rule out the effect of diagnosis within this study design. Future research, with a larger sample that could facilitate matched diagnosis across PUI and non-PUI groups, could account for this.

5.3.1. Research Question 2 Summary

There was no statistical association observed between mood disorders and rates of PUI compared to other diagnostic categories. The findings therefore do not support the vigilance to specific mental health presentations over others in the risk of PUI development. It also offers support for shifting the focus of PUI in diagnostic framing to that of traits of impulsivity and compulsivity extending into the domain of the internet. Wider implications of this shift were explored. The relationship between diagnoses and PUI was explored to the extent to which the methodology allowed. Future research with larger samples of differing diagnostic categories could interrogate this comparison further.

Unlike diagnostic categories, both measures of impulsivity and compulsivity were demonstrated to predict the rates of PUI. Implications for both traits were considered separately but also as a combined model theorised as a latent phenotype for predisposition to PUI development. This conceptualisation aligns with the I-PACE model and the parallels were explored in the development of PUI for an individual as well as the reinforcement of the excessive usage. This offers insights into the role that impulsivity and compulsivity traits play in clinical populations being additionally vulnerable for developing these difficulties, evident in the increased rate observed. It also offers support for the focus on these dimensions in psychological support for those suffering the negative outcomes associated with PUI, however further longitudinal research would be needed to demonstrate the effectiveness of this.

5.4. Research Question 3: What is the impairment of functioning for those with PUI and comorbid mental health presentations?

Hypothesis 7: There is a significant difference in work and social impairment measures between the PUI and non-PUI population

The results of this study found that total impairment scores on the WSAS were significantly higher for those in the clinical population who met the threshold for PUI compared with those who did not. This suggests that the impairment to daily functioning is significantly higher for those with co-occurring mental health and PUI difficulties. The WSAS measures a range of functional domains across occupational and social activities. The findings suggest that the impairment to daily functioning in a broad range of domains (work/education, home management; social leisure activities, private leisure activities, relationships) is significantly higher for those with PUI. In the context of the WSAS, a total score of 0-9 indicates Low impairment, 10-19 is Moderate Impairment and 20-40 is Severe Impairment (Lundqvist et al., 2024). The median WSAS total varied significantly between the PUI group (Md = 27), falling in the severe category, compared to the Non-PUI group (Md = 15), where it sits within the moderate category. However this particular comparison should be held lightly due to the stark difference in group sizes.

Of note, the finding relates to the total WSAS score; it was not within the scope of the project plan to analyse each specific domain independently. This would be an opportunity for a future exploratory analysis. Nevertheless this overall increase in impairment reflects significant challenges for this population that warrants appropriate support and further raises the concern of only 12.1% being asked about their internet usage within the sample. The significant difference in impairment may also be indicative of PUI exacerbating mental health difficulties.

The results emphasize that those with PUI alongside a psychiatric diagnosis present as an additionally vulnerable population. This strengthens the call for services such as the National Gaming Disorder Clinic within the UK (NHS England, 2019). Their referrals have significantly increased over the past 5 years since its inception and they have also documented the uniquely detrimental impact to functioning evident within this population (Piper et al., 2024). The Piper et al (2024) result further supports the need to increase this provision for other forms of PUI, as outlined in the NHS Long-term plan for behavioural addictions (NHS England, 2019). Within this study sample, the total impacts of PUI on the lives of those with a psychiatric diagnosis are not consistent with the impairment of those solely with the diagnosis. Therefore further specialised provision may be necessary for appropriate support. An alternate approach would be to provide training for clinicians across mental health teams to increase confidence in screening for PUI, bolstered by the use of validated measures like

the ISAAQ (Omrawo et al., 2023), and to provide insights into therapies evidenced in supporting those with PUI (Tarrega et al., 2015). This could support the provision for PUI being embedded in existing services rather than establishing separate specialist services, and could arguably be more pragmatic in a resource strained NHS setting aiming to shift away from silo working (Willcocks & Conway, 2022). The notion of embedding PUI support across services instead of referring 'out' is further supported by the study finding of no association between diagnostic category and PUI rates.

The compounding impacts demonstrated in this finding aligns with the concerns of the EU-PUI surrounding appropriate screening and support (Fineberg et al., 2022). With the increasingly digitalised world across domains of life, alongside the shift towards online therapies within the UK (McKenny et al., 2021), there is an increasing exposure for those vulnerable to the development of PUI (Dresp-Langley & Hutt, 2022). The results from this study reinforce the concerns of the EU-PUI and the need for early detection, recognition and prevention of PUI (Fineberg et al., 2022).

This finding also encounters the methodological limitations evidenced in the wider PUI literature (Laconi et al., 2014b; Lortie & Guitton, 2013), through the use of a threshold for PUI that is non-clinical and therefore the grouping of PUI and non-PUI for analysis should be held lightly. The demarcation point for the ISAAQ represents likely PUI but there may be differences if an alternate measure or threshold was used, such as >24 on Young's Internet Addiction Test (Omrawo et al., 2023), therefore impacting the confidence we interpret this finding with. This has been a wider issue in PUI research where different thresholds have been required across populations (Tiego et al., 2019). Additionally, the ISAAQ measure has not been validated within clinical populations so the demarcation point may not remain consistent (Omrawo et al., 2023). It was nonetheless deemed appropriate to use as there is no validated measure existing for PUI within clinical populations due to the limited exploration of this in the wider literature landscape. Although the grouping of PUI and non-PUI holds these limitations, the study finding is supported by the Correlation Matrix shown in Table 10. It shows the large positive correlation between ISAAQ-A scores and WSAS scores ($r = .660$, $p < .001$). This suggests that the more problematic the use of internet is for participants in the sample, the higher the impact on domains of functioning there is. This aligns with the finding of those reaching the threshold of PUI having significantly greater impairment than those who do not and increases confidence in its reliability.

Further investigation could explore the impairment of PUI on specific domains of an individual's life, as well as if PUI presenting in certain forms of internet use correspond with greater amounts of impairment. This would offer greater insight for clinicians on what forms of PUI to be increasingly vigilant for in clinical populations. Furthermore, interviewing family members and relevant others

may offer insight into the impacts of PUI across the system. Involving families and supportive structures is necessary in many forms of mental health provision and is particularly present in child and adolescent services (Aass et al., 2022; Wirehag et al., 2024). Extending this relational approach to the understanding of PUI and its impacts could better aid the understanding of PUI and subsequently improve the support available.

5.4.1. Research Question 3 Summary

The findings of this study identify a compounding level of impairment to daily life in those with PUI and a psychiatric diagnosis. Therefore, not only are clinical populations more vulnerable to the development of PUI, they are additionally detrimentally impacted in their capacity to engage in life in the ways they wish. This further emphasizes a need to screen and support those affected by their relationship with the internet. Although some forms of PUI have found provision in the UK, such as gaming and gambling, acceleration of this offering is needed. The finding focuses on total levels of impairment and future research could further explore the specific domains of life most impacted for this population. Gathering perspectives of those within the impacted individual's life could offer further insight into these experiences.

5.5. Summary of Clinical Implications

This study indicates that those with a mental health diagnosis were not only more vulnerable to having PUI, but were also shown to have additional impairment for those with co-occurrence. The vast majority were not asked about their internet use during mental health support, despite self-reporting concerns around their internet use at a greater rate than the PUI measures observed. The participants' concerns mirror those of organisations such as the EU-PUI and strengthen the call for appropriate support in an increasingly internet-dependent society. Roundtable discussions to bolster healthcare provision for those individuals and their families impacted by PUI also need the input of NHS managers, clinicians, academics and experts by experience. Suitable screening within routine mental health support is warranted; the development of service short-form screening tools based on measures such as the ISAAQ may support this. The findings surrounding the roles of impulsivity and compulsivity offer insights into supporting the individuals impacted by PUI. The predictive nature of these traits for PUI support therapies targeting these determinants.

The potential for a dynamic interplay of these traits as driving forces for PUI development and maintenance could help guide clinical vigilance that is not limited to diagnostic categories. If an individual has traits of impulsivity and compulsivity, this could present a unique vulnerability to developing PUI regardless of psychiatric diagnosis. Existing psychological interventions targeting these factors may offer support to those impacted by PUI. The findings offer support for the I-PACE

model of PUI that can bolster psychological formulation of these difficulties and better guide person-centred intervention. Embedding this understanding across existing mental health services may prove more pragmatic than the establishment of specialised services, particularly with an increased rate of PUI not being found to be associated with specific diagnoses.

Psychological interventions, in the form of DBT and ACT, have already been evidenced for supporting PUI but the societal shift to recognising the potential harms of PUI extends to outside of NHS settings. Organisations such as 5Rights, Children and Screens Foundation, and the Lancet Psychiatry Commission have already begun this work (Christakis & Hale, 2025; Fineberg et al., 2025). These have a particular focus on children and adolescents, however the findings of the present study suggest this same emphasis is needed in adult settings.

5.6. Summary of Academic Implications

The findings of the current study contribute to the wider understanding of PUI in a number of ways. Whilst recognising the increased rates of PUI in clinical populations, the present study also identified the need to reconsider thresholds and conceptualising PUI as a binary. The additional impairment of PUI and co-occurring mental health difficulties also support the understanding of the two constructs as, to some degree, distinct from one another. The classification of PUI in the present study has been dependent on self-report measures, whereas future research taking a direct observational approach may mitigate some of the limitations identified. The findings also align with existing frameworks of PUI such as the I-PACE model. The findings from the clinical population in the present study both directly and indirectly contribute to this framing. Directly, in the form of evidencing the role of individual predisposing traits such as impulsivity and compulsivity in predicting PUI. As well as indirectly, though the impact these traits can have on theorised driving forces of PUI such as inhibitory control and emotion regulation. The implications of this support testing targeted therapies for these underlying psychological mechanisms with the aim of alleviating the associated distress of PUI for those affected.

The current study has contributed to the understanding of PUI in UK clinical populations. However, there remain a number of avenues for further investigation in the area. Future use of longitudinal methodological design would likely offer further insights into the presentation of PUI in individuals' lives. One area in particular could be the repeated measures of impulsivity and compulsivity across time to further investigate the dynamic interplay that the two constructs may play in formation and maintenance of PUI. Although the current study did not find any link between diagnoses and PUI rates, future research could interrogate this further through matched grouping of diagnoses with sufficient sample size to power statistical analysis. Further exploration is needed of whether specific

internet forms are translating more into problematic use and whether additional impairment to lives for those with PUI and co-occurring mental health difficulties is more evident in particular domains of functioning as identified in the WSAS (work/education, home management; social leisure activities, private leisure activities, relationships). Research into these areas should be inclusive of wider family perspectives to better understand the wider system impacts and qualitative methodologies could offer additional insight on this. Exploration of these areas may better guide assessment and targeted support for those affected by PUI.

5.7 Study Limitations

One main limitation of the study was that the ISAAQ has been validated in general populations but not within clinical populations. This means all findings need to consider this within the conclusions drawn from them. Additionally, self-report information gathered in the study may have influenced accuracy of certain factors such as diagnostic category. Prioritising anonymity resulted in a limitation to the accuracy of diagnostic categories and this may affect reliability of findings. Offering examples prompts of diagnosis within each category were utilised to attempt to mitigate this limitation. One further limitation is the study sample being collected from one region of the UK, therefore applying conclusions may not account for regional variance.

5.7. Conclusion

With limited attention to PUI applied among UK patients with mental health diagnoses, roughly one in seven reported likely PUI using a validated scale. We can therefore conclude clinical samples as more at risk of PUI when compared to established rates in the general population. The self-identified problematic use exceeded what was observed in the ISAAQ measure, demonstrating that the public health concern is also shared by the individuals affected. The specific internet activity did not appear to influence PUI rates in the sample, although further research would be needed to more comprehensively assert this.

No particular diagnostic group was overrepresented in terms of PUI rate, however this analysis was limited by the participant distribution of diagnoses. Unlike the categorical approach of diagnosis, impulsivity and compulsivity dimensions both demonstrated predictive capacity for PUI. The dynamic interplay of these may offer insight into the onset and maintenance of PUI. They align with and offer support to the existing I-PACE model of PUI. Considering the additional functional impairment associated with PUI in people already impacted by their mental health, clinicians working in all fields of mental health support need to be vigilant and consider enquiring about PUI during routine care.

To support the operationalisation of study conclusions, below are the actions points drawn from the knowledge generated in the present study.

5.8. Action Points

- Consideration of PUI screening measures, alongside clinical judgment, in routine mental health care to support identification.
- Targeted therapeutic focus on PUI with interventions tailored to address likely determinants including impulsivity and compulsivity (such as CBT, DBT, ACT) to support those affected by the additional impact of PUI and co-occurring mental health difficulties.
- Roundtable discussions including experts by experience and their families for service development, as public health and individual concern is shared.
- Further research incorporating observational and longitudinal methodological designs to extend our understanding of PUI and its harms and further inform how to support those affected.

6. References

- Aass, L. K., Moen, Ø. L., Skundberg-Kletthagen, H., Lundqvist, L. O., & Schröder, A. (2022). Family support and quality of community mental health care: Perspectives from families living with mental illness. *Journal of Clinical Nursing*, 31(7-8), 935-948.
- Aboujaoude, E., Koran, L. M., Gamel, N., Large, M. D., & Serpe, R. T. (2006). Potential Markers for Problematic Internet Use: A Telephone Survey of 2,513 Adults. *CNS Spectrums*, 11(10), 750–755. <https://doi.org/10.1017/S1092852900014875>
- Aguilar-Yamuza, B., Trenados, Y., Herruzo, C., Pino, M. J., & Herruzo, J. (2024). A systematic review of treatment for impulsivity and compulsivity. *Frontiers in Psychiatry*, 15, 1430409.
- Alessi, E. J., & Martin, J. I. (2010). Conducting an internet-based survey: benefits, pitfalls, and lessons learned. *Social Work Research*, 34(2), 122–128.
- Alimoradi, Z., Lin, C.-Y., Broström, A., Bülow, P. H., Bajalan, Z., Griffiths, M. D., Ohayon, M. M., & Pakpour, A. H. (2019). Internet addiction and sleep problems: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 47, 51–61. <https://doi.org/10.1016/j.smrv.2019.06.004>
- Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). Internet use and Problematic Internet Use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. *International Journal of Adolescence and Youth*, 22(4), 430–454. <https://doi.org/10.1080/02673843.2016.1227716>
- Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors*, 64, 287–293. <https://doi.org/10.1016/j.addbeh.2016.03.006>
- Aslan, I. H., Dorey, L., Grant, J. E., & Chamberlain, S. R. (2024). Emotion regulation across psychiatric disorders. *CNS Spectrums*, 29(3), 215–220. <https://doi.org/10.1017/S1092852924000270>
- Ateş, C., Kaymaz, Ö., Kale, H. E., & Tekindal, M. A. (2019). Comparison of test statistics of nonnormal and unbalanced samples for multivariate analysis of variance in terms of type-I error rates. *Computational and Mathematical Methods in Medicine*, 2019(1), 2173638.
- Ayas, T., & Horzum, M. (2013). Relation between depression, loneliness, self-esteem and internet addiction. *Education*, 133(3), 283–290.
- Baggio, S., Iglesias, K., Berchtold, A., & Suris, J. C. (2017). Measuring internet use: comparisons of different assessments and with internet addiction. *Addiction Research & Theory*, 25(2), 114–120.
- Baloğlu, M., Şahin, R., & Arpacı, I. (2020). A review of recent research in problematic internet use: Gender and cultural differences. *Current Opinion in Psychology*, 36, 124–129. <https://doi.org/10.1016/j.copsyc.2020.05.008>
- Bipeta, R., Yerramilli, S. S., Karredla, A. R., & Gopinath, S. (2015). Diagnostic stability of internet addiction in obsessive-compulsive disorder: data from a naturalistic one-year treatment study. *Innovations in Clinical Neuroscience*, 12(3–4), 14–23.
- Boden, M., & Day, E. (2023). Illicit drug use in university students in the UK and Ireland: a PRISMA-guided scoping review. *Substance Abuse Treatment, Prevention, and Policy*, 18(1), 18.
- Borges, L. M., & Naugle, A. E. (2017). The role of emotion regulation in predicting personality dimensions. *Personality and Mental Health*, 11(4), 314–334.
- Bowden-Jones, H., Hook, R. W., Grant, J. E., Ioannidis, K., Corazza, O., Fineberg, N. ..., & Chamberlain, S. (2022). Gambling disorder in the UK: key research priorities and the urgent need for independent research funding. *The Lancet Psychiatry*, 9(4), 321–329.

- Bozkurt, H., Coskun, M., Ayaydin, H., Adak, İ., & Zoroglu, S. S. (2013). Prevalence and patterns of psychiatric disorders in referred adolescents with Internet addiction. *Psychiatry and Clinical Neurosciences*, 67(5), 352–359. <https://doi.org/10.1111/pcn.12065>
- Brand, M., Müller, A., Wegmann, E., Antons, S., Brandtner, A., Müller, S. M., & Potenza, M. N. (2025). Current interpretations of the I-PACE model of behavioral addictions. *Journal of Behavioral Addictions*, 14(1), 1-17.
- Brand, M., Potenza, M. N., & Stark, R. (2022). Theoretical models of types of problematic usage of the Internet: When theorists meet therapists. *Current Opinion in Behavioral Sciences*, 45, 101119. <https://doi.org/10.1016/j.cobeha.2022.101119>
- Brand, M., Rumpf, H.-J., Demetrovics, Z., Müller, A., Stark, R., King, D. L., Goudriaan, A. E., Mann, K., Trotzke, P., Fineberg, N. A., Chamberlain, S. R., Kraus, S. W., Wegmann, E., Billieux, J., & Potenza, M. N. (2020). Which conditions should be considered as disorders in the International Classification of Diseases (ICD-11) designation of “other specified disorders due to addictive behaviors”? *Journal of Behavioral Addictions*, 11(2), 150–159. <https://doi.org/10.1556/2006.2020.00035>
- Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience & Biobehavioral Reviews*, 104, 1–10. <https://doi.org/10.1016/j.neubiorev.2019.06.032>
- Brand, M., Young, K. S., Laier, C., Wölfling, K., & Potenza, M. N. (2016). Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect-Cognition-Execution (I-PACE) model. *Neuroscience & Biobehavioral Reviews*, 71, 252–266. <https://doi.org/10.1016/j.neubiorev.2016.08.033>
- Braun, V., & Clarke, V. (2021). *Thematic Analysis: A Practical Guide*. Sage.
- Breuer, F., Meyhöfer, I., Lencer, R., Sprenger, A., Roesmann, K., Schag, K., Dannlowski, U., & Leehr, E. J. (2024). Aberrant inhibitory control as a transdiagnostic dimension of mental disorders – A meta-analysis of the antisaccade task in different psychiatric populations. *Neuroscience & Biobehavioral Reviews*, 165, 105840. <https://doi.org/10.1016/j.neubiorev.2024.105840>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, 395(10227), 912-920.
- Brown, R. J., Skelly, N., & Chew-Graham, C. A. (2020). Online health research and health anxiety: A systematic review and conceptual integration. *Clinical Psychology: Science and Practice*, 27(2), e12299.
- Brown, T., Stavropoulos, V., Christidi, S., Papastefanou, Y., & Matsa, K. (2021). Problematic internet use: The effect of comorbid psychopathology on treatment outcomes. *Psychiatry Research*, 298, 113789. <https://doi.org/10.1016/j.psychres.2021.113789>
- Burkauskas, J., Gecaite-Stonciene, J., Demetrovics, Z., Griffiths, M. D., & Király, O. (2022). Prevalence of problematic Internet use during the coronavirus disease 2019 pandemic. *Current Opinion in Behavioral Sciences*, 46, 101179. <https://doi.org/10.1016/j.cobeha.2022.101179>
- Burtäverde, V., Jonason, P. K., Giosan, C., & Ene, C. (2021). Why do people watch porn? An evolutionary perspective on the reasons for pornography consumption. *Evolutionary Psychology*, 19(2), 14747049211028798.

- Bussu, S., Lalani, M., Pattison, S., & Marshall, M. (2021). Engaging with care: Ethical issues in Participatory Research. *Qualitative Research*, 21(5), 667–685.
<https://doi.org/10.1177/1468794120904883>
- Butkowski, C. P., Dixon, T. L., & Weeks, K. (2019). Body surveillance on Instagram: examining the role of selfie feedback investment in young adult women's body image Concerns. *Sex Roles*, 81(5), 385–397. <https://doi.org/10.1007/s11199-018-0993-6>
- Capili, B. (2021). Cross-Sectional Studies. *AJN The American Journal of Nursing*, 121(10), 59.
<https://doi.org/10.1097/01.NAJ.0000794280.73744.fe>
- Carlo, G., Knight, G. P., Roesch, S. C., Opal, D., & Davis, A. (2014). Personality across cultures: A critical analysis of Big Five research and current directions. In F. T. L. Leong, L. Comas-Díaz, G. C. Nagayama Hall, V. C. McLoyd, & J. E. Trimble (Eds.), *APA handbook of multicultural psychology*, Vol. 1: Theory and research (pp. 285–298). American Psychological Association.
- Carroll, N., & Conboy, K. (2020). Normalising the “new normal”: Changing tech-driven work practices under pandemic time pressure. *International Journal of Information Management*, 55, 102186. <https://doi.org/10.1016/j.ijinfomgt.2020.102186>
- Cash, H., Rae, C. D., Steel, A. H., & Winkler, A. (2012). Internet addiction: a brief summary of research and practice. *Current Psychiatry Reviews*, 8(4), 292–298.
<https://doi.org/10.2174/157340012803520513>
- Cerniglia, L., Cimino, S., Marzilli, E., Pascale, E., & Tambelli, R. (2020). Associations among internet addiction, genetic polymorphisms, family functioning, and psychopathological risk: cross-sectional exploratory study. *JMIR Mental Health*, 7(12), e17341.
<https://doi.org/10.2196/17341>
- Ceyhan, E., Boysan, M., & Kadak, M. (2018). Associations between online addiction, attachment Style, emotion regulation, depression and anxiety in general population: testing the proposed diagnostic criteria for internet addiction. *Sleep and Hypnosis - International Journal*, 21, 123–139. <https://doi.org/10.5350/Sleep.Hypn.2019.21.0181>
- Chamberlain, S. R., Ioannidis, K., & Grant, J. E. (2018). The impact of comorbid impulsive/compulsive disorders in problematic Internet use. *Journal of behavioral addictions*, 7(2), 269-275.
- Chamberlain, S. R., Stochl, J., Redden, S. A., & Grant, J. E. (2018). Latent traits of impulsivity and compulsivity: toward dimensional psychiatry. *Psychological Medicine*, 48(5), 810-821.
- Chamberlain, S. R., Tiego, J., Fontenelle, L. F., Hook, R., Parkes, L., Segrave, R., Hauser, T. U., Dolan, R. J., Goodyer, I. M., Bullmore, E., Grant, J. E., & Yücel, M. (2019). Fractionation of impulsive and compulsive trans-diagnostic phenotypes and their longitudinal associations. *Australian & New Zealand Journal of Psychiatry*, 53(9), 896–907.
<https://doi.org/10.1177/0004867419844325>
- Chen, C.-Y., Chen, I.-H., Hou, W.-L., Potenza, M. N., O'Brien, K. S., Lin, C.-Y., & Latner, J. D. (2022). The relationship between children's problematic internet-related behaviors and psychological distress during the onset of the COVID-19 pandemic: a longitudinal study. *Journal of Addiction Medicine*, 16(2), e73. <https://doi.org/10.1097/ADM.0000000000000845>
- Chen, S. K., Lo, M. T., & Lin, S. S. (2017). Impulsivity as a precedent factor for problematic Internet use: How can we be sure? *International Journal of Psychology*, 52(5), 389-397.
- Cheng, C., & Lau, Y. C. (2022). Social media addiction during COVID-19-mandated physical distancing: relatedness needs as motives. *International journal of environmental research and public health*, 19(8), 4621.

- Christakis, D. A., & Hale, L. (2025). *Handbook of children and screens: Digital media, development, and well-being from birth through adolescence* (p. 657). Springer Nature.
- Chun, J., Shim, H., & Kim, S. (2017). A meta-analysis of treatment interventions for internet addiction among Korean adolescents. *Cyberpsychology, Behavior, and Social Networking*, 20(4), 225-231.
- Çimşir, E., & Akdoğan, R. (2024). Inferiority feelings and internet addiction among Turkish University students in the context of COVID-19: the mediating role of emotion dysregulation. *Current Psychology*, 43(5), 4245-4254.
- Clark, D. A. (2022). Cognitive reappraisal. *Cognitive and Behavioral Practice*, 29(3), 564–566. <https://doi.org/10.1016/j.cbpra.2022.02.018>
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (Second Edi.). Hisdale: Lawrence Erlbaum Associates.
- Cohen, J. (1992). Quantitative methods in psychology: a power primer. *Psychological Bulletin*, 112, 155-159.
- Cuthbert, B. N. (2022). Research domain criteria (RDoC): progress and potential. *Current Directions in Psychological Science*, 31(2), 107-114.
- Dang, D., Dearholt, S. L., Bissett, K., Ascenzi, J., & Whalen, M. (2021). *Evidence-based practice for nurses and healthcare professionals: model and guidelines, Fourth Edition*. Johns Hopkins
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior*, 17(2), 187–195. [https://doi.org/10.1016/S0747-5632\(00\)00041-8](https://doi.org/10.1016/S0747-5632(00)00041-8)
- Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic internet use: implications for pre-employment screening. *CyberPsychology & Behavior*, 5(4), 331–345. <https://doi.org/10.1089/109493102760275581>
- Dayan, J., Bernard, A., Olliac, B., Mailhes, A.-S., & Kermarrec, S. (2010). Adolescent brain development, risk-taking and vulnerability to addiction. *Journal of Physiology-Paris*, 104(5), 279–286. <https://doi.org/10.1016/j.jphysparis.2010.08.007>
- Dell’Osso, B., Bernardo, I. D., Vismara, M., Piccoli, E., Giorgetti, F., Molteni, L., Fineberg, N. A., Virzi, C., Bowden-Jones, H., Truzoli, R., & Viganò, C. (2021). Managing Problematic Usage of the Internet and Related Disorders in an Era of Diagnostic Transition: An Updated Review. *Clinical Practice and Epidemiology in Mental Health : CP & EMH*, 17, 61. <https://doi.org/10.2174/1745017902117010061>
- Derges, J., Bould, H., Gooberman-Hill, R., Moran, P., Linton, M.-J., Rifkin-Zybutz, R., & Biddle, L. (2023). Mental health practitioners’ and young people’s experiences of talking about social media during mental health consultations: qualitative focus group and interview study. *JMIR Formative Research*, 7(1), e43115. <https://doi.org/10.2196/43115>
- Di Carlo, F., Pettorruso, M., Alessi, M. C., Picutti, E., Collevicchio, R., Migliara, G., Baroni, G., Gambi, F., Cinosi, E., Martinotti, G., Grant, J. E., & di Giannantonio, M. (2021). Characterizing the building blocks of Problematic Use of the Internet (PUI): The role of obsessional impulses and impulsivity traits among Italian young adults. *Comprehensive Psychiatry*, 106, 152225. <https://doi.org/10.1016/j.comppsy.2021.152225>
- Diotaiuti, P., Mancone, S., Corrado, S., De Risio, A., Cavicchiolo, E., Girelli, L., & Chirico, A. (2022). Internet addiction in young adults: The role of impulsivity and codependency. *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsy.2022.893861>
- Dores, A. R., Antunes, C., Ioannidis, K., Lochner, C., Geraldo, A., Carvalho, I. P., & Marques, A. (2023). *Internet Severity and Activities Questionnaire (ISAAQ): Tradução e adaptação para Português*

- Drach, R. D., Orloff, N. C., & Hormes, J. M. (2021). The emotion regulatory function of online social networking: Preliminary experimental evidence. *Addictive Behaviors*, 112, 106559. <https://doi.org/10.1016/j.addbeh.2020.106559>
- Dresp-Langley, B., & Hutt, A. (2022). Digital addiction and sleep. *International journal of environmental research and public health*, 19(11), 6910.
- Drummond, A., & Sauer, J. D. (2018). Video game loot boxes are psychologically akin to gambling. *Nature Human Behaviour*, 2 (8), 530–532.
- Durkee, T., Kaess, M., Carli, V., Parzer, P., Wasserman, C., Floderus, B., Apter, A., Balazs, J., Barzilay, S., Bobes, J., Brunner, R., Corcoran, P., Cosman, D., Cotter, P., Despalins, R., Graber, N., Guillemin, F., Haring, C., Kahn, J.-P., ... Wasserman, D. (2012). Prevalence of pathological internet use among adolescents in Europe: Demographic and social factors. *Addiction*, 107(12), 2210–2222. <https://doi.org/10.1111/j.1360-0443.2012.03946.x>
- Emerson, R. W. (2021). Convenience sampling revisited: Embracing its limitations through thoughtful study design. *Journal of Visual Impairment & Blindness*, 115(1), 76-77.
- Eriksen, M. B., & Frandsen, T. F. (2018). The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: A systematic review. *Journal of the Medical Library Association*, 106(4), Article 4. <https://doi.org/10.5195/jmla.2018.345>
- Eşkisu, M., Boysan, M., & Çam, Z. (2024). A mixture modeling of the predictors of internet addiction: Cognition and dissociation. *Psychological Reports*, 127(5), 2262-2286.
- Fineberg, N., Demetrovics, Z., Potenza, M. N., Mestre-Bach, G., Ekhtiari, H., Roman-Urrestarazu, A., & Stein, D. J. (2025). Global action on problematic usage of the internet: announcing a Lancet Psychiatry Commission. *The Lancet Psychiatry*, 12(1), 11-13.
- Fineberg, N., Demetrovics, Z., Stein, D., Ioannidis, K., Potenza, M., Grünblatt, E., Brand, M., Billieux, J., Carmi, L., King, D., Grant, J., Yücel, M., Dell’Osso, B., Rumpf, H., Hall, N., Hollander, E., Goudriaan, A., Menchon, J., Zohar, J., ... Chamberlain, S. (2018). Manifesto for a European research network into Problematic Usage of the Internet. *European Neuropsychopharmacology*, 28(11), 1232–1246. <https://doi.org/10.1016/j.euroneuro.2018.08.004>
- Fineberg, N., Menchón, J. M., Hall, N., Dell’Osso, B., Brand, M., Potenza, M. N., Chamberlain, S. R., Cirnigliaro, G., Lochner, C., Billieux, J., Demetrovics, Z., Rumpf, H. J., Müller, A., Castro-Calvo, J., Hollander, E., Burkauskas, J., Grünblatt, E., Walitza, S., Corazza, O., ... Zohar, J. (2022). Advances in problematic usage of the internet research – A narrative review by experts from the European network for problematic usage of the internet. *Comprehensive Psychiatry*, 118, 152346. <https://doi.org/10.1016/j.comppsy.2022.152346>
- Fineberg, N., Sharma, P., Sivakumaran, T., Sahakian, B., & Chamberlain, S. (2007). Does obsessive-compulsive personality disorder belong within the obsessive-compulsive spectrum? *CNS Spectrums*, 12(6), 467–482. <https://doi.org/10.1017/S1092852900015340>
- Finkelhor, S. Mitchell, K., & Wolak J. (2000). *Online victimization: A report on the nation’s youth*. Retrieved from http://www.unh.edu/ccrc/Youth_Internet_info_page.html
- Fumero, A., Marrero, R. J., Voltes, D., & Peñate, W. (2018). Personal and social factors involved in internet addiction among adolescents: A meta-analysis. *Computers in Human Behavior*, 86, 387–400. <https://doi.org/10.1016/j.chb.2018.05.005>

- Gadelkarim, W., Shahper, S., Reid, J., Wikramanayake, M., Kaur, S., Kolli, S., Osman, S., & Fineberg, N. A. (2019). Overlap of obsessive–compulsive personality disorder and autism spectrum disorder traits among OCD outpatients: An exploratory study. *International Journal of Psychiatry in Clinical Practice*, 23(4), 297–306. <https://doi.org/10.1080/13651501.2019.1638939>
- Gecaite-Stonciene, J., Fineberg, N. A., Podlipskyte, A., Neverauskas, J., Juskiene, A., Mickuviene, N., & Burkauskas, J. (2020). Mental fatigue, but not other fatigue characteristics, as a candidate feature of obsessive compulsive personality disorder in patients with anxiety and mood disorders— an exploratory study. *International Journal of Environmental Research and Public Health*, 17(21), Article 21. <https://doi.org/10.3390/ijerph17218132>
- Ghiaccio, R., Passaro, A., Stasolla, F., Martini, E., De Fortuna, A. M., & De Luca Picione, R. (2025). Exploring the association between problematic internet use, internet gaming disorder in adolescents with ADHD: a scoping review. *International Journal of Environmental Research and Public Health*, 22(4), Article 4. <https://doi.org/10.3390/ijerph22040496>
- Gilbert, P. (2009). Introducing compassion-focused therapy. *Advances in Psychiatric Treatment*, 15(3), 199–208. <https://doi.org/10.1192/apt.bp.107.005264>
- Gjoneska, B., Potenza, M. N., Jones, J., Corazza, O., Hall, N., Sales, C. M. D., Grünblatt, E., Martinotti, G., Burkauskas, J., Werling, A. M., Walitza, S., Zohar, J., Menchón, J. M., Király, O., Chamberlain, S. R., Fineberg, N. A., & Demetrovics, Z. (2022). Problematic use of the internet during the COVID-19 pandemic: Good practices and mental health recommendations. *Comprehensive Psychiatry*, 112, 152279. <https://doi.org/10.1016/j.comppsy.2021.152279>
- Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment*, 4(1), 26–42. <https://doi.org/10.1037/1040-3590.4.1.26>
- Gorowska, M., Tokarska, K., Zhou, X., Gola, M. K., & Li, Y. (2022). Novel approaches for treating Internet Gaming Disorder: A review of technology-based interventions. *Comprehensive Psychiatry*, 115, 152312. <https://doi.org/10.1016/j.comppsy.2022.152312>
- Gritsenko, V., Skugarevsky, O., Konstantinov, V., Khamenka, N., Marinova, T., Reznik, A., & Isralowitz, R. (2021). COVID 19 fear, stress, anxiety, and substance use among Russian and Belarusian university students. *International journal of mental health and addiction*, 19, 2362–2368.
- Harris, R. (2019). *ACT made simple: an easy-to-read primer on acceptance and commitment therapy*. New Harbinger Publications.
- Haslam, S. A., McGarty, C., Cruwys, T., & Steffens, N. K. (2024). *Research Methods and Statistics in Psychology*. SAGE Publications.
- Hollander, E., Doernberg, E., Shavitt, R., Waterman, R. J., Soreni, N., Veltman, D. J., Sahakian, B. J., & Fineberg, N. A. (2016). The cost and impact of compulsivity: A research perspective. *European Neuropsychopharmacology*, 26(5), 800–809. <https://doi.org/10.1016/j.euroneuro.2016.02.006>
- Hook, R. W., Grant, J. E., Ioannidis, K., Tiego, J., Yücel, M., Wilkinson, P., & Chamberlain, S. R. (2021). Trans-diagnostic measurement of impulsivity and compulsivity: A review of self-report tools. *Neuroscience & Biobehavioral Reviews*, 120, 455–469. <https://doi.org/10.1016/j.neubiorev.2020.10.007>
- Hui, A., Latif, A., Hinsliff-Smith, K., & Chen, T. (2020). Exploring the impacts of organisational structure, policy and practice on the health inequalities of marginalised communities: Illustrative cases from the UK healthcare system. *Health Policy*, 124(3), 298–302. <https://doi.org/10.1016/j.healthpol.2020.01.003>
- IBM Corp. (2020). IBM SPSS Statistics for Windows (Version 27.0) [Computer software]. IBM Corp.

- Ioannidis, K., Chamberlain, S. R., Treder, M. S., Kiraly, F., Leppink, E. W., Redden, S. A., & Grant, J. E. (2016). Problematic internet use (PIU): associations with the impulsive-compulsive spectrum. An application of machine learning in psychiatry. *Journal of psychiatric research*, 83, 94-102.
- Ioannidis, K., Taylor, C., Holt, L., Brown, K., Lochner, C., Fineberg, N. A., Corazza, O., Chamberlain, S. R., Roman-Urrestarazu, A., & Czabanowska, K. (2021). Problematic usage of the internet and eating disorder and related psychopathology: A multifaceted, systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*, 125, 569–581. <https://doi.org/10.1016/j.neubiorev.2021.03.005>
- Ioannidis, K., Tiego, J., Lutz, N., Omrawo, C., Yücel, M., Grant, J. E., Lochner, C., & Chamberlain, S. R. (2023). Internet severity and activities addiction questionnaire (ISAAQ): Psychometrics of item response theory and clustering of online activities. *Comprehensive Psychiatry*, 122, 152366. <https://doi.org/10.1016/j.comppsy.2023.152366>
- Ioannidis, K., Treder, M. S., Chamberlain, S. R., Kiraly, F., Redden, S. A., Stein, D. J., Lochner, C., & Grant, J. E. (2018). Problematic internet use as an age-related multifaceted problem: Evidence from a two-site survey. *Addictive Behaviors*, 81, 157–166. <https://doi.org/10.1016/j.addbeh.2018.02.017>
- Jo, Y. S., Bhang, S. Y., Choi, J. S., Lee, H. K., Lee, S. Y., & Kweon, Y. S. (2019). Clinical characteristics of diagnosis for internet gaming disorder: comparison of DSM-5 IGD and ICD-11 GD diagnosis. *Journal of Clinical Medicine*, 8(7), 945.
- Jouhki, H., Savolainen, I., Sirola, A., & Oksanen, A. (2022). Escapism and excessive online behaviors: A three-wave longitudinal study in Finland during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 19(19), 12491.
- Joyner, K. J., Daurio, A. M., Perkins, E. R., Patrick, C. J., & Latzman, R. D. (2021). The difference between trait disinhibition and impulsivity—And why it matters for clinical psychological science. *Psychological Assessment*, 33(1), 29–44. <https://doi.org/10.1037/pas0000964>
- Kang, H. (2021). Sample size determination and power analysis using the G* Power software. *Journal of educational evaluation for health professions*, 18.
- Kang, S. K., Kwon, J., & Kim, K. (2023). A study on the relationship between internet overdependence and anger response among young adults during COVID-19 pandemic: moderating effect on negative emotions. *International Journal of Environmental Research and Public Health*, 20(3), 2435.
- Karaer, Y., & Akdemir, D. (2019). Parenting styles, perceived social support and emotion regulation in adolescents with internet addiction. *Comprehensive Psychiatry*, 92, 22–27. <https://doi.org/10.1016/j.comppsy.2019.03.003>
- Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior*, 31, 351–354. <https://doi.org/10.1016/j.chb.2013.10.059>
- Kardefelt-Winther, D., Heeren, A., Schimmenti, A., van Rooij, A., Maurage, P., Carras, M., Edman, J., Blaszczynski, A., Khazaal, Y., & Billieux, J. (2017). How can we conceptualize behavioural addiction without pathologizing common behaviours? *Addiction*, 112(10), 1709–1715. <https://doi.org/10.1111/add.13763>
- Kavaklı, M., Yalçın, S. B., & Coşkun, M. (2024). Internet addiction on psycho-social symptoms of happiness and aggression through difficulties in emotion regulation: evidence following COVID-19 pandemic. *Primenjena Psihologija*, 17(1), 3-26.
- Kaval, A., & Siyez, D. M. (2024). An internet addiction model based on cognitive-behavioral approach among adolescents: maladaptive cognitions, psychopathology, and situational cues. *Journal*

- of Rational-Emotive & Cognitive-Behavior Therapy*, 42(2), 194–213.
<https://doi.org/10.1007/s10942-023-00502-5>
- Kayış, A. R., Satıcı, S. A., Yılmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior*, 63, 35–40. <https://doi.org/10.1016/j.chb.2016.05.012>
- Kesmodel, U. S. (2018). Cross-sectional studies – what are they good for? *Acta Obstetrica et Gynecologica Scandinavica*, 97(4), 388–393. <https://doi.org/10.1111/aogs.13331>
- Kim, S. J., Park, D. H., Ryu, S. H., Yu, J., & Ha, J. H. (2013). Usefulness of Young's Internet Addiction Test for clinical populations. *Nordic Journal of Psychiatry*, 67(6), 393–399.
- King, B. M. (2022). The influence of social desirability on sexual behavior surveys: A review. *Archives of Sexual Behavior*, 51(3), 1495–1501.
- King, D. L., Chamberlain, S. R., Carragher, N., Billieux, J., Stein, D., Mueller, K., Potenza, M. N., Rumpf, H. J., Saunders, J., Starcevic, V., Demetrovics, Z., Brand, M., Lee, H. K., Spada, M., Lindenberg, K., Wu, A. M. S., Lemenager, T., Pallesen, S., Achab, S., ... Delfabbro, P. H. (2020). Screening and assessment tools for gaming disorder: A comprehensive systematic review. *Clinical Psychology Review*, 77, 101831. <https://doi.org/10.1016/j.cpr.2020.101831>
- Király, O., Potenza, M. N., Stein, D. J., King, D. L., Hodgins, D. C., Saunders, J. B., Griffiths, M. D., Gjoneska, B., Billieux, J., Brand, M., Abbott, M. W., Chamberlain, S. R., Corazza, O., Burkauskas, J., Sales, C. M. D., Montag, C., Lochner, C., Grünblatt, E., Wegmann, E., ... Demetrovics, Z. (2020). Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. *Comprehensive Psychiatry*, 100, 152180. <https://doi.org/10.1016/j.comppsy.2020.152180>
- Kock, N., Gallivan, M., & DeLuca, D. (2008). Furthering information systems action research: a post-positivist synthesis of four dialectics. *Journal of the Association for Information Systems*, 9(2). <https://doi.org/10.17705/1jais.00150>
- Kohut, T., Balzarini, R. N., Fisher, W. A., Grubbs, J. B., Campbell, L., & Prause, N. (2020). Surveying pornography use: A shaky science resting on poor measurement foundations. *The Journal of Sex Research*, 57(6), 722–742.
- Koo, H. J., & Kwon, J.-H. (2014). Risk and protective factors of internet addiction: a meta-analysis of empirical studies in Korea. *Yonsei Medical Journal*, 55(6), 1691. <https://doi.org/10.3349/ymj.2014.55.6.1691>
- Koole, S. L. (2009). The psychology of emotion regulation: An integrative review. *Cognition and emotion*, 23(1), 4–41.
- Kor, A., Zilcha-Mano, S., Fogel, Y. A., Mikulincer, M., Reid, R. C., & Potenza, M. N. (2014). Psychometric development of the Problematic Pornography Use Scale. *Addictive Behaviors*, 39(5), 861–868. <https://doi.org/10.1016/j.addbeh.2014.01.027>
- Kuss, D. J., & Lopez-Fernandez, O. (2016). Internet addiction and problematic Internet use: A systematic review of clinical research. *World Journal of Psychiatry*, 6(1), 143. <https://doi.org/10.5498/wjp.v6.i1.143>
- Kuss, D. J., Shorter, G. W., van Rooij, A. J., van de Mheen, D., & Griffiths, M. D. (2014). The Internet addiction components model and personality: Establishing construct validity via a nomological network. *Computers in Human Behavior*, 39, 312–321. <https://doi.org/10.1016/j.chb.2014.07.031>

- Laconi, S., Rodgers, R. F., & Chabrol, H. (2014). The measurement of Internet addiction: A critical review of existing scales and their psychometric properties. *Computers in Human Behavior*, 41, 190–202. <https://doi.org/10.1016/j.chb.2014.09.026>
- Laconi, S., Tricard, N., & Chabrol, H. (2015). Differences between specific and generalized problematic Internet uses according to gender, age, time spent online and psychopathological symptoms. *Comput. Hum. Behav.*, 48, 236–244.
- Lakens, D. (2022). Sample Size Justification. *Collabra: Psychology*, 8(1), 33267. <https://doi.org/10.1525/collabra.33267>
- Larche, C. J., Chini, K., Lee, C., Dixon, M. J., & Fernandes, M. (2021). Rare loot box rewards trigger larger arousal and reward responses, and greater urge to open more loot boxes. *Journal of Gambling Studies*, 37(1), 141–163. <https://doi.org/10.1007/s10899-019-09913-5>
- Lee, Y. S., Han, D. H., Yang, K. C., Daniels, M. A., Na, C., Kee, B. S., & Renshaw, P. F. (2008). Depression like characteristics of 5HTTLPR polymorphism and temperament in excessive internet users. *Journal of affective disorders*, 109(1-2), 165–169.
- Leshem, R., & Yefet, M. (2019). Does impulsivity converge distinctively with inhibitory control? Disentangling the cold and hot aspects of inhibitory control. *Personality and individual differences*, 145, 44–51.
- Lilienfeld, S. O. (2014). The Research Domain Criteria (RDoC): An analysis of methodological and conceptual challenges. *Behaviour Research and Therapy*, 62, 129–139.
- Lim, W. M. (2024). What is quantitative research? An overview and guidelines. *Australasian Marketing Journal*, 14413582241264622. <https://doi.org/10.1177/14413582241264622>
- Liu, S. J., Lan, Y., Wu, L., & Yan, W. S. (2019). Profiles of impulsivity in problematic internet users and cigarette smokers. *Frontiers in psychology*, 10, 772.
- Llopis, E. V. A., & Matytsina, I. (2006). Mental health and alcohol, drugs and tobacco: a review of the comorbidity between mental disorders and the use of alcohol, tobacco and illicit drugs. *Drug and alcohol review*, 25(6), 515–536.
- Long, J., Bhad, R., Potenza, M. N., Orsolini, L., Phan, V., Kanabar, M., & Achab, S. (2022). Public health approaches and policy changes after the inclusion of gaming disorder in ICD-11: Global needs. *BJPsych International*, 19(3), 63–66. <https://doi.org/10.1192/bji.2021.57>
- Lopez-Fernandez, O., Freixa-Blanxart, M., & Honrubia-Serrano, M. L. (2013). The problematic internet entertainment use scale for adolescents: prevalence of problem internet use in Spanish high school students. *CyberPsychology, Behavior, and social networking*, 16(2), 108–118.
- Lopez-Fernandez, O., Griffiths, M. D., Kuss, D. J., Dawes, C., Pontes, H. M., Justice, L., & Billieux, J. (2019). Cross-cultural validation of the Compulsive Internet Use Scale in four forms and eight languages. *Cyberpsychology, Behavior, and Social Networking*, 22(7), 451–464.
- Lortie, C. L., & Guitton, M. J. (2013). Internet addiction assessment tools: dimensional structure and methodological status. *Addiction*, 108(7), 1207–1216. <https://doi.org/10.1111/add.12202>
- Loya, J. M., Benitez, B., & Kiluk, B. D. (2023). The effect of cognitive behavioral therapy on impulsivity in addictive disorders: A narrative review. *Current Addiction Reports*, 10(3), 485–493.
- Lozano-Blasco, R., Robres, A. Q., & Sánchez, A. S. (2022). Internet addiction in young adults: A meta-analysis and systematic review. *Computers in Human Behavior*, 130, 107201. <https://doi.org/10.1016/j.chb.2022.107201>
- Lundqvist, J., Lindberg, M. S., Brattmyr, M., Havnen, A., Hjemdal, O., & Solem, S. (2024). The Work and Social Adjustment Scale (WSAS): An investigation of reliability, validity, and associations

- with clinical characteristics in psychiatric outpatients. *PLOS ONE*, 19(10), e0311420. <https://doi.org/10.1371/journal.pone.0311420>
- Macaulay, P. J., Betts, L. R., Stiller, J., & Kellezi, B. (2022). Bystander responses to cyberbullying: The role of perceived severity, publicity, anonymity, type of cyberbullying, and victim response. *Computers in Human Behavior*, 131, 107238.
- Machimbarrena, J. M., González-Cabrera, J., Ortega-Barón, J., Beranuy-Fargues, M., Álvarez-Bardón, A., & Tejero, B. (2019). Profiles of problematic internet use and its impact on adolescents' health-related quality of life. *International journal of environmental research and public health*, 16(20), 3877.
- Magson, N. R., Handford, C. M., & Norberg, M. M. (2021). The empirical status of cue exposure and response prevention treatment for binge eating: a systematic review. *Behavior Therapy*, 52(2), 442-454.
- Makhni, E. C., & Hennekes, M. E. (2023). The use of patient-reported outcome measures in clinical practice and clinical decision making. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 31(20), 1059-1066.
- Malak, M. Z. (2018). Internet Addiction and Cognitive Behavioral Therapy. In Ö. Şenormancı & G. Şenormancı (Eds.), *Cognitive Behavioral Therapy and Clinical Applications*. InTech. <https://doi.org/10.5772/intechopen.71277>
- Männikkö, N., Ruotsalainen, H., Miettunen, J., Pontes, H. M., & Kääriäinen, M. (2020). Problematic gaming behaviour and health-related outcomes: A systematic review and meta-analysis. *Journal of Health Psychology*, 25(1), 67–81. Scopus. <https://doi.org/10.1177/1359105317740414>
- Maráz, A., Király, O., & Demetrovics, Z. (2015). The diagnostic pitfalls of surveys: if you score positive on a test of addiction, you still have a good chance not to be addicted. A response to Billieux et al. 2015. *Journal of Behavioral Addictions*, 4(3), 151-154.
- Masaeli, N., & Farhadi, H. (2021). Prevalence of Internet-based addictive behaviors during COVID-19 pandemic: A systematic review. *Journal of Addictive Diseases*, 39(4), 468–488. <https://doi.org/10.1080/10550887.2021.1895962>
- Mataix-Cols, D., Cowley, A. J., Hankins, M., Schneider, A., Bachofen, M., Kenwright, M., Gega, L., Cameron, R., & Marks, I. M. (2005). Reliability and validity of the Work and Social Adjustment Scale in phobic disorders. *Comprehensive Psychiatry*, 46(3), 223–228. <https://doi.org/10.1016/j.comppsy.2004.08.007>
- Matsuzaki, T., Nishimura, K., & Higuchi, S. (2023). Screening for forms of problematic Internet usage. *Current Opinion in Behavioral Sciences*, 50, 101260.
- Matthews, M., Webb, T. L., Shafir, R., Snow, M., & Sheppes, G. (2021). Identifying the determinants of emotion regulation choice: A systematic review with meta-analysis. *Cognition and Emotion*, 35(6), 1056–1084. <https://doi.org/10.1080/02699931.2021.1945538>
- McClure, K., Ammerman, B. A., & Jacobucci, R. (2024). On the selection of item scores or composite scores for clinical prediction. *Multivariate Behavioral Research*, 59(3), 566–583. <https://doi.org/10.1080/00273171.2023.2292598>
- McCrae, R. R. (2015). A more nuanced view of reliability: specificity in the trait hierarchy. *Personality and Social Psychology Review*, 19(2), 97–112. <https://doi.org/10.1177/1088868314541857>
- McElroy, E., & Shevlin, M. (2014). The development and initial validation of the cyberchondria severity scale (CSS). *Journal of anxiety disorders*, 28(2), 259-265.

- McKenny, R., Galloghly, E., Porter, C. M., & Burbach, F. R. (2021). 'Living in a Zoom world': Survey mapping how COVID-19 is changing family therapy practice in the UK. *Journal of Family Therapy*, 43(2), 272-294.
- Meerkerk, G. J., Van Den Eijnden, R. J., Vermulst, A. A., & Garretsen, H. F. (2009). The compulsive internet use scale (CIUS): some psychometric properties. *Cyberpsychology & behavior*, 12(1), 1-6.
- Meng, S.-Q., Cheng, J.-L., Li, Y.-Y., Yang, X.-Q., Zheng, J.-W., Chang, X.-W., Shi, Y., Chen, Y., Lu, L., Sun, Y., Bao, Y.-P., & Shi, J. (2022). Global prevalence of digital addiction in general population: A systematic review and meta-analysis. *Clinical Psychology Review*, 92, 102128. <https://doi.org/10.1016/j.cpr.2022.102128>
- Mikuška, J., Smahel, D., Dedkova, L., Staksrud, E., Mascheroni, G., & Milosevic, T. (2020). Social relational factors of excessive internet use in four European countries. *International Journal of Public Health*, 65(8), 1289–1297. <https://doi.org/10.1007/s00038-020-01484-2>
- Mingoia, J., Hutchinson, A. D., Wilson, C., & Gleaves, D. H. (2017). The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review. *Frontiers in psychology*, 8, 1351.
- Mohamed Shaffril, H. A., Samsuddin, S. F., & Abu Samah, A. (2021). The ABC of systematic literature review: The basic methodological guidance for beginners. *Quality & Quantity*, 55(4), 1319–1346. <https://doi.org/10.1007/s11135-020-01059-6>
- Moniri, R., Pahlevani Nezhad, K., & Lavasani, F. F. (2022). Investigating anxiety and fear of COVID-19 as predictors of internet addiction with the mediating role of self-compassion and cognitive emotion regulation. *Frontiers in Psychiatry*, 13, 841870.
- Montag, C., Pontes, H. M., Kannen, C., Rozgonjuk, D., Brandt, D., Bischof, A., & Rumpf, H. J. (2024). Examining the interplay between internet use disorder tendencies and well-being in relation to socializing during the COVID-19 pandemic. *Comprehensive Psychiatry*, 130, 152452.
- Moon, S. J., Hwang, J. S., Kim, J. Y., Shin, A. L., Bae, S. M., & Kim, J. W. (2018). Psychometric Properties of the Internet Addiction Test: A Systematic Review and Meta-Analysis. *Cyberpsychology, Behavior, and Social Networking*, 21(8), 473–484. <https://doi.org/10.1089/cyber.2018.0154>
- Moretta, T., & Buodo, G. (2020). Problematic Internet use and loneliness: How complex is the relationship? A short literature review. *Current Addiction Reports*, 7, 125-136.
- Moretta, T., & Buodo, G. (2021). The relationship between affective and obsessive-compulsive symptoms in internet use disorder. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.700518>
- Mouratidis, K., & Papagiannakis, A. (2021). COVID-19, internet, and mobility: The rise of telework, telehealth, e-learning, and e-shopping. *Sustainable Cities and Society*, 74, 103182. <https://doi.org/10.1016/j.scs.2021.103182>
- Muela, I., Navas, J. F., Ventura-Lucena, J. M., & Perales, J. C. (2022). How to pin a compulsive behavior down: A systematic review and conceptual synthesis of compulsivity-sensitive items in measures of behavioral addiction. *Addictive Behaviors*, 134, 107410. <https://doi.org/10.1016/j.addbeh.2022.107410>
- Müller, S. M., Wegmann, E., Garcia Arías, M., Bernabéu Brotóns, E., Marchena Giráldez, C., & Brand, M. (2022). Decision making and risk propensity in individuals with tendencies towards specific internet-use disorders. *Brain Sciences*, 12(2), Article 2. <https://doi.org/10.3390/brainsci12020201>

- Mundt, J. C., Marks, I. M., Shear, M. K., & Greist, J. M. (2002). The Work and Social Adjustment Scale: A simple measure of impairment in functioning. *The British Journal of Psychiatry*, 180(5), 461–464. <https://doi.org/10.1192/bjp.180.5.461>
- Muñoz, E. M., Ruiz, E. M., & Montserrat, A. S. (2022). Association between mood disorders, problematic internet use and online gambling addiction: a systematic review. *European Psychiatry*, 65(S1), S834–S834. <https://doi.org/10.1192/j.eurpsy.2022.2160>
- Mustafa, M. Y., Rose, N. N., & Ishak, A. S. (2020). Internet addiction and family stress: symptoms, causes and effects. *Journal of Physics: Conference Series*, 1529(3), 032017. <https://doi.org/10.1088/1742-6596/1529/3/032017>
- Mweshi, G. K., & Sakyi, K. (2020). Application of sampling methods for the research design. *Archives of Business Research*, 8(11), 180–193. <https://doi.org/10.14738/abr.811.9042>
- Nemes, A., Szok, D., Tibold, A., Kosa, G., Kapus, K., Berke, G., Banko, Z., & Feher, G. (2024). Internet addiction and covid-19 misbeliefs among hungarian online gamers: a cross-sectional study. *Journal of Multidisciplinary Healthcare*, 17, 2351–2358. <https://doi.org/10.2147/JMDH.S451825>
- NewsGroove. (2019). A new public body is necessary to effectively regulate the UK video game industry. *The BMJ*. NewsGroove UK.
- NHS England. (2019). *The NHS Long Term Plan*. Available at: [www.longtermplan.nhs.uk/publication/nhs-long-term-plan]
- Novielli, J., Kane, L., & Ashbaugh, A. R. (2023). Convenience sampling methods in psychology: A comparison between crowdsourced and student samples. *Canadian Journal of Behavioural Science / Revue Canadienne Des Sciences Du Comportement*, <https://doi.org/10.1037/cbs0000394>
- Office for Health & Improvement Strategies. (2022). *Guidance: Misuse of illicit drugs and medicines: applying All Our Health*. <https://www.gov.uk/government/publications/misuse-of-illicit-drugs-and-medicines-applying-all-our-health/misuse-of-illicit-drugs-and-medicines-applying-all-our-health>
- Office for National Statistics. (2024). *Drug misuse in England and Wales: year ending March 2024*. <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/articles/drugmisuseinenglandandwales/yearendingmarch2024#frequency-of-drug-use-in-the-last-year>
- Oka, T., Hamamura, T., Miyake, Y., Kobayashi, N., Honjo, M., Kawato, M., Kubo, T., & Chiba, T. (2021). Prevalence and risk factors of internet gaming disorder and problematic internet use before and during the COVID-19 pandemic: A large online survey of Japanese adults. *Journal of Psychiatric Research*, 142, 218–225. <https://doi.org/10.1016/j.jpsychires.2021.07.054>
- Omar, S., Zaremohzzabieh, Z., Abu Samah, A., Bolong, J., & Shaffril, H. (2020). Influence of different facets of internet addiction on subjective well-being in malaysia: a comparison across ethnic groups. *Jurnal Komunikasi: Malaysian Journal of Communication*, 36, 196–211. <https://doi.org/10.17576/JKMJC-2020-3602-12>
- Omrawo, C., Ioannidis, K., Grant, J. E., Lutz, N., Chamberlain, S. R., Stein, D. J., Tiego, J., Kidd, M., & Lochner, C. (2023). A cross-national validation of the Internet Severity and Activities Addiction Questionnaire (ISAAQ). *Comprehensive Psychiatry*, 122, 152378. <https://doi.org/10.1016/j.comppsy.2023.152378>
- Opazo Breton, M., Gillespie, D., Pryce, R., Bogdanovica, I., Angus, C., Hernandez Alava, M., Brennan, A., & Britton, J. (2022). Understanding long-term trends in smoking in England, 1972-2019: an age-period-cohort approach. *Addiction*, 117(5), 1392-1403. <https://doi.org/10.1111/add.15696>

- Özparlak, A., & Karakaya, D. (2022). The associations of cognitive distortions with internet addiction and internet activities in adolescents: A cross-sectional study. *Journal of Child and Adolescent Psychiatric Nursing*, 35(4), 322–330. <https://doi.org/10.1111/jcap.12385>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Pal Singh Balhara, Y., Doric, A., Stevanovic, D., Knez, R., Singh, S., Roy Chowdhury, M. R., Kafali, H. Y., Sharma, P., Vally, Z., Vi Vu, T., Arya, S., Mahendru, A., Ransing, R., Erzin, G., & Le Thi Cam Hong Le, H. (2019). Correlates of Problematic Internet Use among college and university students in eight countries: An international cross-sectional study. *Asian Journal of Psychiatry*, 45, 113–120. <https://doi.org/10.1016/j.ajp.2019.09.004>
- Palazzolo, F., & Bettman, C. (2020). Exploring the lived experience of problematic users of internet pornography: a qualitative study. *Sexual Addiction & Compulsivity*, 27(1–2), 45–64. <https://doi.org/10.1080/10720162.2020.1766610>
- Panhwar, A. H., Ansari, D., & Shah, A. (2017). Post-positivism: an effective paradigm for social and educational research. *International Research Journal Arts & Humanities (IRJAH)*, 45, 253–260.
- Park, J.-A., Park, M.-H., Shin, J.-H., Li, B., Rolfe, D. T., Yoo, J.-Y., & Dittmore, S. W. (2016). Effect of sports participation on Internet addiction mediated by self-control: A case of Korean adolescents. *Kasetsart Journal of Social Sciences*, 37(3), 164–169. <https://doi.org/10.1016/j.kjss.2016.08.003>
- Patel, K. C. R., & Hanif, W. (2022). Ethnic health inequalities in the NHS. *BMJ*, 376, o607. <https://doi.org/10.1136/bmj.o607>
- Pautrat, M., Lebeau, J. P., & Laporte, C. (2022). Identifying available addictive disorder screening tests validated in primary care: A systematic review. *Addictive behaviors*, 126, 107180.
- Perkins, A., Ridler, J., Browes, D., Peryer, G., Notley, C., & Hackmann, C. (2018). Experiencing mental health diagnosis: A systematic review of service user, clinician, and carer perspectives across clinical settings. *The Lancet Psychiatry*, 5(9), 747–764. [https://doi.org/10.1016/S2215-0366\(18\)30095-6](https://doi.org/10.1016/S2215-0366(18)30095-6)
- Piper, T., Youngs, M. D. S., Tomy, H., Lockwood, R., & Bowden-Jones, H. (2024). The national centre for gaming disorders—the demographic profile and clinical characteristics of individuals accessing our service. *BJPsych Open*, 10(S1), S203-S203.
- Polyakova, V., Streltsova, E., Iudin, I., & Kuzina, L. (2024). Irreversible effects? How the digitalization of daily practices has changed after the COVID-19 pandemic. *Technology in Society*, 76, 102447.
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., ... & Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. *A product from the ESRC methods programme Version*, 1(1), 92.
- Preuss, U. W., Schaefer, M., Born, C., & Grunze, H. (2021). Bipolar disorder and comorbid use of illicit substances. *Medicina*, 57(11), 1256.
- Przepiorka, A. M., Blachnio, A., Miziak, B., & Czuczwar, S. J. (2014). Clinical approaches to treatment of Internet addiction. *Pharmacological Reports*, 66, 187-191.

- Puddephatt, J. A., Irizar, P., Jones, A., Gage, S. H., & Goodwin, L. (2022). Associations of common mental disorder with alcohol use in the adult general population: a systematic review and meta-analysis. *Addiction*, 117(6), 1543-1572.
- Pugh, P., Hemingway, P., Christian, M., & Higginbottom, G. (2021). Children's, parents', and other stakeholders' perspectives on the factors influencing the initiation of early dietary change in the management of childhood chronic disease: A mixed studies systematic review using a narrative synthesis. *Patient Education and Counseling*, 104(4), 844-857. <https://doi.org/10.1016/j.pec.2020.09.021>
- Quaglieri, A., Biondi, S., Roma, P., Varchetta, M., Frascchetti, A., Burrai, J., Lausi, G., Martí-Vilar, M., González-Sala, F., Domenico, A. D., Giannini, A. M., & Mari, E. (2021). From emotional (dys)regulation to internet addiction: a mediation model of problematic social media use among italian young adults. *Journal of Clinical Medicine*, 11(1), 188. <https://doi.org/10.3390/jcm11010188>
- Radhakrishnan, T., Chris-Okoro, E., Bodunwa, F., Lee, M., Aina, O., Pellegrini, L., & Fineberg, N. A. (2025). Problematic use of the internet in individuals with psychiatric disorders—A scoping review and meta-analysis. *Comprehensive Psychiatry*, 139, 152562.
- Raynaud, M., Goutaudier, V., Louis, K., Al-Awadhi, S., Dubourg, Q., Truchot, A., & Loupy, A. (2021). Impact of the COVID-19 pandemic on publication dynamics and non-COVID-19 research production. *BMC Medical Research Methodology*, 21, 1-10.
- Reitsma, M. B., Fullman, N., Ng, M., Salama, J. S., Abajobir, A., Abate, K. H., ... & Patton, G. C. (2017). Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015. *The Lancet*, 389(10082), 1885-1906.
- Richardson, S., McNeill, A., & Brose, L. S. (2019). Smoking and quitting behaviours by mental health conditions in Great Britain (1993–2014). *Addictive behaviors*, 90, 14-19.
- Rifkin-Zybutz, R., Turner, N., Derges, J., Bould, H., Sedgewick, F., Gooberman-Hill, R., Linton, M.-J., Moran, P., & Biddle, L. (2023). Digital technology use and mental health consultations: survey of the views and experiences of clinicians and young people. *JMIR Mental Health*, 10(1), e44064. <https://doi.org/10.2196/44064>
- Roberts, A., Sharman, S., & Bowden-Jones, H. (2022). Clinical services for problematic internet usage. *Current Opinion in Behavioral Sciences*, 46, 101180. <https://doi.org/10.1016/j.cobeha.2022.101180>
- Ruppar, T. (2020). Meta-analysis: how to quantify and explain heterogeneity? *European Journal of Cardiovascular Nursing*, 19(7), 646–652. <https://doi.org/10.1177/1474515120944014>
- Ryding, F. C., & Kaye, L. K. (2017). "Internet addiction": a conceptual minefield. *International Journal of Mental Health and Addiction*, 16(1), 225. <https://doi.org/10.1007/s11469-017-9811-6>
- Safari, S., Soleimanian, A. A., & Jajarmi, M. (2021). The effectiveness of reality therapy on training on internet addiction and perceptions of social support -family in teenage girls. *Journal of Health Promotion Management*, 10(5), 107–120.
- Sánchez-Fernández, M., Borda-Mas, M., Horvath, Z., & Demetrovics, Z. (2024). Similarities and differences in the psychological factors associated with generalised problematic internet use, problematic social media use, and problematic online gaming. *Comprehensive Psychiatry*, 134, 152512. <https://doi.org/10.1016/j.comppsy.2024.152512>
- Sarker, R., Roknuzzaman, A. S. M., Nazmunnahar, M., Shahriar, M., Hossain, Md. J., & Islam, Md. R. (2023). The WHO has declared the end of pandemic phase of COVID-19: Way to come back in the normal life. *Health Science Reports*, 6(9), e1544. <https://doi.org/10.1002/hsr2.1544>

- Shahidin, S. H., Midin, M., Sidi, H., Choy, C. L., Nik Jaafar, N. R., Mohd Salleh Sahimi, H., & Che Roos, N. A. (2022). The relationship between emotion regulation (ER) and problematic smartphone use (PSU): A systematic review and meta-analyses. *International Journal of Environmental Research and Public Health*, 19(23), 15848.
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3, 749-752.
- Sharman, S., Roberts, A., Harris, B., Lockwood, R., & Bowden-Jones, H. (2022). The National Centre for Gaming Disorders (UK)—Who is accessing this service? *Journal of Behavioral Addictions*, 11(2), 147–149. <https://doi.org/10.1556/2006.2022.00010>
- Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to do a systematic review: a best practice guide for conducting and reporting narrative reviews, meta-analyses, and meta-syntheses. *Annual Review of Psychology*, 70, 747–770. <https://doi.org/10.1146/annurev-psych-010418-102803>
- Sindermann, C., Sariyska, R., Elhai, J. D., & Montag, C. (2021). Chapter 27—Molecular genetics of neurotransmitters and neuropeptides involved in Internet use disorders including first insights on a potential role of hypothalamus' oxytocin hormone. In D. F. Swaab, R. M. Buijs, F. Kreier, P. J. Lucassen, & A. Salehi (Eds.), *Handbook of Clinical Neurology* (Vol. 182, pp. 389–400). Elsevier. <https://doi.org/10.1016/B978-0-12-819973-2.00026-5>
- Siste, K., Hanafi, E., Sen, L. T., Murtani, B. J., Christian, H., Limawan, A. P., Siswidiani, L. P., & Adrian, P. (2021). Implications of covid-19 and lockdown on internet addiction among adolescents: data from a developing country. *Frontiers in Psychiatry*, 12. <https://doi.org/10.3389/fpsyt.2021.665675>
- Smith, A. R., Hames, J. L., & Joiner Jr., T. E. (2013). Status update: maladaptive Facebook usage predicts increases in body dissatisfaction and bulimic symptoms. *Journal of Affective Disorders*, 149(1–3), 235–240. <https://doi.org/10.1016/j.jad.2013.01.032>
- Song, Y., Li, D., Zhang, S., Jin, Z., Zhen, Y., Su, Y., & Li, X. (2022). The effect of exposure and response prevention therapy on obsessive-compulsive disorder: A systematic review and meta-analysis. *Psychiatry Research*, 317, 114861.
- Spada, M. M. (2014). An overview of problematic Internet use. *Addictive Behaviors*, 39(1), 3–6. <https://doi.org/10.1016/j.addbeh.2013.09.007>
- Spătaru, B., Podină, I. R., Tulbure, B. T., & Maricuțoiu, L. P. (2024). A longitudinal examination of appraisal, coping, stress, and mental health in students: A cross-lagged panel network analysis. *Stress and Health*, 40(5), e3450. <https://doi.org/10.1002/smi.3450>
- Stanford, M. S., Mathias, C. W., Dougherty, D. M., Lake, S. L., Anderson, N. E., & Patton, J. H. (2009). Fifty years of the Barratt Impulsiveness Scale: An update and review. *Personality and Individual Differences*, 47(5), 385–395. <https://doi.org/10.1016/j.paid.2009.04.008>
- Stangl, B., Kastner, M., Park, S., & Ukpabi, D. (2023). Internet addiction continuum and its moderating effect on augmented reality application experiences: Digital natives versus older users. *Journal of Travel & Tourism Marketing*, 40(1), 38–54. <https://doi.org/10.1080/10548408.2023.2199776>
- Stein, D. J., & Hartford, A. (2022). Health-policy approaches for problematic Internet use: lessons from substance use disorders. *Current Opinion in Behavioral Sciences*, 46, 101151.
- Stein, D. J., Fineberg, N. A., & Chamberlain, S. R. (2021). *Mental Health in a Digital World*. Academic Press.

- Sulkowski, M. L., Jacob, M. L., & Storch, E. A. (2013). Exposure and response prevention and habit reversal training: commonalities, differential use, and combined applications. *Journal of Contemporary Psychotherapy*, 43, 179-185.
- Tárrega, S., Castro-Carreras, L., Fernández-Aranda, F., Granero, R., Giner-Bartolomé, C., Aymamí, N., ... & Jiménez-Murcia, S. (2015). A serious videogame as an additional therapy tool for training emotional regulation and impulsivity control in severe gambling disorder. *Frontiers in Psychology*, 6, 17-21.
- Taylor, G. M., & Treur, J. L. (2023). An application of the stress-diathesis model: a review about the association between smoking tobacco, smoking cessation, and mental health. *International Journal of Clinical and Health Psychology*, 23(1), 100335.
- Teng, Z., Pontes, H. M., Nie, Q., Griffiths, M. D., & Guo, C. (2021). Depression and anxiety symptoms associated with internet gaming disorder before and during the COVID-19 pandemic: A longitudinal study. *Journal of Behavioral Addictions*, 10(1), 169–180.
<https://doi.org/10.1556/2006.2021.00016>
- Tereshchenko, S., & Kasparov, E. (2019). Neurobiological risk factors for the development of internet addiction in adolescents. *Behavioral Sciences*, 9(6), Article 6.
<https://doi.org/10.3390/bs9060062>
- Thomas, J., Thirlaway, K., Bowes, N., & Meyers, R. (2020). Effects of combining physical activity with psychotherapy on mental health and well-being: A systematic review. *Journal of Affective Disorders*, 265, 475–485. <https://doi.org/10.1016/j.jad.2020.01.070>
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development*, 59(2–3), 25–52.
- Tiego, J., Lochner, C., Ioannidis, K., Brand, M., Stein, D. J., Yücel, M., & Chamberlain, S. R. (2019). Problematic use of the Internet is a unidimensional quasi-trait with impulsive and compulsive subtypes. *BMC psychiatry*, 19, 1-13.
- Tiego, J., Lochner, C., Ioannidis, K., Brand, M., Stein, D. J., Yücel, M., Grant, J. E., & Chamberlain, S. R. (2021). Measurement of the problematic usage of the Internet unidimensional quasitrait continuum with item response theory. *Psychological Assessment*, 33(7), 652–671.
<https://doi.org/10.1037/pas0000870>
- Tiego, J., Oostermeijer, S., Prochazkova, L., Parkes, L., Dawson, A., Youssef, G., Oldenhof, E., Carter, A., Segrave, R. A., Fontenelle, L. F., & Yücel, M. (2019). Overlapping dimensional phenotypes of impulsivity and compulsivity explain co-occurrence of addictive and related behaviors. *CNS Spectrums*, 24(4), 426–440. <https://doi.org/10.1017/S1092852918001244>
- Tiggemann, M., & Slater, A. (2017). Facebook and body image concern in adolescent girls: A prospective study. *International Journal of Eating Disorders*, 50(1), 80–83.
<https://doi.org/10.1002/eat.22640>
- Tsatali, M., Moraitou, D., Papantoniou, G., Foutsitzi, E., Bonti, E., Kougioumtzis, G., ... & Tsolaki, M. (2021). Measuring impulsivity in Greek adults: psychometric properties of the Barratt impulsiveness scale (BIS-11) and impulsive behavior scale (short version of UPPS-P). *Brain Sciences*, 11(8), 1007.
- Tull, M. T., & Aldao, A. (2015). Editorial overview: New directions in the science of emotion regulation. *Current Opinion in Psychology*, 3, iv–x.
<https://doi.org/10.1016/j.copsyc.2015.03.009>
- Twomey, M., Sammon, D., & Nagle, T. (2021). The role of information retrieval in the diagnostic/decision making process within the medical appointment: a review of the literature. *Journal of Decision Systems*, 30(4), 378-409.

- Varchetta, M., González-Sala, F., Mari, E., Quaglieri, A., Frascchetti, A., Cricenti, C., & Martí-Vilar, M. (2023). Psychosocial risk factors of technological addictions in a sample of Spanish University students: the influence of emotional (dys) regulation, personality traits and fear of missing out on internet addiction. *Psychiatry research*, 329, 115518.
- Vasconcelos, A. G., Malloy-Diniz, L., & Correa, H. (2012). Systematic review of psychometric proprieties of Barratt Impulsiveness Scale Version 11 (BIS-11). *Clinical Neuropsychiatry*, 9(2).
- Vindegaard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, 89, 531–542. <https://doi.org/10.1016/j.bbi.2020.05.048>
- Vismara, M., Caricasole, V., Starcevic, V., Cinosi, E., Dell’Osso, B., Martinotti, G., & Fineberg, N. A. (2020). Is cyberchondria a new transdiagnostic digital compulsive syndrome? A systematic review of the evidence. *Comprehensive Psychiatry*, 99, 152167. <https://doi.org/10.1016/j.comppsy.2020.152167>
- Volpe, U., Dell’Osso, B., Fiorillo, A., Mucic, D., & Aboujaoude, E. (2015). Internet-related psychopathology: Clinical phenotypes and perspectives in an evolving field. *Journal of Psychopathology*, 21(4), 406–414.
- Wacks, Y., & Weinstein, A. M. (2021). Excessive smartphone use is associated with health problems in adolescents and young adults. *Frontiers in Psychiatry*, 12. <https://doi.org/10.3389/fpsy.2021.669042>
- Wang, H.-Y., Sigerson, L., & Cheng, C. (2019). Digital Nativity and Information Technology Addiction: Age cohort versus individual difference approaches. *Computers in Human Behavior*, 90, 1–9. <https://doi.org/10.1016/j.chb.2018.08.031>
- Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *Chest*, 158(1, Supplement), S65–S71. <https://doi.org/10.1016/j.chest.2020.03.012>
- Wang, X., & Kattan, M. W. (2020). Cohort studies: design, analysis, and reporting. *Chest*, 158(1, Supplement), S72–S78. <https://doi.org/10.1016/j.chest.2020.03.014>
- Wei, P. (2024). The effect of self-compassion on social media addiction among college students—the mediating role of gratitude: an observational study. *Medicine*, 103(21), e37775.
- Willcocks, S., & Conway, T. (2022). The shift to collaborative working and integration in the English NHS: developing shared leadership in primary care networks. *Journal of Integrated Care*, 30(1), 28-41.
- Wirehag Nordh, E. L., Grip, K., & Axberg, U. (2024). The patient and the family: investigating parental mental health problems, family functioning, and parent involvement in child and adolescent mental health services (CAMHS). *European Child & Adolescent Psychiatry*, 1-12.
- World Health Organization. (2015). *Public health implications of excessive use of the internet, computers, smartphones and similar electronic devices: Meeting report, Main Meeting Hall, Foundation for Promotion of Cancer Research, National Cancer Research Centre, Tokyo, Japan, 27-29 August 2014*. World Health Organization. <https://iris.who.int/handle/10665/184264>
- Xu, L., Wu, L., Geng, X., Wang, Z., Guo, X., Song, K., Liu, G., Deng, L., Zhang, J., & Potenza, M. N. (2021). A review of psychological interventions for internet addiction. *Psychiatry Research*, 302, 114016. <https://doi.org/10.1016/j.psychres.2021.114016>

- Yang, Q., Wu, Z., Yang, X., Jiang, S., Wu, D., & Oliffe, J. L. (2022). Associations between uncertainty stress, life stress and internet addiction among medical students. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.809484>
- Yang, X., Guo, W., Tao, Y., Meng, Y., Wang, H., Li, X., Zhang, Y., Zeng, J., Tang, W., Wang, Q., Deng, W., Zhao, L., Ma, X., Li, M., Xu, J., Li, J., Liu, Y., Tang, Z., Du, X., ... Li, T. (2022). A bidirectional association between internet addiction and depression: A large-sample longitudinal study among Chinese university students. *Journal of Affective Disorders*, 299, 416–424. <https://doi.org/10.1016/j.jad.2021.12.013>
- Yen, J.-Y., Yen, C.-F., Chen, C.-C., Chen, S.-H., & Ko, C.-H. (2007). Family factors of internet addiction and substance use experience in taiwanese adolescents. *CyberPsychology & Behavior*, 10(3), 323–329. <https://doi.org/10.1089/cpb.2006.9948>
- Yildiz, M. (2017). Emotion regulation strategies as predictors of internet addiction and smartphone addiction in adolescents. *Journal of Educational Sciences & Psychology*, VII, 66–78.
- Yildiz, M. A., & Uslu, O. (2023). The mediation of emotion regulation strategies in the relationship between internet addiction and life satisfaction during the covid-19 pandemic. *Educational Process: International Journal*, 12(4), 78-98.
- Young, K. S. (1998). *Caught in the net: how to recognize the signs of internet addiction--and a winning strategy for recovery*. John Wiley & Sons.
- Zendle, D., Meyer, R., & Over, H. (2019). Adolescents and loot boxes: Links with problem gambling and motivations for purchase. *Royal Society Open Science*, 6(6), 190049.
- Zhang, Y., Li, J., Zhang, M., Ai, B., & Jia, F. (2024). Bidirectional associations between loneliness and problematic internet use: A meta-analytic review of longitudinal studies. *Addictive Behaviors*, 150, 107916. <https://doi.org/10.1016/j.addbeh.2023.107916>
- Zhou, P., Zhang, C., Liu, J., & Wang, Z. (2017a). The relationship between resilience and internet addiction: a multiple mediation model through peer relationship and depression. *Cyberpsychology, Behavior, and Social Networking*, 20(10), 634–639. <https://doi.org/10.1089/cyber.2017.0319>
- Zhou, Y., Li, D., Li, X., Wang, Y., & Zhao, L. (2017b). Big five personality and adolescent Internet addiction: The mediating role of coping style. *Addictive Behaviors*, 64, 42–48. <https://doi.org/10.1016/j.addbeh.2016.08.009>

7. Appendices

Appendix A – Participant Information Sheet

Participant Information Sheet

Title: Investigating the prevalence and presentation of problematic internet usage in clinical populations.

Researcher: Simon Taylor (Trainee Clinical Psychologist)

What is the research project?

You are being invited to take part in this study as you agreed to be contacted by Hertfordshire NHS Foundation Trust for research purposes. This project is a joint study with the Hertfordshire NHS Foundation Trust and the Professional Doctorate in Clinical Psychology at the University of Hertfordshire. This study is being undertaken as part of an educational project and the University is the sponsor but will not have any access to identifiable information from participants. This is all held by the NHS Trust. Before taking part in the study it is important you are what the study is aiming to do and aware what it will involve.

In an increasingly digitalised world, it is important to understand how people's internet use can impact their lives. The study is aiming to explore problematic internet use in those who have experienced/are experiencing mental health difficulties. It involves completing a selection of surveys looking at internet use, areas around wellbeing and impact on daily living.

Do I have to take part?

It is entirely your choice if you would like to take part in the study and it will have no impact on any ongoing or future interactions with the Hertfordshire NHS Foundation Trust. If you would like to take part, you will need to complete the following consent form. After signing the consent you form does not mean you have to complete the study and you have the right to withdraw at any time for any reason until the survey is completed. At this point the information gathered is anonymously pooled with other participants and for this reason we would be unable to identify it to withdraw contributions. Therefore, think carefully before completing the survey as this will be the last point to withdraw.

What will happen if I choose to take part?

If you choose to take part and complete the consent form, you will gain access to a series of 5 surveys aiming to collect information about your internet use, mental health and impact on daily life. This will take approximately 20 minutes to finish. The results of these surveys will combined with others who complete them, to then be analysed to gather information about internet use and mental health.

Are there any benefits or risks if I choose to take part?

In taking part, you have the opportunity to contribute to building of new knowledge in internet use and mental health that can better inform NHS services to support others. You will also receive general feedback on the findings of the study as this will be sent via a mass message to the same list of contact details of those who agreed to be contacted by Hertfordshire NHS Foundation Trust for research purposes.

For some people, discussing their internet use and mental health may be challenging or upsetting despite this not being the aim of the project. Due to the anonymised approach to gathering information the researchers will be unable to reach out to debrief. If it is to become distressing, you can stop completing any of the surveys and withdraw from the study. If you need support we recommend reaching out to your supporting Clinician at Hertfordshire NHS Trust, GP or NHS 111 (option 2).

How will we use information about you?

We will need to use information from your survey responses for this research project.

This information will include all answers given across the series of surveys. This includes information about your internet use, aspects of your personality as well as your age, gender and ethnicity. People will use this information to do the research or to check your records to make sure that the research is being done properly.

We will keep all information about you safe and secure. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead. Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

You can stop being part of the study at any time until the survey is completed, without giving a reason, but we will keep information about you that we already have.

You can find out more about how we use your information

- At www.hra.nhs.uk/information-about-patients/
- Or by contacting the research team [REDACTED]

Who can I contact if I have any questions about the study?

If you have any questions about the project, please feel free to contact the researcher Simon Taylor (Trainee Clinical Psychologist) at [REDACTED]

If you have any concerns or questions about how the project is being conducted, please contact the study's principal supervisor Dr Debra Marais at [REDACTED] or the University of Hertfordshire Research Ethics Sub-Committee Chair at hsetecda@herts.ac.uk. The University of Hertfordshire protocol number for this study is (LMS/PGR/NHS/02316).

Thank you for reading this information sheet and considering taking part in this project.

Appendix B – Participant Consent from

Participant Informed Consent Form

Title: Investigating the prevalence and presentation of problematic internet usage in clinical populations.

Researcher: Simon Taylor (Trainee Clinical Psychologist)

If you wish to take part in this research, please carefully read the Participant Information Sheet before completing this Consent Form.

	Please Tick
I have read the Participant Information Sheet (Version 3, 18/10/24) and understand the purpose and aims of this project.	
I understand my rights and participation within the project.	
I have been given the opportunity to ask questions, and have given satisfactory answers, about the project and my participation.	
I voluntarily agree to participate in the project.	
I understand that the survey findings will be recorded and then analysed. I agree to this as part of the study.	
I understand that only the researchers involved in the project will have access to the anonymised data. It will be kept in a secure, password-protected folder for 5 years.	
I understand that my participation is entirely voluntary and that I can withdraw at any time until the survey is completed. I do not need to give a reason for withdrawing, and I will not be penalised for this.	
I understand that the information from this project will be written up into an anonymised paper and this will be published.	
I understand that the anonymised data will be included as a thesis for the University of Hertfordshire Doctoral Programme in Clinical Psychology	

If any further information is required or it would be helpful to discuss any details, please contact the researcher at [REDACTED]

(A required box was present on Qualtrics for a signature to be applied, the survey was not be given without this being ticked.)

Appendix C – Demographics & Diagnostic Information Survey

- 1) What is your age?
(Scale given for age selection 18-99)
- 2) What is your gender?
 - ☐ Male
 - ☐ Female
 - ☐ Trans-male
 - ☐ Trans-female
 - ☐ Non-binary / Third Gender
 - ☐ Prefer not to say
- 3) What is your ethnicity?
 - ☐ Asian or Asian British
 - ☐ Black, Black British, Caribbean or African
 - ☐ Other Ethnic Group
 - ☐ Prefer not to say
- 4) What primary mental health diagnosis have you received?
 - ☐ Anxiety or Fear Related Disorders (Generalised Anxiety, Social Anxiety, Agoraphobia)
 - ☐ Mood Disorders (Depression, EUPD)
 - ☐ Schizophrenia and other Psychotic Disorders
 - ☐ Obsessive-Compulsive and Related Disorders
 - ☐ Neurodevelopmental Disorders (Autism, ADHD)
 - ☐ Disorders due to substance use or addictive behaviours
 - ☐ Feeding or Eating Disorders
 - ☐ Unknown
 - ☐ Other
- 5) Have you ever been asked about your internet use during your time being supported by mental health services?
 - ☐ Yes
 - ☐ No
 - ☐ Unsure
- 6) Do you consider your internet use “problematic”?
 - ☐ Yes
 - ☐ No
 - ☐ Unsure

Appendix D – ISAAQ-10 (Internet Severity and Activities Addiction Questionnaire, 10-items), Part A & B

#	Question	Rating Scale					
		Not at all	Rarely	Occasionally	Frequently	Very often	All the time
1	How often do you find yourself loosing track of time while engaging on an internet related activity?	0	1	2	3	4	5
2	How often do you use internet related activities to block out disturbing thoughts about your life and to soothe yourself?	0	1	2	3	4	5
3	How often do you choose to spend time on internet related activities to battle loneliness or boredom?	0	1	2	3	4	5
4	How often do you neglect your normal day-to-day activities to spend more time on an internet related activity?	0	1	2	3	4	5
5	How often do your school/study suffer because of the amount of time you spend on internet related activities?	0	1	2	3	4	5
6	How often do you find yourself trying to stop an excessive or repetitive online activity but feeling an urge to continue?	0	1	2	3	4	5
7	How often do you feel preoccupied with the internet when off-line, or fantasize or get repetitive urges to get on-line?	0	1	2	3	4	5
8	How often do you lose sleep due to late-night internet related activities?	0	1	2	3	4	5
9	How often do you find yourself experiencing physical or psychological problems as a consequence of prolonged Internet related activities?	0	1	2	3	4	5
10	How often do you try to cut down the amount of time you spend online and fail?	0	1	2	3	4	5

Over the **last 6 months**, I have spent time on **non-work or study** related online activities as such:

INTERNET ACTIVITIES SCALE		RATING SCALE					
		Not at all	Rarely	Occasio nally	Frequently	Very often	All the time
1	General Surfing (includes any unstructured online activities)	0	1	2	3	4	5
2	Internet gaming including Massively-Multiplayer-Online-Role-Playing-Games (includes online gaming and gaming with multiple other players and role-playing format)	0	1	2	3	4	5
3	Skill games & Time wasters (includes games & applications on computer, tablet, mobile phone or similar for which activity is without specific benefit)	0	1	2	3	4	5
4	Online Shopping (includes activity on online shopping platforms and auction websites)	0	1	2	3	4	5
5	Online gambling (includes any online activity in which there is a chance for monetary gain or other stakes)	0	1	2	3	4	5
6	Social networking (includes browsing social media and messaging/communicating over online social platforms)	0	1	2	3	4	5
7	Health & medicine (includes any online activity relating to reading & researching medical facts, diagnoses, treatments and risks)	0	1	2	3	4	5
8	Pornography (includes cybersex, cyber-texting, viewing pornography and other online sexual activities)	0	1	2	3	4	5
9	Streaming media (include music or video streaming activities on any platform)	0	1	2	3	4	5
10	Cyberbullying (includes exchange of insults, nasty texts/emails, unpleasant media, pranks)	0	1	2	3	4	5

Appendix E- Compulsive Personality Assessment Scale

Compulsive Personality Assessment Scale (CPAS)					
Items refer to a stable pattern of enduring traits dating back to adolescence or early adulthood. Use the questions listed as part of a semi-structured interview. For each item circle the appropriate score: 0 = absent; 1 = mild; 2 = moderate; 3 = severe; 4 = very severe.					
ITEM	RATING				
1. Preoccupation with details Are you preoccupied with details, rules, lists, order, organisation or schedules to the extent that the major aim of the activity is lost?	0	1	2	3	4
2. Perfectionism Would you describe yourself as a perfectionist who struggles with completing the task at hand?	0	1	2	3	4
3. Workaholism Are you excessively devoted to work to the exclusion of leisure activities and friendships?	0	1	2	3	4
4. Over-conscientiousness Would you describe yourself as over-conscientious and inflexible about matters of morality, ethics or values?	0	1	2	3	4
5. Hoarding Are you unable to discard worn-out or worthless objects even when they have no sentimental value?	0	1	2	3	4
6. Need for control Are you reluctant to delegate tasks or to work with others unless they submit to exactly your way of doing things?	0	1	2	3	4
7. Miserliness Do you see money as something to be hoarded for future catastrophes?	0	1	2	3	4
8. Rigidity Do you think you are rigid or stubborn?	0	1	2	3	4

Appendix F – Barratt Impulsivity Scale (Short Form-15)

For each statement, circle a number to the right to indicate how well it describes you.		Rarely/Never	Occasionally	Often	Almost Always
1	I plan tasks carefully.	1	2	3	4
2	I do things without thinking.	1	2	3	4
3	I don't pay attention.	1	2	3	4
4	I concentrate easily.	1	2	3	4
5	I save money on a regular basis.	1	2	3	4
6	I squirm at plays or lectures.	1	2	3	4
7	I am a careful thinker.	1	2	3	4
8	I plan for job security.	1	2	3	4
9	I say things without thinking.	1	2	3	4
10	I act "on impulse."	1	2	3	4
11	I get easily bored when solving thought problems.	1	2	3	4
12	I act on the spur of the moment.	1	2	3	4
13	I buy things on impulse	1	2	3	4
14	I am restless at lectures or talks.	1	2	3	4
15	I plan for the future	1	2	3	4

Appendix G – Work & Social Adjustment Scale

People's problems sometimes affect their ability to do certain day-to-day tasks in their lives. To rate your problems look at each section and determine on the scale provided how much your problem impairs your ability to carry out the activity.

1. Work

If you are retired or choose not to have a job for reasons unrelated to your problem, please tick here

0	1	2	3	4	5	6	7	8			
			not at all		slightly		definitely		markedly		very severely, I cannot work

2. Home Management – cleaning, tidying, shopping, cooking, looking after home/children, paying bills etc

0	1	2	3	4	5	6	7	8	
	not at all		slightly		definitely		markedly		very severely

3. Social Leisure Activities – with other people, e.g. parties, pubs, outings, entertaining etc

0	1	2	3	4	5	6	7	8	
	not at all		slightly		definitely		markedly		very severely

4. Private leisure activities – done alone, e.g. reading, gardening, sewing, hobbies, walking etc

0	1	2	3	4	5	6	7	8	
	not at all		slightly		definitely		markedly		very severely

5. Family and relationships – how far my problems impair my ability to form and maintain close relationships with others including the people that I live with

0	1	2	3	4	5	6	7	8	
not at all			slightly		definitely		markedly		very severely

Appendix H – Proof of NHS Ethics Approval from Research Ethics Committee



London - Camden & Kings Cross Research Ethics Committee



Telephone: [REDACTED]

24 September

Dr Debra Marais
University Of Hertfordshire
College
Lane AL10
9AB

Dear Dr Marais

Study title:	Investigating the prevalence and presentation of problematic internet usage in clinical populations.
REC reference:	24/PR/1055
Protocol number:	TBC
IRAS project ID:	343100

The Proportionate Review Sub-committee of the London - Camden & Kings Cross Research Ethics Committee reviewed the above application in correspondence.

Ethical opinion

On behalf of the Research Ethics Committee (REC), the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Good practice principles and responsibilities

The [UK Policy Framework for Health and Social Care Research](#) sets out principles of good practice in the management and conduct of health and social care research. It also outlines the responsibilities of individuals and organisations, including those related to the four elements of [research transparency](#):

1. [registering research studies](#)
2. [reporting results](#)
3. [informing participants](#)
4. [sharing study data and tissue](#)

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Confirmation of Capacity and Capability (in England, Northern Ireland and Wales) or NHS management permission (in Scotland) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

All research should be registered in a publicly accessible database and we expect all researchers, research sponsors and others to meet this fundamental best practice standard.

It is a condition of the REC favourable opinion that **all clinical trials are registered** on a public registry before the first participant is recruited and no later than six weeks after. For this purpose, 'clinical trials' are defined as:

- clinical trial of an investigational medicinal product
- clinical investigation or other study of a medical device
- combined trial of an investigational medicinal product and an investigational medical device
- Other clinical trial to study a novel intervention or randomised clinical trial to compare interventions in clinical practice.

A 'public registry' means any registry on the WHO list of primary registries or the ICMJE list of registries provided the registry facilitates public access to information about the UK trial.

If you have not already included registration details in your IRAS application form you should notify the REC of the registration details as soon as possible.

Publication of Your Research Summary

We will publish your research summary for the above study on the research summaries section of our website, together with your contact details, no earlier than three months from the date of this favourable opinion letter. Where a deferral is agreed, [a minimum research summary](#) will still be published in [the research summaries database](#). At the end of the deferral period, we will publish the [full research summary](#).

Should you wish to provide a substitute contact point, make a request to defer, or require further information, please visit: [Research summaries - Health Research Authority \(hra.nhs.uk\)](https://www.hra.nhs.uk/research-summaries)

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

After ethical review: Reporting requirements

The attached document “After ethical review – guidance for researchers” gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study, including early termination of the study
- Final report
- Reporting results

The latest guidance on these topics can be found at <https://www.hra.nhs.uk/approvals-amendments/managing-your-approval/>.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see “Conditions of the favourable opinion”).

Approved documents

The documents reviewed and approved were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering letter on headed paper [Covering letter]		16 June 2024
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Evidence of Insurance]		01 August 2024
IRAS Application Form [IRAS_Form_16082024]		16 August 2024
IRAS Checklist XML [Checklist_02102024]		02 October 2024
IRAS Checklist XML [Checklist_30102024]		30 October 2024
Letter from sponsor [Sponsor Letter]		01 August 2024
Non-validated questionnaire [Demographic questions]	1	01 August 2024
Other [Summary CV (NF)]	1	06 September 2024
Participant consent form	4	31 October 2024
Participant information sheet (PIS) [PIS]	1	01 August 2024
Participant information sheet (PIS)	4	31 October 2024
Referee's report or other scientific critique report [Referee's report or other scientific critique report]		01 August 2024
Research protocol or project proposal [Protocol]	2	30 September 2024
Summary CV for Chief Investigator (CI) [Summary CV]		16 June 2024

Summary CV for student [CV]		16 June 2024
Summary CV for supervisor (student research) [Summary CV]		16 June 2024
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Flowchart]	1	01 August 2024
Validated questionnaire [PUI Measure]		19 July 2024
Validated questionnaire [Impulsivity Measure]		19 July 2024
Validated questionnaire [Compulsivity Measure]		19 July 2024
Validated questionnaire [Impairment Scale]		19 July 2024

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities— see details at:

<https://www.hra.nhs.uk/planning-and-improving-research/learning/>

With the Committee's best wishes for the success of this project.

IRAS project ID: 343100	Please quote this number on all correspondence
--	---

Yours sincerely



Miss Raine Astin-Chamberlain

Vice Chair

Email: CamdenandKingsCross.REC@hra.nhs.uk

Enclosures: List of names and professions of members who took part in the review

“After ethical review – guidance for researchers”

Copy to: Prof Wendy Wills

Lead Nation

London - Camden & Kings Cross Research Ethics Committee

Attendance at PRS Sub-Committee of the REC meeting in correspondence

Committee Members:

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>
Dr Harris Dalrymple	Executive Director	Yes	
Miss Amy Richards	Clinical Evaluation Project Manager	Yes	

Also in attendance:

<i>Name</i>	<i>Position (or reason for attending)</i>
Miss Raine Astin-Chamberlain	Clinical Research Nurse (Emergency Department)

Appendix I – Health Research Authority Approval



Dr Debra Marais University
Of Hertfordshire College
Lane
AL10 9AB

Email: [REDACTED]

31 October 2024 Dear

Dr Marais

**HRA and Health and Care
Research Wales (HCRW)
Approval Letter**

Study title:	Investigating the prevalence and presentation of problematic internet usage in clinical populations.
IRAS project ID:	343100
Protocol number:	TBC
REC reference:	24/PR/1055
Sponsor	Hertfordshire University Doctoral College

I am pleased to confirm that [HRA and Health and Care Research Wales \(HCRW\) Approval](#) has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the “Information to support study set up” section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?

HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation.

The relevant national coordinating function/s will contact you as appropriate.

Please see [IRAS Help](#) for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to [obtain local agreement](#) in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document “[After Ethical Review – guidance for sponsors and investigators](#)”, issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The [HRA website](#) also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **343100**. Please quote this on all correspondence. Yours

sincerely,

Christie Ord Approvals

Specialist

Email: [REDACTED]

Copy to: *Prof Wendy Wills*

List of Documents

The final document set assessed and approved by HRA and HCRW Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering letter on headed paper [Covering letter]		16 June 2024
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Evidence of Insurance]		01 August 2024
IRAS Application Form [IRAS_Form_16082024]		16 August 2024
IRAS Checklist XML [Checklist_02102024]		02 October 2024
IRAS Checklist XML [Checklist_30102024]		30 October 2024
Letter from sponsor [Sponsor Letter]		01 August 2024
Non-validated questionnaire [Demographic questions]	1	01 August 2024
Organisation Information Document [Organisation Information Doc]	1	18 July 2024
Other [Summary CV (NF)]	1	06 September 2024
Participant consent form	4	31 October 2024
Participant information sheet (PIS) [PIS]	1	01 August 2024
Participant information sheet (PIS)	4	31 October 2024
Referee's report or other scientific critique report [Referee's report or other scientific critique report]		01 August 2024
Research protocol or project proposal [Protocol]	2	30 September 2024
Schedule of Events or SoECAT [SoECAT]	1	29 August 2024
Summary CV for Chief Investigator (CI) [Summary CV]		16 June 2024
Summary CV for student [CV]		16 June 2024
Summary CV for supervisor (student research) [Summary CV]		16 June 2024
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Flowchart]	1	01 August 2024
Validated questionnaire [PUI Measure]		19 July 2024
Validated questionnaire [Impulsivity Measure]		19 July 2024
Validated questionnaire [Compulsivity Measure]		19 July 2024
Validated questionnaire [Impairment Scale]		19 July 2024

Information to support study set up

The below provides all parties with information to support the arranging and confirming of capacity and capability with participating NHS organisations in England and Wales. This is intended to be an accurate reflection of the study at the time of issue of this letter.

Types of participating NHS organisation	Expectations related to confirmation of capacity and capability	Agreement to be used	Funding arrangements	Oversight expectations	HR Good Practice Resource pack expectations
Research activities and procedures as per the protocol and other study documents will take place at participating NHS organisations.	Research activities should not commence at participating NHS organisations in England or Wales prior to their formal confirmation of capacity and capability to deliver the study in accordance with the contracting expectations detailed. Due to the nature of the activities involved, organisations will be expected to provide that confirmation to the sponsor •Within 35 days of receipt of the local information pack •After HRA/HCRW Approval has been Issued.	An Organisation Information Document has been submitted and the sponsor is not requesting and does not expect any other agreement to be used with participating NHS organisations of this type.	Study funding arrangements are detailed in the Organisation Information Document.	A Local Collaborator should be appointed at participating NHS organisations.	No Honorary Research Contracts, Letters of Access or pre-engagement checks are expected for local staff employed by the participating NHS organisations. Where arrangements are not already in place, research staff not employed by the NHS host organisation undertaking any of the research activities listed in the research application would be expected to obtain a Letters of Access based on standard DBS checks and occupational health clearance.

	If the organisation is not able to formally confirm capacity and capability within this timeframe, they must inform the sponsor of this and provide a justification. If the sponsor is not satisfied with the justification, then the sponsor may escalate to the National Coordinating Function where the participating NHS organisation is located.				
--	--	--	--	--	--

Other information to aid study set-up and delivery

This details any other information that may be helpful to sponsors and participating NHS organisations in England and Wales in study set-up.

The applicant has indicated that they intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix J – Letter of Sponsorship in Full from University of Hertfordshire



University of Hertfordshire
Higher Education Corporation
Hatfield, Hertfordshire
AL10 9AB

Telephone
Fax
Website

+44 (0) 1707 284000
+44 (0) 1707 284115
www.herts.ac.uk

Professor Wendy Wills

PhD, MSc, BSc, SFHEA, Reg Nutr (Public Health) Professor of
Food and Public Health

Pro Vice-Chancellor (Research and Enterprise)

Director, NIHR Applied Research Collaboration (ARC) East of England

Dr Debra Marais (Simon Taylor – student) Department of
Psychology, Sports and Geography School of Life and
Medical Sciences

26 November 2024

Dear Dr Marais,

Re: UNIVERSITY OF HERTFORDSHIRE SPONSORSHIP IN FULL for the following:

RESEARCH STUDY TITLE: Investigating the prevalence and presentation of problematic internet usage in clinical populations.

NAME OF CHIEF INVESTIGATOR (Supervisor): Dr Debra Marais

NAME OF INVESTIGATOR (Student): Simon Taylor

UNIVERSITY OF HERTFORDSHIRE ETHICS PROTOCOL NUMBER: LMS/PGR/NHS/02316

HEALTH RESEARCH AUTHORITY REFERENCE: 24/PR/1055

This letter is to confirm your research study detailed above has been reviewed and accepted and I agree to give full University of Hertfordshire sponsorship, so you may now commence your research.

As a condition of receiving full sponsorship, please note that it is the responsibility of the Chief Investigator to inform the Sponsor at any time of any changes to the duration or funding of the project, changes of investigators, changes to the protocol and any future amendments, or deviations from the protocol, which may require re-evaluation of the sponsorship arrangements.

Permission to seek changes as outlined above should be requested from myself before submission to the Health Research Authority (HRA) Research Ethics Committee (REC) and I must also be notified of the outcome. It is also essential that evidence of any further NHS Trust or other site permissions is sent as soon as they are received. Copies of annual reports and the end of study report as submitted to the HRA also need to be provided. Please do this via email to research-sponsorship@herts.ac.uk

Please note that University Sponsorship of your study is invalidated if this process is not followed.

In the meantime, I wish you well in pursuing this interesting research study.

Yours sincerely,



Professor Wendy Wills

Pro Vice-Chancellor (Research and Enterprise)

Research Department
The Colonnades
Beaconsfield Road
Hatfield
Hertfordshire
AL10 8YE

Simon Taylor
Trainee Clinical Psychologist
University of Hertfordshire
Hatfield
Hertfordshire AL10
9AB

14th November 2024

Dear Simon Taylor

**Letter of access for research:
Investigating the prevalence and presentation of
problematic internet usage in clinical populations, IRAS
343100**

As an existing NHS employee you do not require an additional honorary research contract with Hertfordshire Partnership University Foundation Trust (HPFT). We are satisfied that the research activities that you will undertake in this NHS organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this organisation that the necessary pre-engagement checks are in place in accordance with the role you plan to carry out in this organisation. Evidence of checks should be available on request to HPFT.

This letter confirms your right of access to conduct research through HPFT for the purpose and on the terms and conditions set out below. This right of access commences on **14/11/24** and ends on **30/9/25** unless terminated earlier in accordance with the clauses below. You have a right of access to conduct research as per the emailed confirmation of Capacity and Capability for research from this NHS Organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received an email from us giving confirmation of our agreement to conduct the research.

You are considered to be a legal visitor to HPFT premises. You are not entitled to any form of payment or access to other benefits provided by this organisation to employees and this letter does not give rise to any other relationship between you and this organisation, in particular that of an employee.

While undertaking research through HPFT, you will remain accountable to your employer (**Cambridgeshire and Peterborough NHS Foundation Trust**) but you are required to follow the reasonable instructions of your nominated manager (**Prof. Naomi Fineberg**) in this NHS organisation or those given on her/his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with HPFT policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with HPFT in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on HPFT premises. Although you are not a contract holder, you must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of a contract holder and you must act appropriately, responsibly and professionally at all times.

If you have a physical or mental health condition or disability which may affect your research role and which might require special adjustments to your role, if you have not already done so, you must notify your employer and the HPFT Research Department (01707 253835) prior to commencing your research role at this Trust.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice and the Data Protection Act 2018. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

HPFT will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 2018. Any breach of the Data Protection Act 2018 may result in legal action against you and/or your substantive employer.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

This letter may be revoked and your right to attend this organisation may be terminated at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. You must not undertake regulated activity if you are barred from such work. If you are barred from working with adults or children this letter of access is immediately terminated. Your employer will immediately withdraw you from undertaking this or any other regulated activity and you **MUST** stop undertaking any regulated activity immediately.

Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

If your circumstances change in relation to your health, criminal record, professional registration or suitability to work with adults or children, or any other aspect that may impact on your suitability to conduct research, or your role in research changes, you must inform the organisation that employs you through its normal procedures. You must also inform the nominated manager in this NHS organisation.

Yours sincerely,

Thanusha Balakumar

Senior Research Officer
HPFT Research Department

Declaration of the end of a study

(For all studies except Clinical Trials of Investigational Medicinal Products)

To be completed in typescript by the Chief Investigator or sponsor representative and submitted to the Research Ethics Committee (REC) that gave a favourable opinion of the research within 90 days of the conclusion of the study or within 15 days of early termination

For questions with Yes/No options please indicate answer in bold type.

1. Details of Chief Investigator

Name:	Debra Marais
Address:	University of Hertfordshire College Lane AL10 9AB
Telephone:	██████████
E-mail:	██████████████████

2. Details of study

Full title of study:	Investigating the Prevalence and Presentation of Problematic Internet Usage in Clinical Populations
----------------------	---

IRAS ID:	343100
Name of REC:	London – Camden & Kings Cross
REC reference number:	24/PR/1055
Date of favourable ethical opinion:	24/09/24
Sponsor:	University of Hertfordshire

3. Study duration

Date study commenced:	12/12/24
Date study ended	26/05/25
Did this study terminate prematurely?	No

4. Recruitment

Number of participants recruited	354
Proposed number of participants to be recruited at the start of the study	107 was minimum sample size
If different, please state the reason or this	

5. Circumstances of early termination

What is the justification for this early termination?	N/A
---	-----

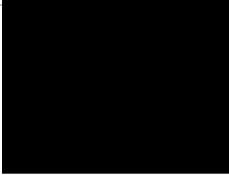
6. Potential implications for research participants

Are there any potential implications for research participants as a result of terminating the study prematurely?	N/A
Please describe the steps taken to address them.	

7. Final report on the research

Have you submitted a Final Report?	No If no, please submit a Final Report within 12 months of the end of the study (or for paediatric CTIMPs, within 6 months). More information is available on the HRA website
------------------------------------	--

8. Declaration

*Signature or Electronic Authorisation of Chief Investigator/sponsor representative:	
*Please print below or insert electronic signature	
Print name:	DEBRA MARAIS
Date of submission:	26/05/25

Appendix M – SPSS Outputs for Data Analysis

Hypothesis 1

PUI					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	51	14.4	14.4	14.4
	No	303	85.6	85.6	100.0
	Total	354	100.0	100.0	

Hypothesis 2

OwnView * PUI Crosstabulation

			PUI		Total
			Yes	No	
OwnView	Yes	Count	34	46	80
		Expected Count	11.5	68.5	80.0
	No	Count	5	192	197
		Expected Count	28.4	168.6	197.0
	Unsure	Count	12	65	77
		Expected Count	11.1	65.9	77.0
Total		Count	51	303	354
		Expected Count	51.0	303.0	354.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	73.793 ^a	2	<.001
Likelihood Ratio	69.550	2	<.001
Linear-by-Linear Association	23.963	1	<.001
N of Valid Cases	354		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.09.

Hypothesis 3

AskedBefore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	43	12.1	12.1	12.1
	No	288	81.4	81.4	93.5
	Unsure	23	6.5	6.5	100.0
	Total	354	100.0	100.0	

Hypothesis 4

Box's Test of Equality of Covariance Matrices^a

Box's M	186.229
F	3.138
df1	55
df2	25822.160
Sig.	<.001

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design:
Intercept +
PUI

Multivariate Tests^a

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^c
Intercept	Pillai's Trace	.864	218.604 ^b	10.000	343.000	<.001	.864	2186.038	1.000
	Wilks' Lambda	.136	218.604 ^b	10.000	343.000	<.001	.864	2186.038	1.000
	Hotelling's Trace	6.373	218.604 ^b	10.000	343.000	<.001	.864	2186.038	1.000
	Roy's Largest Root	6.373	218.604 ^b	10.000	343.000	<.001	.864	2186.038	1.000
PUI	Pillai's Trace	.229	10.181 ^b	10.000	343.000	<.001	.229	101.807	1.000
	Wilks' Lambda	.771	10.181 ^b	10.000	343.000	<.001	.229	101.807	1.000
	Hotelling's Trace	.297	10.181 ^b	10.000	343.000	<.001	.229	101.807	1.000
	Roy's Largest Root	.297	10.181 ^b	10.000	343.000	<.001	.229	101.807	1.000

a. Design: Intercept + PUI

b. Exact statistic

c. Computed using alpha = .05

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^k
Corrected Model	ISAAQB1	100.841 ^a	1	100.841	57.362	<.001	.140	57.362	1.000
	ISAAQB2	47.797 ^b	1	47.797	18.536	<.001	.050	18.536	.990
	ISAAQB3	47.355 ^c	1	47.355	16.958	<.001	.046	16.958	.984
	ISAAQB4	81.772 ^d	1	81.772	50.176	<.001	.125	50.176	1.000
	ISAAQB5	25.722 ^e	1	25.722	25.530	<.001	.068	25.530	.999
	ISAAQB6	62.429 ^f	1	62.429	31.460	<.001	.082	31.460	1.000
	ISAAQB7	13.999 ^g	1	13.999	8.367	.004	.023	8.367	.822
	ISAAQB8	4.355 ^h	1	4.355	2.737	.099	.008	2.737	.378
	ISAAQB9	12.633 ⁱ	1	12.633	5.667	.018	.016	5.667	.661
	ISAAQB10	1.294 ^j	1	1.294	4.953	.027	.014	4.953	.602

Hypothesis 5

DxGrouped * PUI Crosstabulation

			PUI		
			Yes	No	Total
DxGrouped	Other Diagnostic Categories	Count	28	187	215
		Expected Count	31.0	184.0	215.0
	Mood Disorders	Count	23	116	139
		Expected Count	20.0	119.0	139.0
Total		Count	51	303	354
		Expected Count	51.0	303.0	354.0

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-.049	.357
	Cramer's V	.049	.357
N of Valid Cases		354	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.850 ^a	1	.357		
Continuity Correction ^b	.588	1	.443		
Likelihood Ratio	.840	1	.360		
Fisher's Exact Test				.358	.221
Linear-by-Linear Association	.848	1	.357		
N of Valid Cases	354				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.03.

b. Computed only for a 2x2 table

Hypothesis 6

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Age ^b	.	Enter
2	CPASTotal ^b	.	Enter
3	BISTotal ^b	.	Enter

a. Dependent Variable: ISAAQATotal

b. All requested variables entered.

Model Summary^d

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.152 ^a	.023	.020	11.091	.023	8.361	1	352	.004
2	.444 ^b	.197	.192	10.071	.174	75.872	1	351	<.001
3	.571 ^c	.326	.321	9.237	.130	67.320	1	350	<.001

a. Predictors: (Constant), Age

b. Predictors: (Constant), Age, CPASTotal

c. Predictors: (Constant), Age, CPASTotal, BISTotal

d. Dependent Variable: ISAAQATotal

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error				Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	26.079	2.028		12.862	<.001					
	Age	-.120	.042	-.152	-2.892	.004	-.152	-.152	-.152	1.000	1.000
2	(Constant)	13.619	2.332		5.841	<.001					
	Age	-.058	.038	-.074	-1.517	.130	-.152	-.081	-.073	.966	1.035
	CPASTotal	.775	.089	.424	8.710	<.001	.438	.422	.417	.966	1.035
3	(Constant)	-2.052	2.867		-.716	.475					
	Age	-.059	.035	-.075	-1.672	.096	-.152	-.089	-.073	.966	1.036
	CPASTotal	.519	.087	.284	5.938	<.001	.438	.303	.261	.842	1.187
	BISTotal	.488	.059	.386	8.205	<.001	.494	.402	.360	.869	1.151

a. Dependent Variable: ISAAQATotal

[ENTERED IN REVERSE ORDER]

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Age ^b	.	Enter
2	BISTotal ^b	.	Enter
3	CPASTotal ^b	.	Enter

a. Dependent Variable: ISAAQATotal

b. All requested variables entered.

Model Summary^d

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.152 ^a	.023	.020	11.091	.023	8.361	1	352	.004
2	.508 ^b	.259	.254	9.677	.235	111.394	1	351	<.001
3	.571 ^c	.326	.321	9.237	.068	35.260	1	350	<.001

a. Predictors: (Constant), Age

b. Predictors: (Constant), Age, BISTotal

c. Predictors: (Constant), Age, BISTotal, CPASTotal

d. Dependent Variable: ISAAQATotal

Coefficients ^a											
Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Correlations			Collinearity Statistics		
	B	Std. Error				Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	26.079	2.028	12.862	<.001						
	Age	-.120	.042	-.152	.004	-.152	-.152	-.152	1.000	1.000	
2	(Constant)	1.170	2.950	.397	.692						
	Age	-.095	.036	-.121	.009	-.152	-.138	-.120	.996	1.004	
	BISTotal	.614	.058	.486	<.001	.494	.491	.485	.996	1.004	
3	(Constant)	-2.052	2.867	-.716	.475						
	Age	-.059	.035	-.075	.096	-.152	-.089	-.073	.966	1.036	
	BISTotal	.488	.059	.386	<.001	.494	.402	.360	.869	1.151	
	CPASTotal	.519	.087	.284	<.001	.438	.303	.261	.842	1.187	

a. Dependent Variable: ISAAQATotal

Hypothesis 7

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
WSASTotal	.083	201	.002	.969	201	<.001

a. Lilliefors Significance Correction

Ranks

	PUI	N	Mean Rank	Sum of Ranks
WSASTotal	Yes	42	157.65	6621.50
	No	159	86.03	13679.50
	Total	201		

Test Statistics^a

WSASTotal	
Mann-Whitney U	959.500
Wilcoxon W	13679.500
Z	-7.103
Asymp. Sig. (2-tailed)	<.001

a. Grouping Variable: PUI

Report

Median

PUI	WSASTotal
Yes	27.00
No	15.00
Total	17.00