

The battle against screen time: A systematic review of hedonic information systems use reduction

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Abstract

Purpose - In the 21st century, excessive use of hedonic information systems (HIS) has become commonplace, making HIS use reduction a more viable option for many users than complete discontinuation. Even so, there is no systematic revision on this matter. This systematic literature review aims to examine previous studies on HIS use reduction, identify their limitations, and point out future research directions.

Design/methodology/approach - We adhered to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines, ultimately analyzing 52 papers published between 2010 and 2024, with the majority disseminated after 2021.

Findings – The primary findings indicate a gradual shift from focusing on internet research to exploring social networking sites, with consistent attention on gaming and mobile device usage. Moreover, there is a notable diversity in the theoretical foundations of scholarly research in this area, as well as in the antecedents, consequences, and control factors. Additionally, factors such as awareness, social norms, fatigue, privacy concerns, and self-efficacy play the most significant roles in reducing the use of HIS. Finally, this article identifies gaps and opportunities in the field and employs science mapping to uncover the four predominant themes that form the basis of this research domain.

Originality/value – As far as we know, this article marks the inaugural comprehensive systematic review of current research on reducing HIS use, intending to make a dual impact. Initially, the authors meticulously outline HIS use reduction systematically and thoroughly, offering theoretical insights. Second, they delve into potential research areas and contributions concerning this phenomenon to address the gap in understanding the effects of reducing HIS usage on individuals.

Keywords: Systematic literature review; Information systems; Use reduction; Social networking sites; Gaming; Mobile device; Internet

Paper type: Literature review

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1. Introduction

In the intricate tapestry of modern societal structures, the seamless integration of information systems (IS) has become an indispensable facet of our daily lives (Islam *et al.*, 2022). The proliferation of multifunctional applications and ubiquitous internet access has driven an unprecedented surge in IS usage (Tandon *et al.*, 2021). Recent estimations reveal a staggering number, surpassing 3 billion active global social media users, spending an average of 136 minutes daily (Statista, 2022). Additionally, platforms like Netflix and Microsoft Teams witnessed a substantial surge in users during the COVID-19 pandemic (Meier *et al.*, 2023), further amplifying the pervasiveness of IS in our lives. Furthermore, numerous youths discover gratifying experiences through compliments and motivational messages, such as those encountered in gaming and social networking sites (SNS), unlike the scarcity of such encouragement in home or academic settings (Wang and Sun, 2011).

The ubiquitous use of IS has significantly captured the attention of both academic and mainstream spheres in recent years. In contrast to utilitarian systems, hedonic information systems (HIS), defined by Van Der Heijden (2004) for their user-friendly nature and enjoyment purpose and by Turel (2016) as intrinsically rewarding and fairly frequent, tend to be more susceptible to overuse, potentially fostering the development of technology addiction - a psychological state marked by maladaptive dependency (Meske *et al.*, 2019). The primary aim in designing HIS is to promote extended usage by incorporating enjoyable content that stimulates various sensations, with the interaction itself being the ultimate goal (Van Der Heijden, 2004). IS literature illustrates that these systems carry a significant risk of steering users toward addiction, subsequently resulting in numerous negative outcomes (Vaghefi *et al.*, 2023). For example, addiction to SNS has been linked to increased task distraction and poses detrimental effects on users' mental, physical, and social well-being (Chen *et al.*, 2021). This situation has prompted researchers to explore the adverse effects of HIS use, commonly referred to as the 'dark side' of IS utilization. (Moqbel and Kock, 2018). This heightened scrutiny stems from the realization among scholars that the seamless integration of HIS into our daily routines blurs the boundaries between mere enjoyment and potential addiction (Gong *et al.*, 2019; Vaghefi *et al.*, 2023), particularly when considering the detrimental effects of IS addiction (Soror *et al.*, 2015; Turel and Qahri-Saremi, 2016). Moreover, studies indicating that such excessive HIS use can profoundly impact individuals' health and overall well-being (Turel, 2015; Turel and Serenko, 2012) prompted a surge in research. Researchers have explored the characteristics of how these pleasure-oriented systems and users' internal responses tied to psychological phenomena, such as technostress (Maier *et al.*, 2015), fear (Chen *et al.*, 2020), and privacy concerns (Neves *et al.*, 2022) trigger behavioral changes.

Despite the increasing research on self-regulatory corrective behaviors in HIS usage, systematic reviews on HIS use reduction do not exist. While HIS discontinuance, or the complete termination of usage, has received extensive exploration across various contexts and platforms (Fan *et al.*, 2021; Shokouyar *et al.*, 2018; Tang *et al.*, 2019; Vaghefi *et al.*, 2020), other corrective behaviors such as use reduction, temporary breaks, and switching require further investigation. Additionally, while sometimes the notion of discontinuance may encompass these various forms of corrective behavior (Farooq *et al.*, 2023), it is crucial to conduct individual research, as these

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3 behaviors differ significantly from one another (Osatuyi and Turel, 2020). Furthermore, our focus
4 on HIS use reduction stems from its perceived realism for many users who may not wish to
5 disengage from a system entirely. Use reduction presents a less extreme and potentially more
6 manageable approach that does not necessitate total cessation from the target HIS, serving as a
7 more acceptable step for users grappling with issues related to HIS use but still strongly desire to
8 engage with it (Turel, 2015, 2016). Moreover, the exploration of HIS use reduction could benefit
9 from additional research, as current studies provide, for instance, few insights into the
10 consequences of reduction in usage due to adverse internal effects and external factors (Osatuyi
11 and Turel, 2020). We understand that IS literature requires a comprehensive understanding to
12 advance our grasp of HIS use reduction, thus motivating the imperative undertaking of a
13 systematic literature review (SLR) to consolidate and synthesize diverse findings.
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17 To the best of our knowledge, there has not been a systematic effort to review and synthesize the
18 existing literature on reducing the use of HIS. Given the increasing reliance on HIS and the
19 pressing need for practical strategies to manage and reduce excessive use while preserving its
20 benefits, our SLR is particularly timely. Our study seeks to address this gap by exploring four key
21 research questions. First, we aim to assess the current landscape of research focused on HIS use
22 reduction (RQ1). Second, we investigate the emerging theoretical foundations and approaches
23 that have been developed in this area (RQ2). Third, we examine how previous research has been
24 constrained by existing knowledge gaps and limitations (RQ3). Finally, we identify future
25 research directions that should be pursued to address these gaps and advance the field (RQ4).
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29 Our study critically examines the literature on HIS use reduction through stringent article
30 selection criteria and rigorous quality assessment protocols. Moreover, our contribution delves
31 into a detailed discussion of prior research, elucidating investigated variables, theoretical
32 foundations, and discrepancies in findings. It also identifies research gaps and presents potential
33 paths for future investigation. Lastly, our findings carry significant implications for both scholars
34 and practitioners, facilitating public awareness regarding the consequences of hedonic IS
35 addiction and strategies to reduce such usage while retaining its benefits.
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38 The subsequent sections of this manuscript are structured to address these questions
39 comprehensively. Section 2 briefly introduces the phenomena of HIS addiction and HIS use
40 reduction. Section 3 provides an overview of our methodology, including review protocols, article
41 selection criteria, search strategies, and quality assessment methodologies. Section 4
42 comprehensively analyzes prior research contributions, delineating their limitations and providing
43 a contemporary research profile. Section 5 outlines the insights identified through our review and
44 discusses future research endeavors and implications. Finally, Section 6 presents concluding
45 remarks.
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49 **2. Background**

50 **2.1. HIS addiction**

51 Addiction, whether to substances or behaviors, manifests as a habitual compulsion despite adverse
52 consequences across various aspects of life (Chen and Roberts, 2020). While substance addiction
53 involves psychoactive ingestion, behavioral addiction encompasses a compulsion toward specific
54 behaviors or the feelings they elicit (Grant et al., 2010). Despite this distinction, both share
55 underlying etiological frameworks and common diagnostic symptoms like excessive usage,
56 tolerance, withdrawal, and ensuing negative repercussions (Kuss and Griffiths, 2011).
57 Technology addiction, a subset of behavioral dependency, underscores this overlap, evident in
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3 various contexts such as internet use, gaming, and SNS reliance (Turel et al., 2011). It frequently
4 shows through several symptoms like salience, withdrawal, tolerance, conflict, mood
5 modification, relapse, and reinstatement (Holden, 2001). It is more than just excessive use of
6 technology (Davis, 2001); it aligns with the level of psychological reliance, mirroring the intensity
7 of symptoms seen in behavioral addiction (Turel et al., 2011).
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10 HIS exist within the realm of technology addiction, serving as a prominent arena prone to
11 addictive tendencies, as highlighted by Charlton and Danforth (2007). These volitionally adopted
12 systems, designed to maximize user pleasure and gratification (Gerow *et al.*, 2013), cultivate an
13 environment ripe for addiction, leveraged by a reinforcement mechanism (Cheung *et al.*, 2013).
14 Within this context, cybernetics theory (Wiener, 2019) elucidates that the allure of HIS lies in
15 their immediate and immersive experiences, prompting an intense desire for sustained
16 engagement (Chen *et al.*, 2021). The specific design elements of HIS, including customized
17 content, instant feedback, and interactive interfaces, exploit psychological triggers that amplify
18 pleasure and reward, fostering a cycle of compulsive use rooted in affordance theory (Gibson,
19 1978).
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23 Moreover, the utilization of technology to meet users' initial needs, sparking their adoption of
24 HIS, is shaped by the interplay of needs, affordances, and features (Vaghefi et al., 2023). Users
25 often find themselves consumed by HIS, dominating their thoughts and actions (salience),
26 impeding routine activities, and causing conflicts (Vaghefi et al., 2023). Withdrawal from HIS
27 induces negative emotions, while their use generates positive feelings, perpetuating an addictive
28 cycle (Vaghefi et al., 2017). The escalating need for increased usage to sustain pleasure
29 (tolerance) and repeated unsuccessful attempts to cease use (relapse and reinstatement)
30 underscore the addictive nature of HIS (Venkatesh et al., 2019). Given this, it is no surprise that
31 the bulk of research reveals numerous adverse outcomes stemming from HIS addiction for its
32 users (Turel, 2016; Turel and Serenko, 2010). It is crucial to delve deeper into understanding
33 corrective behaviors within IS, with a particular emphasis on reducing usage as a practical and
34 viable corrective action for HIS addiction.
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39 **2.2. HIS use reduction**

40 Although HIS offer numerous advantages for organizations and users, excessive user engagement
41 has led to various problematic behaviors and outcomes, such as declines in physical and
42 psychological health (Turel and Qahri-Saremi, 2018). IS research has explored various self-
43 regulatory corrective behaviors to address the probable maladaptive psychological dependence
44 (i.e., IS addiction) and avoid adverse consequences. Users are expected to employ coping
45 strategies to mitigate these often undesirable behaviors, such as discontinuing usage, taking
46 temporary breaks, switching to alternative platforms, and reducing usage (Osatuyi and Turel,
47 2020).
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50 Three out of four pose considerable challenges to their long-term success. First, the intention to
51 discontinue only surfaces after continuance intentions have been established (Turel, 2015).
52 Despite varying interpretations based on context (i.e., rejection, regressive discontinuance,
53 quitting, temporary discontinuance, and replacement) (Soliman and Rinta-Kahila, 2020), we
54 define discontinuance as the cessation of all activities on a particular platform (Gan et al., 2024).
55 Rejection and a regressive discontinuance occur before the user reaches the stage of continued
56 use, automatically ruling them out as potential remedies for HIS addiction. Essentially, quitting
57 represents the permanent termination of an HIS to alleviate the negative impacts of overuse (Salo
58 and Frank, 2017). Second, taking a temporary break refers to a more rapid response, which might
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3 only temporarily mask the issue (York and Turcotte, 2015). This strategy involves temporarily
4 ceasing to access the platform, with the intention to return at a later date (Pollard, 2003). The
5 duration of these breaks can range from short periods to longer intervals, contingent on the
6 severity of the consequences of excessive use (Ravindran *et al.*, 2014). Third, switching to
7 alternative platforms preserves the rewards, and as such, it does not address the issue of addictive
8 use (Bhattacharjee *et al.*, 2012). This strategy signifies replacing one HIS with another (Polites
9 and Karahanna, 2012), involving two steps: discontinuing the current HIS and adopting an
10 alternative HIS, with no strict sequence of events (Soliman and Rinta-Kahila, 2020).
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14 Finally, regarding the reduction of HIS usage, our comprehension suggests that the notion of
15 reducing usage does not neatly align with the framework outlined by Soliman and Rinta-Kahila
16 (2020). While taking a break may appear to be a form of usage reduction, the specific concept of
17 reducing usage in the voluntary hedonic context we are examining differs because it aims to
18 preserve the benefits of using the IS. In our quest for a more profound understanding of the stages
19 of use reduction within the HIS domain, we suggest placing it within the context of nonwork,
20 hedonic, and private spheres. This placement implies that use reduction occurs after a period of
21 sustained use, potentially preceding actions such as quitting, replacement, or temporary
22 discontinuation. Additionally, Soliman and Tuunainen (2022) have developed a stage model that
23 elucidates the complexities of IS discontinuation, highlighting five crucial stages: IS framing,
24 goal pursuit, frame disruption, dormancy, and quitting. Among these stages, dormancy and
25 quitting emerge as pivotal focal points. Despite initial similarities that may be perceived between
26 dormancy and use reduction, a closer examination reveals them to be distinct behaviors.
27 Dormancy involves passive use and lurking, whether conscious or unconscious. In contrast,
28 drawing on the intentionality from Osatuyi and Turel's definition, we assert that use reduction
29 involves users consciously striving to decrease their IS usage (Osatuyi and Turel, 2020). Lastly,
30 intermittent discontinuance describes the pattern where individuals initially adopt a technology,
31 then stop using it, but eventually return to it or intend to do so (Ng, 2020; Shen *et al.*, 2018). Our
32 understanding suggests that the concept of reducing usage fits within one of the factors of
33 intermittent discontinuance: controlled activity. Controlled activity is characterized by a gradual
34 and consistent decrease in usage. This concept is exemplified by an interviewee in (Ravindran *et*
35 *al.*, 2014) study, who stated, "From time to time, I feel the need to regulate time spent on Facebook
36 more strictly." Thus, we incorporate the concept of controlled use into our definition of usage
37 reduction.
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44 Moreover, this corrective measure is a more achievable and manageable strategy, as it does not
45 require a complete cessation of HIS usage (Osatuyi and Turel, 2020). This new habit, once
46 cultivated, is likely to yield a higher likelihood of long-term success (Hughes *et al.*, 2008). We
47 characterize use reduction as the conscious effort by users to lessen their engagement with an
48 HIS, thereby maintaining a healthy usage balance to prevent adverse effects (Osatuyi and Turel,
49 2020). This approach is particularly appealing to those users who derive significant enjoyment
50 from using HIS but must take action to mitigate the downsides associated with their use (Turel,
51 2016). This self-regulated method demonstrates an individual's intention to exert control over
52 usage, reaping both internal and external benefits. The internal motivation for such a corrective
53 behavior tends to yield more efficient results (Bandura, 1998). In a nutshell, HIS use reduction is
54 an appropriate corrective behavior for our technology-driven era, thus meriting closer scrutiny in
55 terms of existing research and potential knowledge gaps.
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3. Methodology

3.1. Review protocols

SLRs present a substantial advantage over traditional review approaches, such as narrative reviews, as they enable the systematic and reproducible synthesis of existing knowledge within a specific domain in a transparent manner (Kitchenham, 2004). In adherence to best practices, the present SLR adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher, 2009), as illustrated in Figure 1. The primary objectives of this SLR were to achieve four key goals. First, we aimed to gather and integrate relevant empirical knowledge on reducing the use of HIS. Second, we sought to identify the theoretical foundations and approaches that previous scholars have focused on. Third, we worked to recognize the apparent limitations and gaps in the existing knowledge. Lastly, we aimed to highlight potential directions for future research. The SLR process was carried out in two distinct phases: the first involved searching databases and selecting articles, while the second focused on profiling the research and conducting a content analysis of the reviewed articles. The database search and article selection were carried out independently by two authors. To ensure the reliability of the process, the authors engaged in regular discussions to reconcile any conflicting results. The inter-rater reliability, evaluated using Cohen's kappa value (0.85), was deemed acceptable (Cohen, 1960).

In summary, this SLR not only embraced the transparency and rigor of PRISMA guidelines but also ensured a robust and reproducible synthesis of knowledge related to HIS use reduction. The systematic execution of the review process, coupled with satisfactory inter-rater reliability, strengthens the credibility and reliability of the findings, thereby contributing to the advancement of knowledge in this domain.

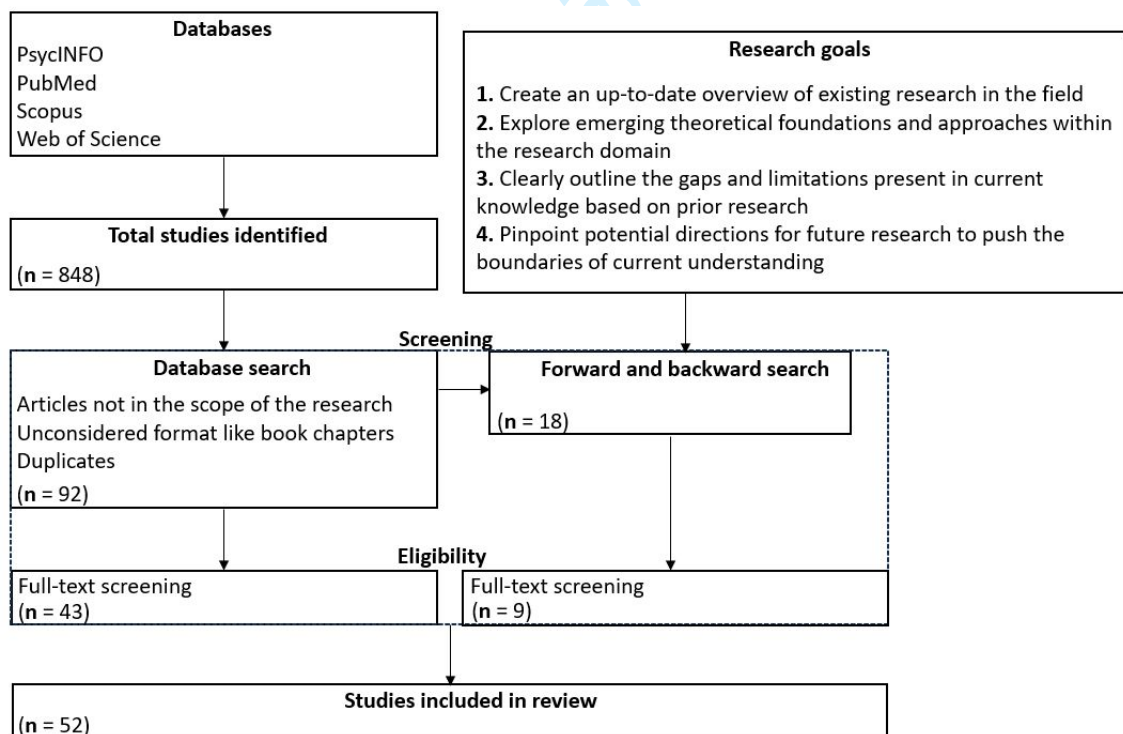


Figure 1. SLR process

3.2. Article search and selection

The review process commenced by identifying suitable search terms and databases, coupled with the subsequent determination of search syntaxes. An initial exploration on Google Scholar utilizing the keyword string "use reduction" was conducted to discern optimal keyword combinations for a comprehensive database search (Mongeon and Paul-Hus, 2016). The examination of the most relevant 100 texts derived from this search informed the identification of additional frequently used keywords related to the original search string. Consequently, the search criteria encompassed variations of the term "use reduction" and references to specific HIS relevant to our research objectives. Simultaneously, efforts were made to exclude articles not concentrating on the intention or behavior of reducing HIS use, as well as papers discussing reduction in contexts outside the scope of our study (e.g., substance use, car use, pornography use).

Given the interdisciplinary nature of HIS use reduction studies, our investigation extended across four databases - PsycINFO, PubMed, Scopus and Web of Science - to ensure comprehensive literature coverage (Sigerson and Cheng, 2018). The search was executed in June 2024 using a meticulously crafted combination of keywords within the article title, abstract, and keyword sections. The Boolean search string aimed at capturing relevant studies included terms such as "use reduction," "intention," "behavior," and specific HIS-related terms. Notably, efforts were made to exclude irrelevant contexts like travel, alcohol, drugs, and others through a "NOT" operator. This rigorous search process yielded an initial set of 848 articles. The search string is as follows: (TITLE-ABS-KEY ("use reduction" OR "usage reduction" OR ("control* use") OR ("control* usage") OR ("intermittent discontinuance") OR ("decreas*" PRE/2 "use") OR ("decreas*" PRE/2 "usage") OR ("reduc*" PRE/2 "usage") OR ("reduc*" PRE/2 "use")) AND TITLE-ABS-KEY ("intention" OR "behaviour" OR "behavior") AND TITLE-ABS-KEY ("internet" OR "screen " OR "information system*" OR "social media" OR "social network* site*" OR "sns" OR "facebook" OR "twitter" OR "instagram" OR "linkedin" OR "gaming" OR "video games" OR "mobile" OR "tiktok" OR "snapchat" OR "smartphone*" OR "tablet*" OR "laptop*" OR "wearable*") AND NOT TITLE-ABS-KEY ("travel" OR "alcohol" OR "drug*" OR "smok*" OR "plastic" OR "environment*" OR "traffic" OR "cannabis" OR "water" OR {substance use} OR {energy use} OR {pornography use})). It is our understanding that this search string considers most types of HIS.

Subsequently, the screening process involved two coauthors systematically reviewing the search results based on four inclusion criteria. Firstly, only studies directly addressing HIS use reduction were considered, excluding those related to alternative contexts such as addiction, loneliness, and parental assistance. Secondly, we focused on published studies aimed at comprehending HIS use reduction. Thirdly, empirical investigations, whether qualitative or quantitative, were prioritized for inclusion. Finally, studies had to be published in peer-reviewed journals and in the English language to be eligible.

Conversely, three exclusion criteria were employed to maintain the relevance of the final sample. Articles presented in formats like papers, review articles, books, book chapters, research notes, and letters to the editor were excluded. The second criterion involved excluding studies that did not specifically address HIS use reduction through empirical investigations. Lastly, duplicated results were eliminated from further consideration.

Moving forward, a detailed examination of the full texts of 92 articles ensued (Meline, 2006). Additionally, a backward- and forward-chaining search methodology was applied to ensure our

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3 focus did not inadvertently exclude relevant studies (Levy and Ellis, 2006; Webster and Watson,
4 2002). This supplementary search strategy identified nine additional articles, culminating in a
5 final sample of 52 articles for our comprehensive literature review.
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7 **3.3. Study quality and risk-of-bias assessment**

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9 The Mixed Methods Appraisal Tool (MMAT) served as the cornerstone for evaluating the
10 methodological rigor of the studies incorporated into this systematic review (Hong *et al.*, 2018b).
11 Renowned for its robustness and efficiency, the MMAT stands out as a dependable protocol for
12 assessing study quality. It offers the ability to concurrently evaluate methodological excellence
13 across a spectrum of empirical research types (Hong *et al.*, 2018a). Moreover, the quality
14 assessment process was conducted by two of the authors, namely P.N. and J.N. Each author
15 independently evaluated the quality of the included studies, ensuring a comprehensive and
16 unbiased appraisal. Interrater reliability was calculated employing Cohen's kappa to gauge the
17 consistency of their assessments (Cohen, 1960). The resultant coefficient was 0.85, signifying a
18 high degree of substantial agreement between the two assessors.
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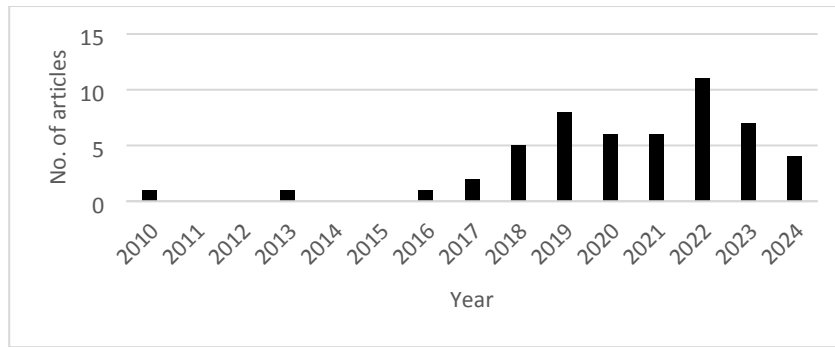
21
22 In the rare instances where disparities in the evaluation of study quality arose, the authors
23 promptly resolved these disagreements through thoughtful discussions. This collaborative
24 approach not only enhanced the reliability of the quality assessment but also upheld the integrity
25 of the systematic review's findings.
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28 **4. Research review and profiling**

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30 In this section, we delve into the research profile of the reviewed articles concerning RQ1. We
31 shed light on the prevailing publication trends and outline the research approaches that have been
32 previously adopted. Additionally, we tackle the challenges and constraints linked to the designs
33 and methodologies utilized in these investigations while also uncovering the four principal themes
34 of research on reducing HIS usage. This comprehensive examination aims to provide a nuanced
35 understanding of the landscape surrounding the research topics under consideration.
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38 **4.1. Publication trends**

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40 The annual trend of publications indicates a notable increase in research on HIS use reduction,
41 with a significant surge observed in 2022 (n=11), highlighting a growing interest and recognition
42 of the need to explore strategies to mitigate adverse consequences associated with HIS usage.
43 Prior to this period, there was a scarcity of studies addressing HIS use reduction, as illustrated in
44 Figure 2. This trend underscores the evolving landscape and emphasizes the importance of
45 addressing HIS-related challenges.
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Notes: Search is up to June 2024

Figure 2. Number of articles published over time

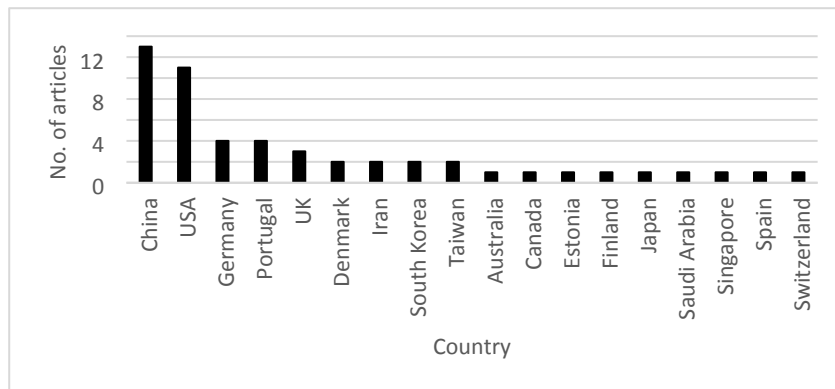


Figure 3. Geographic scope

In terms of geographical focus, earlier research predominantly centered on developed countries, particularly China ($n=13$) and the United States of America ($n=11$) and, Germany and Portugal ($n=4$) (Figure 3). While the majority of authors are affiliated with institutions in China and the USA, there is a noticeable gap in studies investigating HIS use reduction in Asian countries, such as Japan ($n=1$) and Saudi Arabia ($n=1$). No studies explored this aspect in developing nations like Indonesia, indicating a significant void in our understanding of coping strategies related to HIS use reduction in diverse global contexts.

Noteworthy authors in this field include Ofir Turel ($n=5$), Joseph Lau, and Anise Wu ($n=4$), followed by Joana Neves, Mason Lau, and Kit-man Cheng ($n=3$). Leading journals contributing to this research landscape include Behaviour & Information Technology ($n=3$), Computers in Human Behavior ($n=3$), and the International Journal of Environmental Research and Public Health ($n=2$). The multidisciplinary nature of publications, spanning diverse disciplines such as medicine, psychology, social sciences, engineering, decision sciences, neuroscience, computer science, business, information systems science, and health, underscores the complexity of HIS use reduction. To advance knowledge in this area, a proposed multidisciplinary focus integrates insights from humanities, psychology, information systems science, and health-related studies for a more comprehensive understanding of the challenges and opportunities across different domains of study.

4.2. Designs, methodologies, and approaches

Examining the various study designs employed by previous researchers, the review underscores a prevalent focus on both general and student-oriented samples. Intriguingly, there is a notable inclination toward female-dominant samples, representing 53% or more female respondents. This gender-based skewness is a noteworthy trend in the literature. Furthermore, the landscape of HIS

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3 research delineates itself into five distinct domains: general HIS, gaming, internet, smartphone,
4 and SNS. Notably, the smartphone domain emerges as the primary focus, with subsequent
5 attention directed toward SNS research.
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8 In terms of methodological approaches, a majority of prior studies have adopted a quantitative
9 paradigm for data collection and analysis, employing surveys and focus groups. Interestingly,
10 only one study deviated from this trend by utilizing a qualitative approach. Statistical analysis in
11 these studies predominantly features regression and structural equation modeling, with 47
12 instances, followed by non-parametric methods such as analysis of variance and Chi-Square
13 (n=5). Moreover, a distinctive aspect of the reviewed literature is the utilization of two specific
14 measurement instruments in two different studies. The first instrument is the Short-term Efficacy
15 of Reducing Screen-Based Media Use trial, a tool designed to assess the impact of interventions
16 aimed at reducing screen-based media consumption. The second instrument is the Smartphone
17 Addiction Scale Short Version, employed to gauge levels of smartphone addiction among study
18 participants. These instruments contribute valuable metrics to understanding screen-based media
19 usage and smartphone addiction within the context of HIS use reduction research.
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22 23 **4.2.1. Prior challenges and limitations of research design**

24 The exploration of research profiling has brought to light several noteworthy challenges in the
25 existing body of literature. First and foremost, a critical issue lies in the research design employed
26 in prior studies. This SLR indicates that many survey-based investigations heavily relied on cross-
27 sectional and self-reported data (Chen et al., 2019a; Fu and Li, 2020; Loid et al., 2020). However,
28 the utilization of such data introduces vulnerabilities such as common method bias (Podsakoff *et*
29 *al.*, 2003) and recall bias (Vrijheid *et al.*, 2009). These biases can distort associations between
30 variables, potentially leading to erroneous deductions. Additionally, self-selection bias may result
31 in non-representative samples, impeding the generalizability of findings to the broader population
32 (Heckman, 1990).
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36 Second, previous research has predominantly embraced a static approach characterized by
37 variance and non-stage theories. We recommend a shift toward a dynamic approach by
38 incorporating process or stage theories (Soliman and Tuunainen, 2022) and adopting longitudinal
39 research designs. This focus would shed light on the influence of both time and variations in HIS
40 use reduction, providing valuable insights into corrective behavior research. Third, a recurrent
41 issue in the existing literature is the prevalence of sample imbalances, particularly with female-
42 dominant samples. Fourth, the emphasis on smartphone and SNS investigations eclipses other
43 areas within the realm of HIS. Gaming, in particular, garners disproportionate attention despite
44 its pervasive influence on everyday life.
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48 Furthermore, generalizations concerning age-related differences in HIS use reduction are
49 challenging due to a predominant focus on young or emerging adults in current literature. Future
50 research should endeavor to investigate this phenomenon across various age groups for a more
51 comprehensive understanding. Lastly, the role of culture and ethnicity remains underexplored,
52 with few studies delving into their influence on HIS use reduction. We emphasize the imperative
53 need to develop a multiethnic, cross-cultural understanding of HIS use reduction, even
54 considering them as potential moderators or mediators in the relationship. This holistic approach
55 will contribute to a more nuanced comprehension of the complexities surrounding HIS use
56 reduction.
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4.3. Science mapping

The process of science mapping involves exploring and delineating knowledge clusters within a particular research field. This investigation conducts a co-occurrence analysis utilizing keywords, also known as keyword co-occurrence analysis. This approach identifies keywords that frequently appear together within a shared network (Donthu *et al.*, 2021). Simply put, co-occurrence refers to the common presence, recurrence frequency, and close proximity of similar keywords across a network derived from articles in the review corpus. The construction of a co-occurrence network of keywords employs a text-analysis technique, visually representing potential connections between keywords present in textual content. The keyword co-occurrence facilitates triangulation of findings, thereby reinforcing the conclusions drawn in this study (Kraus *et al.*, 2022). Prior research studies have inspired and supported the adoption of this triangulated method (Kumar *et al.*, 2022; Sahoo *et al.*, 2023).

4.3.1. Keyword co-occurrence

VOSviewer, a software designed for constructing and visualizing bibliometric information (van Eck and Waltman, 2010), played a pivotal role in our current investigation. We employed the co-occurrence analysis feature within VOSviewer to unveil the intricate web of connections between keywords, focusing on keywords that appeared at least three times. Figure 4 illustrates the outcomes, where each keyword is portrayed as a node. The size of each node corresponds to the frequency of the respective keyword, with larger nodes denoting higher occurrences.

The thickness of the links connecting nodes signifies the co-occurrence strength between keywords – thicker links indicate more frequent co-occurrences. Additionally, the color of each node reveals its membership in a cluster, reflecting a shared thematic element (Xu *et al.*, 2021). This approach not only provides a comprehensive visual representation of keyword networks but also offers insights into the prominence, relationships, and thematic clusters within the analyzed bibliometric data.

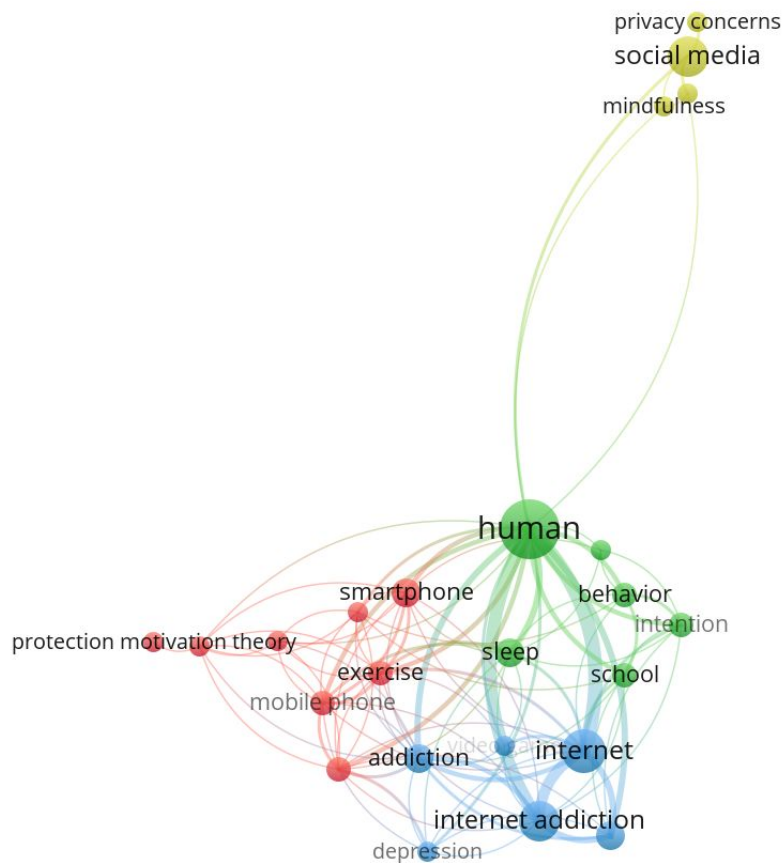


Figure 4. Keyword co-occurrence network

The keywords with the highest total link strength, indicating their frequent co-occurrence and significant interrelation, are "human," "internet," and "social media." The prominence of these terms holds key implications for our study. First, the inherent involvement of human users in HIS underscores the necessity of comprehending human behavior, preferences, and experiences. This insight is critical for designing and implementing corrective actions effectively. Second, the pervasive presence of the internet in HIS, encompassing domains like SNS and gaming, highlights its integral role in the context of our investigation. Lastly, the attention given to social media highlights how this particular HIS is central to research on addiction and corrective behaviors.

Moreover, even though HIS use reduction research topics are intertwined, the keyword co-occurrence analysis identified four distinct clusters, each encapsulating specific themes and associated keywords, as outlined in Table 1. The first cluster revolves around the use of smartphones and their impact on exercise and psychological well-being, which is connected to social isolation—a logical association given the prevalence of smartphone use (Jeong *et al.*, 2016). The contemporary concern of inadequate physical activity (Bourke *et al.*, 2023), partly attributed to sedentary HIS consumption, underscores the significance of this cluster. The second cluster addresses the connection between students' HIS use and lack of sleep, acknowledging the challenges, particularly among underage individuals (Richardson *et al.*, 2021), in falling asleep due to the excitement and short-term rewards associated with such activities before bedtime (Gradisar *et al.*, 2013). The third cluster aims at mitigating internet and video game use linked to addiction and depression (Spada, 2014), recognizing the ubiquitous nature of the internet, which often involves hedonic pursuits (Sanchez-Fernandez *et al.*, 2023). It also acknowledges the tendency of adolescents to allocate substantial time to gaming (Young, 2009), potentially at the

expense of healthier activities and academic pursuits (André *et al.*, 2020). In the fourth cluster, the focus shifts to reducing SNS use to alleviate stress and concerns about privacy, using techniques such as mindfulness. This focus on privacy concerns helps explain why SNS is so distinct from the other clusters, as it is a relatively new research topic primarily explored by SNS researchers within HIS literature. In summary, these clusters provide a nuanced understanding of the diverse facets of HIS use and offer targeted insights and patterns for interventions aimed at improving overall well-being.

Table 1

Co-occurrence terms acquired within each cluster

Cluster	Co-Words
1 - Mobile use reduction	Cell phone use, exercise, mobile phone, protection motivation theory, psychological well-being, smartphone, smartphone overuse, social isolation
2 - Late-night HIS use reduction	Behavior, human, intention, school, sleep, theory of planned behavior
3 - Internet and videogames use reduction	Addiction, depression, Health Belief model, internet, internet addiction, videogame
4 – SNS use reduction	Mindfulness, privacy concerns, social media, and stress

4.4. Prior theoretical foundations

The review reveals a significant variation in the theoretical underpinnings of scholarly research in this area, highlighting the complexity and multidimensionality of the field. A minority of scholars conducted their investigations without anchoring them in distinct theoretical frameworks. Conversely, a substantial portion of the research was grounded in diverse theories, reflecting a wide range of perspectives and approaches. We have consolidated the theoretical foundations in Table 2, addressing RQ2.

To better understand and manage HIS use reduction, we clustered prior theoretical foundations based on their underlying principles. First, behavioral modification theories focus on altering user behaviors through reinforcement, control, and intervention strategies, such as motivational interviewing (Bottel *et al.*, 2021) and mindfulness-based stress reduction (Apaolaza *et al.*, 2019). Second, cognitive and psychological theories emphasize the cognitive and psychological processes that influence user behavior and decision-making, including cognitive dissonance theory (Feng *et al.*, 2024; Liu *et al.*, 2021), self-determination theory (Keller *et al.*, 2021), and the health belief model (Das-Friebel *et al.*, 2019). Third, social influence theories examine how social factors and interactions influence user behavior and attitudes, such as social cognitive theory (Bickham *et al.*, 2018) and neutralization theory (Feng *et al.*, 2024). Fourth, motivation and gratification theories explore how motivations, expectations, and gratifications drive user behavior and satisfaction, including protection motivation theory (Chen *et al.*, 2020; Wang, 2023) and push-pull-mooring theory (Zhang *et al.*, 2024). Fifth, stress and coping theories focus on how individuals manage stress and employ coping strategies to deal with challenges and reduce HIS use, such as stress coping theory (Tran and Chen, 2023) and Lazarus and Folkman's coping theory (Islam *et al.*, 2022). Sixth, innovation and diffusion theories explain how ideas, technologies, and behaviors spread and are adopted by individuals, such as innovation diffusion theory (Ng, 2020). Lastly, decision-making theories focus on decision-making processes and the factors influencing users' choices, including privacy calculus theory (Neves *et al.*, 2022) and the theory of planned

behavior (Gholamian *et al.*, 2019). In summary, this analysis highlights the diverse range of theories regarding HIS use reduction presented in prior literature.

Table 2

Theoretical foundations

Theoretical foundation	Brief description	Source(s)
Applied behavior analysis	Applied behavior analysis is a therapy based on the science of learning and behavior, used to improve or change specific behaviors through reinforcement strategies.	Hernan et al., 2018; Hernan et al., 2019
Cognitive dissonance theory	Cognitive dissonance theory explains the discomfort felt when holding conflicting beliefs, leading to an alteration in one of the beliefs to reduce the dissonance.	Feng et al., 2024; Liu et al., 2021; Wan and Chiou, 2010
Expectancy violation theory	Expectancy violation theory posits that unexpected behaviors violate our expectations, leading to positive or negative responses depending on the nature of the violation. It explores how these responses affect perceptions and interactions.	Zhang et al., 2024
Expectation-disconfirmation theory	Expectation-disconfirmation theory posits that customer satisfaction is determined by comparing perceived performance with expectations, leading to confirmation or disconfirmation.	Shen et al., 2018
Gratifications theory	Gratifications theory suggests that people actively seek out media to satisfy various psychological needs and desires.	Ravindran et al., 2014; Shokouyar et al., 2018
Health action process model	The health action process model describes health behavior change as a process involving a motivational phase and a volitional phase, focusing on planning and self-efficacy.	Tang et al., 2021
Health belief model	The health belief model explains health behaviors by examining individuals' perceptions of the severity, susceptibility, benefits, and barriers related to a health condition.	Das-Friebel et al., 2019; Lau et al., 2017a; Lau et al., 2018; Lau et al., 2017b; Wang 2016
Innovation diffusion theory	Innovation diffusion theory explains how, why, and at what rate new ideas and technologies spread through cultures and social systems.	Ng, 2020
Lazarus and Folkman's coping theory	Lazarus and Folkman's coping theory describes stress as a result of the interaction between an individual and their environment, emphasizing cognitive appraisal and coping strategies.	Islam et al., 2022
Mindfulness-based stress reduction	Mindfulness-based stress reduction is a program that combines mindfulness meditation and yoga to reduce stress and promote well-being.	Apaolaza et al., 2019
Motivational interviewing	Motivational interviewing is a counseling approach that helps individuals resolve ambivalence about behavior change by fostering intrinsic motivation and exploring their reasons for change.	Bottel et al., 2021
Neutralization theory	Neutralization theory proposes that individuals use techniques to neutralize guilt and justify deviant	Feng et al., 2024

Theoretical foundation	Brief description	Source(s)
	behavior, such as denial of responsibility or condemnation of the condemners.	
Nudging theory	Nudging theory suggests that subtle changes in the environment or context can influence people's behavior without restricting their options, often guiding them toward more beneficial choices.	Abreu and Campos, 2022; Ochs and Sauer, 2022; Olson et al., 2023
Peer cluster theory	Peer cluster theory posits that individuals' behavior is heavily influenced by the norms and values of their peer groups or social clusters, leading to conformity and shared attitudes within these groups.	Wang et al., 2016
Privacy calculus theory	Privacy calculus theory suggests that individuals make decisions about disclosing personal information based on a cost-benefit analysis, weighing the perceived risks and benefits of sharing their information.	Neves et al., 2022
Protection motivation theory	Protection motivation theory proposes that individuals are motivated to protect themselves from perceived threats by adopting coping strategies to reduce perceived risk and increase their sense of self-efficacy.	Chen et al., 2020; Wang, 2023
Push-pull-mooring theory	Push-pull-mooring theory explains migration decisions by considering factors that "push" individuals away from their current location, factors that "pull" them toward a new location, and factors that "moor" them in their current location, such as social ties or economic constraints.	Zhang et al., 2024
Regulatory focus theory	Regulatory focus theory suggests that individuals have two distinct motivational orientations: promotion focus, emphasizing gains and aspirations, and prevention focus, emphasizing losses and responsibilities.	Liu et al., 2021
Self-affirmation theory	Self-affirmation theory proposes that individuals can maintain a sense of self-integrity by affirming important personal values, which can buffer against threats to self-esteem and promote adaptive responses to challenges.	Shimoda et al., 2022
Self-determination theory	Self-determination theory suggests that humans have three basic psychological needs—autonomy, competence, and relatedness—that, when satisfied, promote intrinsic motivation and well-being.	Keller et al., 2021
Social cognitive theory	Social cognitive theory explains how individuals acquire and maintain behaviors through the interaction of personal factors, environmental influences, and reciprocal determinism, emphasizing observational learning and self-efficacy.	Bickham et al., 2018; Chen et al., 2019a; Chen et al., 2019b; Fu and Li, 2020; Osatuyi and Turel, 2020
Social norm theory	Social norm theory proposes that individuals' behavior is influenced by perceived social norms, which dictate what is considered acceptable or appropriate within a particular social context.	Rose and Brannon, 2022
Stimulus–organism–response framework	The Stimulus-organism-response framework examines how environmental stimuli impact individuals' internal states, which then influence their responses, helping to	Loh et al., 2022; Niu et al., 2020

Theoretical foundation	Brief description	Source(s)
	understand consumer behavior and psychological processes.	
Stress coping theory	Stress coping theory explores how individuals manage and adapt to stressful situations through various cognitive, emotional, and behavioral strategies, aiming to reduce the negative impact of stress on their well-being.	Neves et al., 2024a; Tran and Chen, 2023
Stress-strain-outcome framework	The stress-strain-outcome framework examines how stressors lead to physiological and psychological strain, ultimately affecting outcomes such as performance, behavior, or well-being.	Kim et al., 2019; Neves et al., 2024a
Theory of planned behavior	The theory of planned behavior expands on the theory of reasoned action by adding perceived behavioral control as a determinant of behavior, suggesting that individuals are more likely to engage in a behavior if they perceive it as feasible and within their control.	Gholamian et al., 2019; Zhao et al., 2019
Theory of reasoned action	The theory of reasoned action proposes that individuals' behavior is determined by their intention to perform the behavior, which is influenced by their attitude toward the behavior and subjective norms regarding its acceptance.	Gholamian et al., 2019
Transcranial direct current stimulation	Transcranial direct current stimulation is a non-invasive brain stimulation technique that delivers low-level electrical currents to specific areas of the brain, modulating neuronal activity and potentially influencing cognitive functions and behaviors.	Lee et al., 2018

4.5. *Antecedents, consequences, and control factors*

Based on our comprehensive review, we have developed an overarching theoretical perspective, represented by a research framework shown in Figure 5. This framework illustrates the factors contributing to HIS use reduction, its consequences, and the control variables involved. This structured representation aims to clarify the complex interplay between these variables and offer a clear visual guide for understanding HIS use reduction. By presenting this comprehensive research framework, we strive to fill the gaps identified in the existing literature and encourage a more balanced exploration of both antecedents and consequences. This approach not only addresses the immediate need to understand how HIS use reduction can be achieved but also underscores the importance of comprehensively examining the outcomes of such reduction. We hope that this framework will serve as a valuable tool for future research, guiding scholars to investigate both the causes and effects of HIS use reduction in a more integrated manner.

First, a significant observation from our review is that the majority of previous studies have concentrated on the antecedents of HIS use reduction rather than its consequences. This trend likely reflects a research priority: understanding the factors that lead HIS users to achieve healthier levels of use is seen as more urgent. The antecedents provide critical insights into the motivations, behaviors, and conditions that prompt users to reduce their HIS use. These insights are essential for developing interventions and strategies to promote healthier usage patterns. Conversely, the consequences of HIS use reduction, while important, are often more straightforward and readily apparent to both users and researchers. Once HIS use is reduced, the benefits and outcomes, such as improved mental health, increased productivity, and better overall

well-being, tend to manifest clearly and are easily understood. This aspect led to a limited emphasis on studying these outcomes in depth.

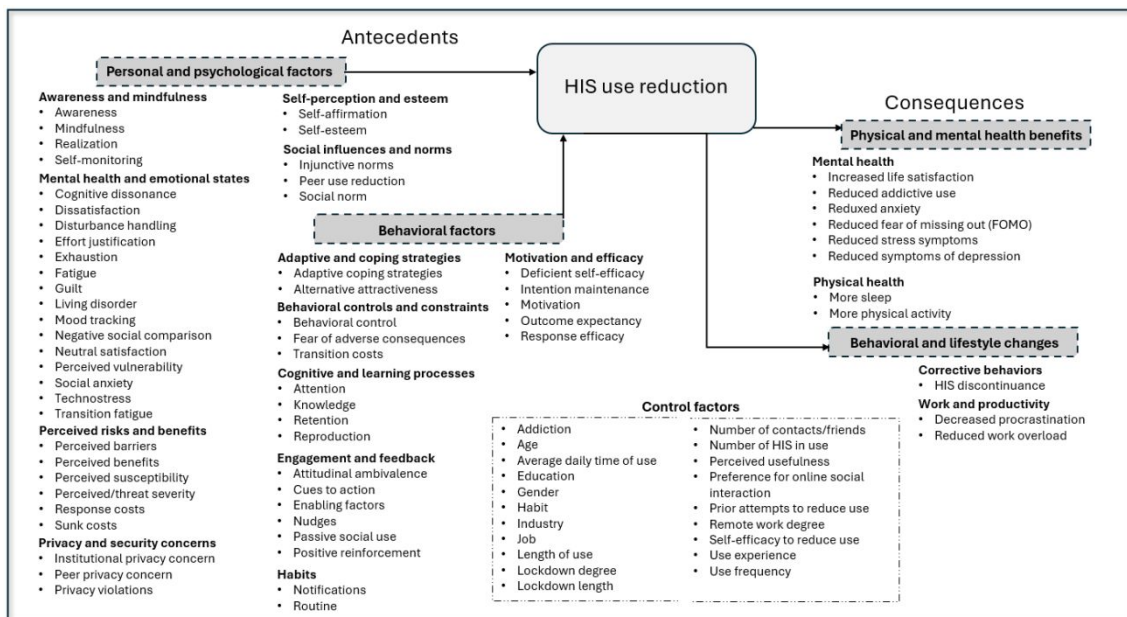


Figure 5. Research framework

Second, the antecedents identified in the research are categorized into two broad areas: personal and psychological factors, and behavioral factors. This classification allows for a more nuanced understanding of the diverse influences on HIS use reduction. The first encompasses the cognitive and emotional dimensions that drive HIS use reduction. Personal factors include individual characteristics such as personality traits, self-control, and personal values. Psychological factors involve emotional states, mental health conditions, and cognitive processes that can either positively or adversely influence behavior. By examining these factors, we aim to understand how various aspects of a person's internal state can lead to the adoption of healthier HIS use patterns. For example, high levels of technostress or guilt might prompt individuals to reduce HIS use as a coping mechanism, while positive emotional states and strong self-discipline like self-esteem might facilitate proactive management of HIS use. The second category focuses on the external, observable actions and habits that influence HIS use reduction. Key behavioral factors include routine behaviors, habit formation, and behavioral control mechanisms. Understanding these factors is crucial for identifying how changes in daily routines and the implementation of control strategies can lead to sustained behavior change. For instance, establishing new routines that limit HIS use or lower transition costs to ease the change are critical areas of study. Behavioral factors also include engagement feedback factors, such as positive reinforcement or nudges, which can significantly impact an individual's decision to reduce HIS use. By clustering the antecedents into these two significant areas and further into sub-clusters, we provide a structured approach to exploring the multifaceted nature of HIS use reduction.

Third, although consequences have been less extensively researched compared to antecedents, they have not been overlooked, indicating that the HIS literature also seeks to understand the outcomes following HIS use reduction. This attention to consequences demonstrates a holistic approach in the field, recognizing the importance of examining what follows the implementation of corrective behaviors. The consequences identified in the research are clustered into two main categories: physical and mental health benefits, and behavioral and lifestyle changes. The first

category includes the positive outcomes on an individual's well-being resulting from reduced HIS use. Physical health benefits may involve improvements such as reduced screen time-related eye strain, better sleep quality, and overall enhanced physical health due to less sedentary behavior. Mental health benefits encompass reduced stress, anxiety, and depression levels, as well as increased mental clarity and emotional stability. These benefits highlight the significant role that reducing HIS use can play in promoting a healthier lifestyle and improving quality of life. The second category focuses on the behavioral changes that occur as a result of HIS use reduction, such as corrective behaviors and productivity improvements. Until now, only one major corrective behavior has been identified: HIS discontinuance. This finding represents a broader process that eventually leads to the termination of HIS use. Corrective behaviors involve adopting healthier habits and routines that replace excessive HIS use. This area of research highlights the ripple effect of HIS use reduction, which can lead to more significant and transformative changes in an individual's lifestyle.

Lastly, control factors were crucial in enhancing our understanding of what might contribute to HIS use reduction. Table 3 presents all the control factors, highlighting the studies in which they were significant and those in which they were not. These factors can be grouped into four distinct categories: demographic factors (age, education, gender and job), usage characteristics (average daily time of use, length of use, number of HIS in use, use experience and use frequency), psychological and behavioral factors (addiction, habit, preference for online social interaction, prior attempts to reduce use and self-efficacy to reduce use), and contextual factors (industry, lockdown degree, lockdown length, number of contacts/friends, perceived usefulness and remote work degree). By clustering the control factors into these four areas, we provide a structured approach to analyzing the diverse elements that influence HIS use reduction. This organization helps clarify the multifaceted nature of the factors at play and their potential interactions.

Table 3

Control factors

Control factor	Significant effect found	Significant effect not found
Addiction	Neves et al., 2022	-
Age	Chen et al., 2019a; Niu et al., 2020; Wang, 2023	Chen et al., 2020; Fu and Li, 2020; Islam et al., 2022; Liu et al., 2021; Neves et al., 2022; Neves et al., 2024a; Osatuyi and Turel, 2020; Tran and Chen, 2023; Zhang et al., 2024
Average daily time of use	Chen et al., 2020; Fu and Li, 2020	Neves et al., 2022, 2024a; Tran and Chen, 2023; Wang, 2023; Zhang et al., 2024
Education	-	Tran and Chen, 2023; Zhang et al., 2024
Gender	Neves et al., 2022; Niu et al., 2020	Chen et al., 2019b, 2020; Fu and Li, 2020; Islam et al., 2022; Liu et al., 2021; Neves et al., 2024a; Osatuyi and Turel, 2020; Tran and Chen, 2023; Wang, 2023; Zhang et al., 2024
Habit	-	Liu et al., 2021
Industry	-	Wang, 2023
Job	Chen et al., 2019a	Chen et al., 2020
Length of use	-	Tran and Chen, 2023
Lockdown degree	-	Islam et al., 2022

Control factor	Significant effect found	Significant effect not found
Lockdown length	Islam et al., 2022	-
Number of contacts/friends	Tran and Chen, 2023	Zhang et al., 2024
Number of HIS in use	-	Tran and Chen, 2023
Perceived usefulness	Liu et al., 2021	-
Preference for online social interaction	-	Liu et al., 2021
Prior attempts to reduce use	-	Osatuyi and Turel, 2020
Remote work degree	-	Islam et al., 2022
Self-efficacy to reduce use	Osatuyi and Turel, 2020	-
Use experience	Fu and Li, 2020	Neves et al., 2022, 2024a
Use frequency	Fu and Li, 2020	Neves et al., 2022; Tran and Chen, 2023

5. Discussion and future research

Through a meticulous analysis of the studies under review, this discussion section provides a comprehensive exploration of the critical insights drawn from current research. Moreover, it systematically identifies existing gaps and future research opportunities while also examining the broader implications of these findings.

5.1. Existing research

The findings of this SLR indicate that a substantial body of work already exists in the current literature. Figure 5 presents a proposed framework representing the ecosystem within which HIS use reduction has emerged and continues to evolve. However, we advocate for a more in-depth examination of this ecosystem. Specifically, it is crucial to focus on the high-impact factors that both influence and are influenced by HIS use reduction. By establishing links between different studies that address the same scientific questions, we can gain a deeper understanding and more nuanced insights into this dynamic field.

5.1.1. Antecedents

Prior research has identified various factors influencing the origins, extent, and outcomes of HIS use reduction among users. As illustrated in Figure 5, these antecedents can be categorized into two main groups: personal and psychological factors, and behavioral factors. Among the numerous constructs identified, certain factors are particularly noteworthy due to their frequent examination and consistent validation across multiple studies. These key factors have been repeatedly demonstrated to significantly contribute to HIS use reduction.

First and foremost, awareness stands out as a critical factor. HIS use awareness occurs when individuals recognize their overuse of HIS and its consequences, leading to a more realistic perspective on their usage. For example, students who become aware of their internet use tend to be less attracted to it (Gholamian *et al.*, 2019), subsequently improving their academic performance (Tang *et al.*, 2021). Similarly, adolescents have been found to reduce late-night HIS

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3 use when informed about its negative impacts (Das-Friebel *et al.*, 2019). Additionally, awareness
4 has proven effective in reducing SNS use and can be easily influenced (Osatuyi and Turel, 2020).
5 However, the effectiveness of awareness diminishes when addiction levels are high, likely due to
6 the overinflation of positive perceptions of HIS use (Osatuyi and Turel, 2020). Heavy users, in
7 particular, are less likely to be impacted by increased awareness (Shimoda *et al.*, 2022).
8 Awareness can be triggered through various techniques such as nudges (Abreu and Campos,
9 2022), awareness campaigns (Alotaibi *et al.*, 2022), regular survey completions (Brailovskaia *et*
10 *al.*, 2023b), and online cognitive-behavioral strategies that incorporate mindfulness practices,
11 mood tracking, and self-monitoring (Throuvala *et al.*, 2020). These strategies promote family and
12 social events, physical activities, and ultimately, reduced HIS use.
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16 Second, closely related to awareness (Rose and Brannon, 2022), is the concept of social norms.
17 Social norms are shared standards of behavior considered acceptable or expected within a group
18 or society (Zhang *et al.*, 2016). Peer influence is particularly effective among adolescents, who
19 are more susceptible to social pressures due to their developmental stage. This influence can be
20 crucial for initiating corrective actions (Wang *et al.*, 2016). For example, gamers have shown a
21 greater intention to reduce their usage when influenced by others, driven by the activation of
22 protection motivation (Chen *et al.*, 2020). Similarly, reductions in SNS use among peers can lead
23 to social conformity and signaling processes, encouraging others to follow suit (Osatuyi and
24 Turel, 2020). Additionally, in the context of SNS, injunctive norms—perceived social rules—can
25 induce feelings of guilt, which in turn lead to reduced SNS use. This factor demonstrates both
26 direct and indirect impacts on behavior change (Liu *et al.*, 2021).
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30 Third, we address one of the most impactful adverse emotional states resulting from excessive
31 HIS use: fatigue. Interestingly, this factor has been primarily researched in the context of SNS,
32 indicating a gap in research regarding other types of HIS. Fatigue is defined as a subjective,
33 multidimensional user experience encompassing feelings such as tiredness, annoyance, anger,
34 disappointment, guardedness, and loss of interest (Ravindran *et al.*, 2014). Fatigue has been
35 shown to indirectly impact SNS use reduction through its contribution to life disorders (Kim *et*
36 *al.*, 2019). Additionally, multiple studies have found that fatigue directly influences the reduction
37 of SNS use (Fu and Li, 2020; Neves *et al.*, 2024b; Niu *et al.*, 2020; Shokouyar *et al.*, 2018).
38 Similarly, it was found that exhaustion directly affects intentions to reduce SNS use (Loh *et al.*,
39 2022; Tran and Chen, 2023). Furthermore, fatigue serves as a moderator, affecting the relationship
40 between adaptive coping strategies and SNS use reduction in the context of SNS addiction (Neves
41 *et al.*, 2024b). Moreover, in the framework of the push-pull-mooring theory, fatigue plays dual
42 roles in influencing controlled use during intermittent discontinuance, such as usage fatigue
43 (push) and transition fatigue (mooring) (Zhang *et al.*, 2024). Lastly, overload, particularly
44 information overload, was identified as a significant and consistent precursor to feelings of fatigue
45 (Kim *et al.*, 2019; Loh *et al.*, 2022; Zhang *et al.*, 2024). Overall, fatigue tends to lead to a self-
46 regulated decline in use (Ravindran *et al.*, 2014).
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51 Fourth, we discovered an intriguing link between fatigue and a recent adverse factor on SNS:
52 privacy concerns. Privacy concerns reflect the extent to which users worry about protecting their
53 personal information (Zhang *et al.*, 2024). Feelings of exhaustion, a precursor to reduced SNS
54 usage, were found to be triggered by fears of potential personal information leaks, as users
55 increasingly worry about the security of their data (Loh *et al.*, 2022). Moreover, privacy concerns
56 were found to cause SNS fatigue, which subsequently led to intentions to reduce SNS use (Neves
57 *et al.*, 2024a). However, privacy concerns typically appear in the same models as feelings of
58 fatigue without a direct relationship. For instance, Zhang *et al.* (2024) found that different forms
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3 of fatigue acted as push and mooring factors in SNS-controlled use, while privacy concerns served
4 as a pull factor. Additionally, fatigue was shown to influence the reduction of SNS use through
5 life disorder, and privacy invasion was found to positively moderate the relationship between life
6 disorder and behavior change (Kim et al., 2019). Lastly, Joana Neves identified three key findings
7 regarding the impact of privacy on reducing SNS use. First, she found that both peer privacy
8 concerns and institutional privacy concerns contribute to intentions to decrease SNS use, with the
9 latter intensifying the relationship between peer privacy concerns and the decision to reduce SNS
10 usage (Neves et al., 2022). Second, her research, drawing on stress coping theory, shows that
11 privacy concerns initiate a process that ultimately leads to reduced SNS use, with privacy literacy
12 and exhaustion playing important moderating role factors (Neves et al., 2024b). Finally, she
13 discovered that privacy fear appeals are effective in encouraging users to limit and control their
14 SNS use (Neves et al., 2024a).

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18 Finally, we will discuss a different factor, a skill capable of facilitating and accelerating the
19 reduction of HIS use: self-efficacy. In this context, self-efficacy is defined as the ability to refuse
20 or resist HIS use (Turel and Osatuyi, 2017). Self-efficacy has been found to be crucial for
21 enhancing students' perceived ability to regulate their own Internet use (Wang et al., 2016).
22 Similarly, addictive players who perceive low self-efficacy or high difficulty levels are unlikely
23 to reduce their behavior during the final reaction stage, resulting in continued addiction to
24 smartphone games (Chen et al., 2019a). In the context of gaming, both self-efficacy and response
25 efficacy promote players' intentions to decrease their problematic use (Chen et al., 2020).
26 Moreover, an app-based intervention using a health action process approach found that increased
27 self-efficacy is associated with a reduction in problematic smartphone use (Keller et al., 2021). In
28 summary, self-efficacy is a key component influencing an individual's success in achieving
29 specific behavioral goals (Bandura, 1977).

30 31 32 33 **5.1.2. Consequences**

34 Even though previous research on HIS use reduction has primarily focused on identifying
35 antecedents rather than examining the resulting effects, there are still valuable insights into how
36 HIS users benefit from and react to reducing their HIS usage.

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39 Interestingly, the most researched benefit of reducing HIS use is improved sleep. For example,
40 Bickham et al. (Bickham et al., 2018) found that students who reduced their HIS use experienced
41 increased attention and performance, likely due to an additional 25 minutes of sleep on average.
42 Additionally, reducing HIS use has been associated with better sleep and improved mental health,
43 although this effect was most pronounced in participants who already had a positive attitude
44 toward this behavioral change (Zhao et al., 2019). Furthermore, a study on the effects of screen
45 media on families found that reducing screen time significantly benefited adults' sleep but not
46 children's (Pedersen et al., 2022). Conversely, another study found that decreased electronic
47 media use among adolescents did not affect sleep duration (Das-Friebel et al., 2019).

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50 Moreover, physical activity has been a significant focus regarding the consequences of reducing
51 HIS use. Pedersen et al. (2022) found that reducing HIS use in children effectively increased their
52 physical activity. Additionally, Brailovskaia et al. (2023b) discovered that participants who
53 reduced their HIS use by 38 to 45 minutes daily experienced increased physical activity, reduced
54 symptoms of depression and anxiety, and, most importantly, enhanced life satisfaction. Similarly,
55 Hinsch and Sheldon (2013) found that the more participants reduced their HIS use, the greater the
56 benefits, such as increased life satisfaction and reduced procrastination. Many participants may
57 engage in gaming and networking activities to fulfill their need for social connection. While this
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3 coping mechanism effectively meets their need for relatedness, it can also have negative
4 consequences (Hinsch and Sheldon, 2013). Furthermore, a controlled one-week reduction of SNS
5 use led to a stable decrease in usage and various mental and health benefits, including reduced
6 work overload, stress symptoms, and fear of missing out (Brailovskaia et al., 2023a). Lastly, HIS
7 use reduction has been shown to eventually lead to discontinuance, indicating that lower usage
8 may signal users' potential to quit altogether (Fu and Li, 2020).
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10 11 **5.1.3. Control factors**

12 The studies reported mixed results regarding the impact of control variables on HIS use reduction.
13 Out of 20 studies, 11 identified significant effects of at least one control variable. In the first
14 cluster, which includes demographic factors, only education was not found to significantly
15 influence HIS use reduction. First, Wang (2023) discovered that older individuals are less likely
16 to reduce their HIS use, which contrasts with findings from Chen et al. (2019b) and Niu et al.
17 (2020). Second, Neves et al. (2022) found that higher levels of addiction increased the intention
18 to reduce HIS use, suggesting that the stronger the addiction, the greater the desire to change
19 behavior. Furthermore, gender was found significant in only 3 out of 13 studies that used it as a
20 control factor. All three studies indicated that men have lower intentions to reduce HIS use
21 compared to women. This outcome may be because men are generally more prone to risk-taking
22 and might believe they can manage the consequences of excessive HIS use (Ertac and Gurdal,
23 2012). Lastly, the respondents' job was identified as a significant control factor by Chen et al.
24 (2019a), but further research is needed to fully understand its impact on HIS use reduction.
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29 In the second cluster, which includes usage characteristics, 3 out of 5 factors were found to be
30 significant. First, average daily time of use was identified as a significant factor in controlling
31 HIS use reduction. Neves et al. (2024b) found that users with higher Instagram daily usage time
32 have greater intentions to reduce their HIS use compared to those with lower usage. Similarly,
33 Chen et al. (2020) arrived at the same findings in the context of gaming. However, Fu and Li
34 (2020) reported the opposite concerning Facebook, indicating a need for further investigation to
35 reconcile these conflicting findings. Second, use frequency consistently emerged as a significant
36 factor. Studies by Fu and Li (2020) and Neves et al. (2024b) both found that users with higher
37 usage frequency exhibit stronger intentions to reduce their HIS use compared to those who use
38 HIS less frequently. Lastly, use experience was shown to have a significant impact on reduced-
39 usage behavior. Experienced users are likely to be more aware of the negative consequences of
40 excessive HIS use and thus demonstrate a higher propensity to reduce their usage.
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44 Regarding the third cluster, which encompasses psychological and behavioral factors, 2 out of 4
45 factors were found to be significant. First, Neves et al. (2022) discovered that SNS addiction
46 increased the intention to reduce use. This finding aligns with previous research by Turel (2015),
47 which highlighted the motivating effect of addiction on behavior change. When users recognize
48 the adverse effects of their addiction, they may become more determined to reduce their usage in
49 order to regain control and improve their well-being. Second, users' self-efficacy, or their belief
50 in their ability to reduce their SNS use, was found to be a significant motivator for HIS use
51 reduction. Osatuyi and Turel (2020) demonstrated that higher self-efficacy is associated with
52 greater intentions to reduce SNS use. This finding suggests that empowering users with the
53 confidence and skills to manage their usage can effectively promote behavior change. These
54 findings highlight the critical role of psychological and behavioral factors in HIS use reduction.
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58 Finally, the fourth cluster pertains to contextual factors, with 3 out of 6 factors found to be
59 significant. First, lockdown length was marginally significant. This factor reflects the degree of
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3 freedom participants had during lockdown periods, ranging from complete confinement at home
4 to unrestricted social interactions (Islam et al., 2022). The variations in lockdown length appear
5 to influence HIS use reduction intentions, albeit to a limited extent. Second, Neves et al. (2024b)
6 identified that users with a higher number of followers tend to have lower intentions to reduce
7 their HIS use compared to those with fewer followers. This finding suggests that social
8 engagement and network size may play a role in maintaining HIS usage. Similarly, Tran and Chen
9 (2023) found that users with more friends on SNS are less likely to reduce their use. Lastly, the
10 perceived usefulness of HIS was found to be a significant factor but in a negative direction.
11 According to Liu et al. (2021), when users perceive HIS as less useful, they are more likely to
12 reduce their usage. This outcome suggests that the value users derive from HIS plays a crucial
13 role in their decision to continue or reduce their use. When the perceived benefits decrease, the
14 likelihood of reducing HIS use increases.
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19 **5.2. Knowledge gaps and future research**

20 The SLR findings underscore significant gaps in addressing the RQ3 of our study, highlighting
21 areas for future investigation (RQ4). First, our analysis suggests an overemphasis on a limited set
22 of characteristics related to HIS use, primarily focusing on metrics like duration of use. This
23 narrow focus has restricted our theoretical comprehension of the underlying mechanisms
24 influencing HIS usage reduction. For instance, factors like the content of SNS posts (Jeong et al.,
25 2016) and the level of interactivity on smartphones (Liu and Shrum, 2002) remain underexplored.
26 This gap can be attributed to both a lack of breadth in research focus and a deficiency in theoretical
27 underpinning. To address this, future scholars might benefit from incorporating seminal theories
28 from related fields, such as media richness theory (Daft and Lengel, 2012) and interactivity theory
29 (Voorveld et al., 2013), to enrich their investigations. Additionally, insights from the darker facets
30 of SNS research, such as the phenomenon of trolling (Baccarella et al., 2018), could offer valuable
31 perspectives.
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35 Second, it is crucial to recognize that "HIS" serves as an umbrella term encompassing various
36 platforms. Within this broad category, issues of overuse and addiction arise from diverse motives,
37 cognitive processes, and platform-specific attributes. These factors not only contribute to
38 excessive use but also shape the triggers for reducing HIS usage. Thus, even within specific HIS
39 and platforms like Instagram and Fortnite, our SLR indicates a notable gap in understanding the
40 breadth of variety and the nuanced contextual situations and consequences associated with each
41 platform. This factor highlights a substantial void in current knowledge that warrants further
42 exploration. To elaborate, different motivations drive individuals to engage with various HIS. For
43 instance, someone may use SNS for social connection, entertainment, or validation (Soror et al.,
44 2021), while others might turn to gaming for escapism, challenge, or social interaction within
45 virtual communities (Balakrishnan and Shamim, 2013). Additionally, cognitive processes such as
46 attentional bias, reward sensitivity, and impulsivity can influence one's susceptibility to overuse
47 or addiction across different platforms (Contractor et al., 2017; Turel, 2016). Lastly, platform-
48 related attributes play a crucial role in shaping user behaviors and experiences and they should be
49 included in future research. These attributes encompass factors like interface design, content
50 features, social dynamics, and gamification elements, which contribute to the allure and addictive
51 potential of each platform (Wang and Lee, 2020).
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56 Third, our review indicates a notable oversight in examining HIS-related experiences and their
57 impact on usage patterns and outcomes. Specifically, there has been insufficient attention given
58 to adverse social events within these platforms, including instances of harassment, cyberbullying,
59 and social comparison (Haferkamp and Krämer, 2011; Wolak et al., 2007). This aspect represents
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3 a significant gap in understanding how individual experiences and characteristics influence the
4 relationship between negative emotions and the reduction of HIS usage. These social experiences
5 can profoundly shape users' perceptions and behaviors within HIS environments (Lim and Yang,
6 2015). For example, encountering harassment or cyberbullying may lead to feelings of distress or
7 insecurity, potentially influencing users' engagement with these platforms (Lowry et al., 2016).
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10 Fourth, an analysis of the research landscape reveals a prevalent focus on young adults within the
11 reviewed studies. However, this disproportionate emphasis offers limited insights into the broader
12 population's experiences and behaviors regarding HIS use reduction. It is imperative to recognize
13 that adult users across varying age demographics may exhibit distinct motives and usage patterns,
14 which could significantly impact strategies for reducing HIS use (Lim and Yang, 2015). For
15 example, while younger users might prioritize certain platforms and engage in extended durations
16 of use for socializing or entertainment, older adults may have different preferences and usage
17 habits driven by factors such as familial connections, professional networking, or leisure interests
18 (Pfeil et al., 2009). Understanding these differences is crucial for developing comprehensive
19 approaches to HIS use reduction that cater to diverse needs and behaviors across age groups.
20 Additionally, incorporating the concept of chronemics, as proposed by Fleuriet, Cole and
21 Guerrero (2014), could offer valuable insights into how time spent on various HIS activities
22 differs across age groups. For instance, understanding whether older adults prioritize certain
23 activities like photo sharing or monitoring partners' activities over other forms of engagement
24 could inform targeted interventions aimed at mitigating excessive HIS use within specific
25 demographic segments (Constantinides, 2004).
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30 Fifth, it is evident that the existing understanding of the relationship between HIS use and its
31 reduction is predominantly limited to specific geographical contexts, notably China and the USA.
32 This geographical specificity underscores the pressing need to broaden the intellectual scope and
33 examine these associations within a cross-cultural framework. Additionally, culture and ethnicity
34 emerge as underexplored factors that hold significant potential for further investigation in
35 research endeavors. Future studies should aim to elucidate whether cultural or ethnic norms serve
36 as moderators or mediators in the relationship between adverse consequences of HIS use and the
37 endeavor of HIS use reduction (Ruiz-Palomino and Martínez-Cañas, 2014). It is proposed that
38 cultural or ethnic norms can profoundly influence individuals' personal values and shape their
39 perceptions of the significance and expectations surrounding online social behavior. Moreover,
40 the gender disparity observed in studies focusing on HIS use reduction is noteworthy, with a
41 predominance of female samples. To comprehensively understand the role of gender in shaping
42 these outcomes, there is a critical need for studies to incorporate more balanced or male-favoring
43 samples. By doing so, future researchers can expand the current scope of knowledge and explore
44 whether males and females experience differing intensities of emotions or responses in the context
45 of HIS use reduction.
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50 Sixth, HIS use reduction has been shown to exert significant effects on objective well-being and
51 overall quality of life. However, previous research lacks objective measures of individuals' well-
52 being in their investigations to gain a more comprehensive understanding of the potential societal
53 impacts of HIS usage and the determinants of HIS use reduction (Dalvi-Esfahani et al., 2021;
54 Teng et al., 2020). By employing objective measures, researchers can move beyond subjective
55 self-reporting and capture quantifiable well-being indicators, such as physical health indicators,
56 social network size and engagement, and overall life satisfaction. This approach enables
57 researchers to assess the tangible consequences of problematic HIS use on individuals' lives and
58 identify potential avenues for intervention, uncovering key antecedents of HIS use reduction.
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3 Seventh, prior research has predominantly concentrated on evaluating users' perceptions of usage,
4 which can introduce bias. To tackle this, companions play a significant role in supporting and
5 monitoring HIS use. Therefore, we suggest that the current understanding could be enhanced by
6 integrating observational or monitoring reports provided by users' companions, such as parents or
7 partners (Wang et al., 2023). These companions often have firsthand knowledge of individuals'
8 HIS usage habits and can offer valuable insights into their interactions with these systems'
9 frequency, duration, and potential consequences (Sun et al., 2021). Moreover, we propose that
10 future studies could also benefit from considering the perspectives of teachers who regularly
11 interact with children. These individuals occupy a unique vantage point, allowing them to observe
12 the daily HIS usage behaviors of some of the most vulnerable segments of society (Peng et al.,
13 2020). By soliciting their input and observations, researchers can gain valuable insights into the
14 broader societal implications of HIS usage among younger populations and identify potential
15 areas for intervention and support.
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20 **Eighth**, there has been a predominant emphasis on identifying the factors driving reductions in
21 HIS usage. However, comparatively little attention has been directed toward understanding the
22 inhibitors that may hinder or counteract these drivers. It is essential to recognize that while certain
23 factors may propel the reduction of HIS, the presence of inhibiting factors can mitigate or even
24 nullify their impact. Moving forward, research efforts should adopt a more comprehensive
25 approach that not only explores the enablers of HIS usage reduction but also delves into the
26 inhibitors. For instance, factors like inertia (Wang et al., 2021) and sunk costs (Meske et al., 2019)
27 can impede one's willingness or ability to embrace HIS use reduction. By examining both the
28 facilitators and barriers, researchers can gain a more nuanced understanding of the dynamics
29 influencing HIS adoption and usage patterns. Lastly, future research should consider using more
30 moderators, such as distress (Turel and Gaudio, 2018) and extrinsic motivation (Davis et al.,
31 1992).
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35 Finally, we propose that future studies should consider adopting longitudinal research designs to
36 shed light on the dynamic influence of time and variations in HIS usage patterns. Methodological
37 advancements, coupled with conceptual progress, are essential to yield more conclusive and
38 widely applicable understandings of HIS use reduction as a distinct phenomenon (Parasuraman
39 et al., 1985). Longitudinal studies offer the advantage of capturing changes and trends over time,
40 providing invaluable insights into the underlying mechanisms driving shifts in HIS usage
41 behaviors (Watson et al., 1998). To complement these longitudinal approaches, researchers may
42 benefit from employing mixed-method-based research designs to collect both qualitative and
43 quantitative data (Wunderlich et al., 2019). This holistic approach allows for a deeper
44 understanding of the complex interplay between individual experiences, motivations, and external
45 factors influencing HIS use reduction. By triangulating different data sources, researchers can
46 enhance the validity and reliability of their findings, paving the way for more robust and
47 empirically grounded conclusions.
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51 **5.3. Theoretical implications**

52 The findings from this review significantly advance the existing body of knowledge on reducing
53 HIS use, offering several theoretical implications. First, our study presents a modern synthesis of
54 empirical research on HIS use reduction. Through a systematic review and synthesis of the
55 available literature, we provide a comprehensive overview of the current research landscape in
56 this area. This synthesis not only consolidates the existing knowledge but also highlights key
57 factors, theoretical underpinnings, and gaps within the literature, thereby establishing a
58 foundation for future theoretical advancements.
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3 Second, through science mapping and keyword co-occurrence analysis, our review identifies four
4 primary clusters and their associated keywords within the research on HIS use reduction: mobile
5 use reduction, late-night HIS use reduction, internet and video game use reduction, and SNS use
6 reduction. Furthermore, we observed a significant surge in research activity in 2022, with China
7 and the USA emerging as the leading contributors to this field.
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10 Third, we contribute to the literature by developing a holistic framework representing a digital
11 ecosystem where HIS use reduction can originate and what its consequences are. For example,
12 we highlight the most important areas of research regarding antecedents, control factors, and
13 effects while also identifying underrepresented and less-studied areas. This framework illustrates
14 how antecedents are categorized into internal and behavioral factors, whereas consequences are
15 divided into physical and mental health benefits, as well as behavioral outcomes. Additionally,
16 we explore the most researched factors influencing and being influenced by SNS use reduction,
17 highlighting their associations and noting cases where specific HIS were predominantly studied,
18 such as privacy concerns. Furthermore, we provide a synthesis of all theoretical foundations used
19 in the HIS use reduction literature, identifying six clusters related to cognitive, emotional, and
20 behavioral theories. This aspect demonstrates the diversity of theoretical perspectives already
21 applied to this subject.
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25 Lastly, this study paves the way for future research on HIS use reduction by highlighting
26 knowledge gaps and research opportunities. We identified several gaps, including the nuanced
27 contextual situations and characteristics of HIS, the diverse experiences of HIS users, the age
28 demographics of the majority of study samples, and the geographical contexts of existing
29 research. Additionally, there is a need for more objective measures to assess the effects of HIS
30 use reduction, address data collection biases, and apply a greater focus on inhibitors. We also
31 emphasize the necessity for employing different research methods to deepen understanding and
32 generate more robust findings in this field.
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36 **5.4. Practical implications**

37 Through the findings, we propose four critical practical implications. First, the findings suggest
38 the necessity of parental or peer observation to gather additional feedback on patterns of use and
39 contextual events where problematic use of HIS tends to occur. Individuals engaging in HIS use
40 can receive valuable insights and feedback from trusted sources by involving parents or peers in
41 the observation process. Parents and peers may offer unique perspectives on when, where, and
42 how excessive HIS use occurs, as well as identify potential triggers or patterns that contribute to
43 problematic behaviors. This collaborative approach to observation can enhance awareness and
44 understanding of HIS usage patterns, facilitating the development of targeted interventions and
45 support strategies.
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49 Second, our findings underscore the importance of educators providing habit education to address
50 the perils associated with problematic use of HIS. This proactive approach can establish protective
51 measures against the adverse effects of HIS use and foster a culture of knowledge and awareness
52 regarding boundaries around technology usage. By integrating habit education into curricula and
53 educational programs, educators can equip individuals with the necessary skills and strategies to
54 navigate HIS usage responsibly. This may involve teaching students about the potential risks and
55 consequences of excessive HIS use, as well as providing practical tips for managing screen time
56 and fostering healthy technology habits. Additionally, educators can facilitate discussions and
57 activities aimed at promoting critical thinking and self-awareness regarding technology use,
58 empowering individuals to make informed choices about their digital behaviors.
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3 Third, our findings hold relevance for psychologists and medical professionals who are
4 addressing issues related to problematic HIS use. These professionals can leverage the insights
5 gleaned from our study to focus on specific factors identified as contributing to HIS use reduction,
6 thereby mitigating the side effects associated with excessive technology use. By understanding
7 the key factors identified in our study, psychologists and medical professionals can tailor their
8 interventions and treatments to target these underlying issues more effectively. For example, they
9 may develop cognitive-behavioral strategies to address maladaptive thought patterns or coping
10 mechanisms to manage stressors contributing to problematic HIS use. Additionally, medical
11 professionals may incorporate interventions aimed at improving sleep hygiene or addressing
12 mental health concerns exacerbated by excessive screen time.
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16 Finally, these findings are intended to inspire HIS developers and service providers to embrace
17 social responsibility and actively work toward developing solutions to mitigate the adverse
18 consequences of HIS use. By acknowledging the potential negative impacts of excessive HIS use
19 highlighted in our findings, developers and service providers can prioritize the well-being of their
20 users and incorporate features that promote responsible usage habits. This may include
21 implementing built-in usage tracking tools, providing prompts for breaks or mindfulness
22 exercises, or designing interfaces that encourage moderation and balance. Furthermore,
23 developers and service providers can play a pivotal role in raising awareness about the importance
24 of healthy technology usage and educating users about potential risks associated with excessive
25 HIS use. By fostering a culture of digital well-being and promoting responsible usage practices,
26 they can empower individuals to make informed choices about their technology usage habits.
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30 **5.5. Limitations**

31 Despite the rigorous approach followed in this SLR, the present study faced certain limitations.
32 First, some reviewed studies provided insufficient details, such as sample characteristics like
33 gender distribution, which may have limited the implications derived from our review. Second,
34 many quantitative studies did not report the underlying theories used to develop their frameworks,
35 thereby constraining our findings by the methodological and theoretical assumptions of the
36 reviewed studies. Third, the SLR relied on four databases, potentially introducing bias into the
37 results. Lastly, we may have excluded relevant articles that did not match our search terms and
38 were not referenced by the articles found in our search. Despite these limitations, this study offers
39 an organized knowledge structure for HIS use reduction by assimilating findings from 51
40 investigations. The resulting research framework serves as a valuable guide for future research
41 on HIS use reduction.
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46 **6. Conclusion**

47 This study aimed to explore the current state of research on reducing the use of HIS, a crucial
48 corrective behavior within the IS literature. To achieve this, a SLR was conducted, analyzing 51
49 articles published between 2010 and 2024. Following the PRISMA guidelines, the study
50 addressed four primary objectives. First, by organizing and structuring prior research it provided
51 a comprehensive overview, presenting a research framework that showcases the antecedents,
52 consequences, and control factors identified in previous HIS use reduction literature (RQ1).
53 Second, it identified and synthesized the emerging theoretical frameworks and factors, as well as
54 the methodologies employed in HIS use reduction research (RQ2). Third, through a thorough
55 analysis of existing literature, the study highlighted key knowledge gaps (RQ3) and proposed
56 future research agendas based on these findings (RQ4). Moreover, this study significantly
57 contributes to the field by initiating a structured discussion on the existing knowledge surrounding
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3 HIS use reduction, an area still in its early stages, especially concerning specific topics like
4 privacy. Lastly, it presents important implications for both theory and practice while
5 acknowledging its limitations.
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11 Informação (MagIC)/NOVA IMS).
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13

14 **References**

15
16 Abreu, C. and Campos, P.F. (2022), “Raising awareness of smartphone overuse among university
17 students: a persuasive systems approach”, *Informatics*, Vol. 9 No. 1, p. 15, doi:
18 10.3390/informatics9010015.
19

20 Alotaibi, M.S., Fox, M., Coman, R., Ratan, Z.A. and Hosseinzadeh, H. (2022), “Perspectives and
21 experiences of smartphone overuse among university students in Umm Al-Qura university
22 (UQU), Saudi Arabia: a qualitative analysis”, *International Journal of Environmental Research
23 and Public Health*, Vol. 19 No. 7, p. 4397, doi: 10.3390/ijerph19074397.
24
25

26 André, F., Broman, N., Håkansson, A. and Claesdotter-Knutsson, E. (2020), “Gaming addiction,
27 problematic gaming and engaged gaming—prevalence and associated characteristics”, *Addictive
28 Behaviors Reports*, Vol. 12, p. 100324.
29

30 Apaolaza, V., Hartmann, P., D’Souza, C. and Gilsanz, A. (2019), “Mindfulness, compulsive
31 mobile social media use, and derived stress: the mediating roles of self-esteem and social
32 anxiety”, *Cyberpsychology, Behavior, and Social Networking*, Vol. 22 No. 6, pp. 388–396, doi:
33 10.1089/cyber.2018.0681.
34
35

36 Baccarella, C. V, Wagner, T.F., Kietzmann, J.H. and McCarthy, I.P. (2018), “Social media? it’s
37 serious! understanding the dark side of social media”, *European Management Journal*, Vol. 36
38 No. 4, pp. 431–438.
39

40 Balakrishnan, V. and Shamim, A. (2013), “Malaysian facebookers: motives and addictive
41 behaviours unraveled”, *Computers in Human Behavior*, Vol. 29 No. 4, pp. 1342–1349, doi:
42 10.1016/j.chb.2013.01.010.
43
44

45 Bandura, A. (1977), “Self-Efficacy: Toward a unifying theory of behavioral change”,
46 *Psychological Review*, Vol. 84 No. 2, p. 191.
47

48 Bandura, A. (1998), “Health promotion from the perspective of social cognitive theory”,
49 *Psychology and Health*, Vol. 13 No. 4, pp. 623–649, doi: 10.1080/08870449808407422.
50

51 Bhattacherjee, A., Limayem, M. and Cheung, C.M.K. (2012), “User switching of information
52 technology: a theoretical synthesis and empirical test”, *Information & Management*, Vol. 49 No.
53 7–8, pp. 327–333, doi: 10.1016/j.im.2012.06.002.
54
55

56 Bickham, D.S., Hswen, Y., Slaby, R.G. and Rich, M. (2018), “A preliminary evaluation of a
57 school-based media education and reduction intervention”, *The Journal of Primary Prevention*,
58 Vol. 39 No. 3, pp. 229–245, doi: 10.1007/s10935-018-0510-2.
59
60

1
2
3 Bottel, L., Brand, M., Dieris-Hirche, J., Herpertz, S., Timmesfeld, N. and Te Wildt, B.T. (2021),
4 “Efficacy of short-term telemedicine motivation-based intervention for individuals with internet
5 use disorder – a pilot-study”, *Journal of Behavioral Addictions*, Vol. 10 No. 4, pp. 1005–1014,
6 doi: 10.1556/2006.2021.00071.
7

8
9 Bourke, M., Hilland, T.A. and Craike, M. (2023), “Domain specific association between physical
10 activity and affect in adolescents’ daily lives: an ecological momentary assessment study”,
11 *Psychology & Health*, Vol. 38 No. 3, pp. 369–388.
12

13 andBrailovskaia, J., Becherer, I., Wicker, V., Schillack, H. and Margraf, J. (2023a), “Less social
14 media use–more satisfied, work-engaged and mentally healthy employees: an experimental
15 intervention study”, *Behaviour & Information Technology*, pp. 1–13.
16

17
18 Brailovskaia, J., Delveaux, J., John, J., Wicker, V., Noveski, A., Kim, S., Schillack, H. and
19 Margraf, J. (2023b), “Finding the ‘sweet spot’ of smartphone use: reduction or abstinence to
20 increase well-being and healthy lifestyle?! an experimental intervention study.”, *Journal of*
21 *Experimental Psychology: Applied*, American Psychological Association, Vol. 29 No. 1, p. 149.
22

23
24 Büttner, C.M., Gloster, A.T. and Greifeneder, R. (2022), “Your phone ruins our lunch: attitudes,
25 norms, and valuing the interaction predict phone use and phubbing in dyadic social interactions”,
26 *Mobile Media & Communication*, Vol. 10 No. 3, pp. 387–405, doi:
27 10.1177/20501579211059914.
28

29
30 Charlton, J.P. and Danforth, I.D.W. (2007), “Distinguishing addiction and high engagement in
31 the context of online game playing”, *Computers in Human Behavior*, Vol. 23 No. 3, pp. 1531–
32 1548.
33

34
35 Chen, A. and Roberts, N. (2020), “Connecting personality traits to social networking site
36 addiction: the mediating role of motives”, *Information Technology and People*, Vol. 33 No. 2, pp.
37 633–656, doi: 10.1108/ITP-01-2019-0025.
38

39
40 Chen, C., Zhang, K.Z.K., Gong, X. and Lee, M.K.O. (2019a), “Failure to decrease the addictive
41 usage of information technologies: a theoretical model and empirical examination of smartphone
42 game users”, *Computers in Human Behavior*, Vol. 92, pp. 256–265, doi:
43 10.1016/j.chb.2018.11.025.
44

45
46 Chen, C., Zhang, K.Z.K., Gong, X., Lee, M.K.O. and Wang, Y. (2020), “Decreasing the
47 problematic use of an information system: an empirical investigation of smartphone game
48 players”, *Information Systems Journal*, Vol. 30 No. 3, pp. 492–534, doi: 10.1111/isj.12264.
49

50
51 Chen, C., Zhang, K.Z.K., Gong, X., Lee, M.K.O. and Wang, Y.Y. (2021), “Preventing relapse to
52 information technology addiction through weakening reinforcement: a self-regulation
53 perspective”, *Information and Management*, Vol. 58 No. 5, doi: 10.1016/j.im.2021.103485.
54

55
56 Chen, S., Shao, B.-J. and Zhi, K.-Y. (2019b), “Examining the effects of passive WeChat use in
57 China”, *International Journal of Human–Computer Interaction*, Vol. 35 No. 17, pp. 1630–1644,
58 doi: 10.1080/10447318.2018.1559535.
59

60
61 Cheung, C.M.K., Lee, Z.W.Y. and Lee, M.K.O. (2013), “Understanding compulsive use of
62 Facebook through the reinforcement processes”, *ECIS 2013 Completed Research*, Vol. 22.

- 1
2
3 Cohen, J. (1960), "A coefficient of agreement for nominal scales", *Educational and Psychological Measurement*, Sage Publications Sage CA: Thousand Oaks, CA, Vol. 20 No. 1, pp. 37–46.
- 4
5
6 Constantinides, E. (2004), "Influencing the online consumer's behavior: the web experience",
7 *Internet Research*, Vol. 14 No. 2, pp. 111–126.
- 8
9 Contractor, A.A., Weiss, N.H., Tull, M.T. and Elhai, J.D. (2017), "PTSD's relation with
10 problematic smartphone use: mediating role of impulsivity", *Computers in Human Behavior*, Vol.
11 75, pp. 177–183, doi: 10.1016/j.chb.2017.05.018.
- 12
13 Daft, R.L. and Lengel, R.H. (2012), "Organizational information requirements , media richness
14 and structural design", *Management Science*, Vol. 32 No. 5, pp. 554–571.
- 15
16 Dalvi-Esfahani, M., Niknafs, A., Alaedini, Z., Barati Ahmadabadi, H., Kuss, D.J. and Ramayah,
17 T. (2021), "Social media addiction and empathy: moderating impact of personality traits among
18 high school students", *Telematics and Informatics*, Vol. 57, doi: 10.1016/j.tele.2020.101516.
- 19
20 Das-Friebel, A., Perkinson-Gloor, N., Brand, S., Dewald-Kaufmann, J.F., Grob, A., Wolke, D.
21 and Lemola, S. (2019), "A pilot cluster-randomised study to increase sleep duration by decreasing
22 electronic media use at night and caffeine consumption in adolescents", *Sleep Medicine*, Vol. 60,
23 pp. 109–115, doi: 10.1016/j.sleep.2018.11.010.
- 24
25 Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1992), "Extrinsic and intrinsic motivation to use
26 computers in the workplace 1", *Journal of Applied Social Psychology*, Vol. 22 No. 14, pp. 1111–
27 1132.
- 28
29 Davis, R.A. (2001), "A cognitive-behavioral model of pathological internet use", *Computers in*
30 *Human Behavior*, Vol. 17 No. 2, pp. 187–195.
- 31
32 Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), "How to conduct a
33 bibliometric analysis: an overview and guidelines", *Journal of Business Research*, Vol. 133, pp.
34 285–296.
- 35
36 van Eck, N.J. and Waltman, L. (2010), "Software survey: VOSviewer, a computer program for
37 bibliometric mapping", *Scientometrics*, Vol. 84 No. 2, pp. 523–538, doi: 10.1007/s11192-009-
38 0146-3.
- 39
40 Ertac, S. and Gurdal, M.Y. (2012), "Deciding to decide: gender, leadership and risk-taking in
41 groups", *Journal of Economic Behavior & Organization*, Vol. 83 No. 1, pp. 24–30.
- 42
43 Fan, X., Jiang, X., Deng, N., Dong, X. and Lin, Y. (2021), "Does role conflict influence
44 discontinuous usage intentions? privacy concerns, social media fatigue and self-esteem",
45 *Information Technology & People*, Vol. 34 No. 3, pp. 1152–1174.
- 46
47 Farooq, A., Dahabiyeh, L. and Maier, C. (2023), "Social media discontinuation: a systematic
48 literature review on drivers and inhibitors", *Telematics and Informatics*, Vol. 77, p. 101924.
- 49
50 Feng, Y., Li, L. and Zhao, A. (2024), "A cognitive-emotional model from mobile short-form
51 video addiction to intermittent discontinuance: the moderating role of neutralization",
52 *International Journal of Human-Computer Interaction*, Vol. 40 No. 7, pp. 1505–1517, doi:
53 10.1080/10447318.2022.2147714.
- 54
55
56
57
58
59
60

1
2
3 Fleuriet, C., Cole, M. and Guerrero, L.K. (2014), “Exploring Facebook: attachment style and
4 nonverbal message characteristics as predictors of anticipated emotional reactions to Facebook
5 postings”, *Journal of Nonverbal Behavior*, Vol. 38, pp. 429–450.
6

7
8 Frydenlund, G., Guldager, J.D., Frederiksen, K.O. and Egebæk, H.K. (2023), “Do young people
9 perceive their smartphone addiction as problematic? a study in Danish university college
10 students”, *Heliyon*, Vol. 9 No. 10, p. e20368, doi: 10.1016/j.heliyon.2023.e20368.
11

12 Fu, S. and Li, H. (2020), “Understanding social media discontinuance from social cognitive
13 perspective: evidence from Facebook users”, *Journal of Information Science*, Vol. 48 No. 4, pp.
14 544–560, doi: 10.1177/0165551520968688.
15

16 Gan, C., Li, H. and Liu, Y. (2024), “Understanding social media discontinuance behavior in
17 China: a perspective of social cognitive theory”, *Information Technology & People*, doi:
18 10.1108/ITP-05-2022-0403.
19

20
21 Gerow, J.E., Ayyagari, R., Thatcher, J.B. and Roth, P.L. (2013), “Can we have fun@ work? the
22 role of intrinsic motivation for utilitarian systems”, *European Journal of Information Systems*,
23 Vol. 22 No. 3, pp. 360–380.
24

25 Gholamian, B., Shahnazi, H. and Hassanzadeh, A. (2019), “The effect of educational intervention
26 based on BASNEF model for reducing internet addiction among female students: a quasi-
27 experimental study”, *Italian Journal of Pediatrics*, Vol. 45 No. 1, p. 164, doi: 10.1186/s13052-
28 019-0761-4.
29

30
31 Gibson, J.J. (1978), “The ecological approach to the visual perception of pictures”, *Leonardo*,
32 Vol. 11 No. 3, pp. 227–235.
33

34 Gong, X., Zhang, K.Z.K., Cheung, C.M.K., Chen, C. and Lee, M.K.O. (2019), “Alone or
35 together? exploring the role of desire for online group gaming in players’ social game addiction”,
36 *Information and Management*, Vol. 56 No. 6, p. 103139.
37

38
39 Gradisar, M., Wolfson, A.R., Harvey, A.G., Hale, L., Rosenberg, R. and Czeisler, C.A. (2013),
40 “The sleep and technology use of Americans: findings from the National Sleep Foundation’s 2011
41 Sleep in America poll”, *Journal of Clinical Sleep Medicine*, Vol. 9 No. 12, pp. 1291–1299.
42

43 Grant, J.E., Potenza, M.N., Weinstein, A. and Gorelick, D.A. (2010), “Introduction to behavioral
44 addictions”, *The American Journal of Drug and Alcohol Abuse*, Vol. 36 No. 5, pp. 233–241.
45

46 Haferkamp, N. and Krämer, N.C. (2011), “Social comparison 2.0: Examining the effects of online
47 profiles on social-networking sites”, *Cyberpsychology, Behavior, and Social Networking*, Vol. 14
48 No. 5, pp. 309–314.
49

50 Heckman, J.J. (1990), “Selection bias and self-selection”, *Econometrics*, pp. 201–224.
51

52
53 Van Der Heijden, H. (2004), “User acceptance of hedonic information systems”, *MIS Quarterly*,
54 Vol. 28 No. 4, pp. 695–704.
55

56 Hernan, C.J., Collins, T.A., Morrison, J.Q. and Kroeger, S.D. (2019), “Decreasing inappropriate
57 use of mobile devices in urban high school classrooms: comparing an antecedent intervention
58 with and without the good behavior game”, *Behavior Modification*, Vol. 43 No. 3, pp. 439–463,
59 doi: 10.1177/0145445518764343.
60

1
2
3 Hernan, C.J., Morrison, J.Q., Collins, T.A. and Kroeger, S.D. (2018), “Decreasing inappropriate
4 mobile device use in middle and high school classrooms”, *Intervention in School and Clinic*, Vol.
5 54 No. 1, pp. 47–51, doi: 10.1177/1053451218762498.

7 Hirsch, C. and Sheldon, K.M. (2013), “The impact of frequent social Internet consumption:
8 Increased procrastination and lower life satisfaction”, *Journal of Consumer Behaviour*, Vol. 12
9 No. 6, pp. 496–505.

11 Holden, C. (2001), “‘Behavioral’addictions: do they exist?”, *American Association for the
12 Advancement of Science*.

15 Hong, Q.N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P.,
16 Griffiths, F., Nicolau, B., O’Cathain, A. (2018a), “The mixed methods appraisal tool (MMAT)
17 version 2018 for information professionals and researchers”, *Education for Information*, Vol. 34
18 No. 4, pp. 285–291.

21 Hong, Q.N., Gonzalez-Reyes, A. and Pluye, P. (2018b), “Improving the usefulness of a tool for
22 appraising the quality of qualitative, quantitative and mixed methods studies, the mixed methods
23 appraisal tool (MMAT)”, *Journal of Evaluation in Clinical Practice*, Vol. 24 No. 3, pp. 459–467.

25 Hughes, J.R., Peters, E.N., Callas, P.W., Budney, A.J. and Livingston, A.E. (2008), “Attempts to
26 stop or reduce marijuana use in non-treatment seekers”, *Drug and Alcohol Dependence*, Vol. 97
27 No. 1–2, pp. 180–184, doi: 10.1016/j.drugalcdep.2008.03.031.

30 Islam, A.K.M.N., Mäntymäki, M., Laato, S. and Turel, O. (2022), “Adverse consequences of
31 emotional support seeking through social network sites in coping with stress from a global
32 pandemic”, *International Journal of Information Management*, Vol. 62, p. 102431, doi:
33 10.1016/j.ijinfomgt.2021.102431.

35 Jeong, S.-H., Kim, H., Yum, J.-Y. and Hwang, Y. (2016), “What type of content are smartphone
36 users addicted to?: SNS vs. games”, *Computers in Human Behavior*, Vol. 54, pp. 10–17.

38 Keller, J., Roitzheim, C., Radtke, T., Schenkel, K. and Schwarzer, R. (2021), “A mobile
39 intervention for self-efficacious and goal-directed smartphone use in the general population:
40 randomized controlled trial”, *JMIR MHealth and UHealth*, Vol. 9 No. 11, p. e26397, doi:
41 10.2196/26397.

44 Kim, S., Park, H. and Choi, M.J. (2019), “Negative impact of social network services based on
45 stressor-stress-outcome: the role of experience of privacy violations”, *Future Internet*, Vol. 11
46 No. 6, p. 137, doi: 10.3390/fi11060137.

48 Kitchenham, B. (2004), “Procedures for performing systematic reviews”, *Keele University*, Vol.
49 33, pp. 1–26.

52 Kraus, S., Breier, M., Lim, W.M., Dabić, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello,
53 V., Piñeiro-Chousa, J. and Liguori, E. (2022), “Literature reviews as independent studies:
54 guidelines for academic practice”, *Review of Managerial Science*, Vol. 16 No. 8, pp. 2577–2595.

56 Kumar, S., Sahoo, S., Lim, W.M. and Dana, L.-P. (2022), “Religion as a social shaping force in
57 entrepreneurship and business: insights from a technology-empowered systematic literature
58 review”, *Technological Forecasting and Social Change*, Vol. 175, p. 121393.

1
2
3 Kuss, D.J. and Griffiths, M.D. (2011), "Online social networking and addiction-a review of the
4 psychological literature", *International Journal of Environmental Research and Public Health*,
5 Vol. 8 No. 9, pp. 3528–3552, doi: 10.3390/ijerph8093528.

6
7 Kyonka, E.G.E., Garcia, S., Torres, E.C. and Naidu, R. (2023), "Behavioral functions associated
8 with wanting to reduce internet use", *Technology, Mind, and Behavior*, Vol. 4 No. 2, doi:
9 10.1037/tmb0000107.

10
11
12 Lau, J.T.F., Gross, D.L., Wu, A.M.S., Cheng, K. and Lau, M.M.C. (2017a), "Incidence and
13 predictive factors of internet addiction among Chinese secondary school students in Hong Kong:
14 a longitudinal study", *Social Psychiatry and Psychiatric Epidemiology*, Vol. 52 No. 6, pp. 657–
15 667, doi: 10.1007/s00127-017-1356-2.

16
17
18 Lau, J.T.F., Wu, A.M.S., Cheng, K., Tse, V.W.S., Lau, M.M.C. and Yang, X. (2018), "Prevalence
19 and factors of self-corrective intention among Hong Kong secondary school students who are
20 self-assessed Internet addiction cases", *Child and Adolescent Mental Health*, Vol. 23 No. 3, pp.
21 155–163, doi: 10.1111/camh.12219.

22
23
24 Lau, J.T.F., Wu, A.M.S., Gross, D.L., Cheng, K. and Lau, M.M.C. (2017b), "Is internet addiction
25 transitory or persistent? incidence and prospective predictors of remission of internet addiction
26 among Chinese secondary school students", *Addictive Behaviors*, Vol. 74, pp. 55–62, doi:
27 10.1016/j.addbeh.2017.05.034.

28
29
30 Lee, S.H., Im, J.J., Oh, J.K., Choi, E.K., Yoon, S., Bikson, M., Song, I.-U., Jeong, H. and Chung,
31 Y. (2018), "Transcranial direct current stimulation for online gamers: a prospective single-arm
32 feasibility study", *Journal of Behavioral Addictions*, Vol. 7 No. 4, pp. 1166–1170, doi:
33 10.1556/2006.7.2018.107.

34
35
36 Levy, Y. and Ellis, T.J. (2006), "A systems approach to conduct an effective literature review in
37 support of information systems research", Vol. 9, pp. 181–212, doi:
38 10.1109/IEEM.2012.6837801.

39
40
41 Lim, M. and Yang, Y. (2015), "Effects of users' envy and shame on social comparison that occurs
42 on social network services", *Computers in Human Behavior*, Vol. 51 No. PA, pp. 300–311, doi:
43 10.1016/j.chb.2015.05.013.

44
45
46 Liu, Y. and Shrum, L.J. (2002), "What is interactivity and is it always such a good thing?
47 implications of definition, person, and situation for the influence of interactivity on advertising
48 effectiveness", *Journal of Advertising*, Vol. 31 No. 4, pp. 53–64.

49
50
51 Liu, Z., Wang, X. and Chen, J. (2021), "Why can't I stop using social media problematically? the
52 impact of norm and neutralization from the regulatory focus perspective", *International Journal
53 of Electronic Commerce*, Vol. 25 No. 2, pp. 204–229, doi: 10.1080/10864415.2021.1887698.

54
55
56 Loh, X.-K., Lee, V.-H., Loh, X.-M., Tan, G.W.-H., Ooi, K.-B. and Dwivedi, Y.K. (2022), "The
57 dark side of mobile learning via social media: how bad can it get?", *Information Systems
58 Frontiers*, Vol. 24 No. 6, pp. 1887–1904, doi: 10.1007/s10796-021-10202-z.

59
60 Loid, K., Täht, K. and Rozgonjuk, D. (2020), "Do pop-up notifications regarding smartphone use
decrease screen time, phone checking behavior, and self-reported problematic smartphone use?"

evidence from a two-month experimental study”, *Computers in Human Behavior*, Vol. 102, pp. 22–30.

Lowry, P.B., Zhang, J., Wang, C. and Siponen, M. (2016), “Why do adults engage in cyberbullying on social media? an integration of online disinhibition and deindividuation effects with the social structure and social learning model”, *Information Systems Research*, Vol. 27 No. 4, pp. 962–986, doi: 10.1287/isre.2016.0671.

Maier, C., Laumer, S., Weinert, C. and Weitzel, T. (2015), “The effects of technostress and switching stress on discontinued use of social networking services: a study of Facebook use.”, *Information Systems Journal*, Vol. 25 No. 3, pp. 275–308, doi: 10.1111/isj.12068.

Meier, M., Maier, C., Thatcher, J.B. and Weitzel, T. (2023), “Shocks and IS user behavior: a taxonomy and future research directions”, *Internet Research*, Vol. 33 No. 3, pp. 853–889.

Meline, T. (2006), “Selecting studies for systemic review: inclusion and exclusion criteria”, *Contemporary Issues in Communication Science and Disorders*, Vol. 33 No. Spring, pp. 21–27, doi: 10.1044/cicsd_33_S_21.

Meske, C., Junglas, I. and Stieglitz, S. (2019), “Explaining the emergence of hedonic motivations in enterprise social networks and their impact on sustainable user engagement: a four-drive perspective”, *Journal of Enterprise Information Management*, Vol. 32 No. 3, pp. 436–456, doi: 10.1108/JEIM-08-2018-0177.

Moher, D. (2009), “Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement”, *Annals of Internal Medicine*, Vol. 151 No. 4, p. 264, doi: 10.7326/0003-4819-151-4-200908180-00135.

Mongeon, P. and Paul-Hus, A. (2016), “The journal coverage of web of science and scopus: a comparative analysis”, *Scientometrics*, Vol. 106 No. 1, pp. 213–228, doi: 10.1007/s11192-015-1765-5.

Moqbel, M. and Kock, N. (2018), “Unveiling the dark side of social networking sites: personal and work-related consequences of social networking site addiction”, *Information and Management*, Vol. 55 No. 1, pp. 109–119, doi: 10.1016/j.im.2017.05.001.

Neves, J., Turel, O. and Oliveira, T. (2022), “SNS use reduction: a two-facet privacy concern perspective”, *Internet Research*, doi: 10.1108/INTR-01-2022-0012.

Neves, J., Turel, O. and Oliveira, T. (2024a), “Privacy concerns in social media use: a fear appeal intervention”, *International Journal of Information Management Data Insights*, Vol. 4 No. 2, p. 100260.

Neves, J., Turel, O. and Oliveira, T. (2024b), “Explaining social media use reduction as an adaptive coping mechanism: the roles of privacy literacy, social media addiction and exhaustion”, *Information Systems Management*, pp. 1–14.

Ng, Y.M.M. (2020), “Re-examining the innovation post-adoption process: the case of Twitter discontinuance”, *Computers in Human Behavior*, Vol. 103, pp. 48–56.

- 1
2
3 Niu, G., Yao, L., Tian, Y., Sun, X. and Zhou, Z. (2020), "Information overload and the intention
4 to reduce SNS usage: the mediating roles of negative social comparison and fatigue", *Current*
5 *Psychology*, Vol. 41 No. 8, pp. 5212–5219, doi: 10.1007/s12144-020-01043-1.
6
7
8 Ochs, C. and Sauer, J. (2022), "Curtailling smartphone use: a field experiment evaluating two
9 interventions", *Behaviour & Information Technology*, Vol. 41 No. 16, pp. 3598–3616.
10
11 Olson, J.A., Sandra, D.A., Chmoulevitch, D., Raz, A. and Veissière, S.P.L. (2023), "A nudge-
12 based intervention to reduce problematic smartphone use: randomised controlled trial",
13 *International Journal of Mental Health and Addiction*, Vol. 21 No. 6, pp. 3842–3864.
14
15 Osatuyi, B. and Turel, O. (2020), "Conceptualisation and validation of system use reduction as a
16 self-regulatory IS use behaviour", *European Journal of Information Systems*, Vol. 29 No. 1, pp.
17 44–64, doi: 10.1080/0960085X.2019.1709575.
18
19
20 Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985), "A conceptual model of service quality
21 and its implications for future research", *Journal of Marketing*, Vol. 49 No. 4, pp. 41–50, doi:
22 10.1016/S0148-2963(99)00084-3.
23
24 Pedersen, J., Rasmussen, M.G.B., Sørensen, S.O., Mortensen, S.R., Olesen, L.G., Brønd, J.C.,
25 Brage, S., Kristensen, P.L. and Grøntved, A. (2022), "Effects of limiting recreational screen
26 media use on physical activity and sleep in families with children: a cluster randomized clinical
27 trial", *JAMA Pediatrics*, Vol. 176 No. 8, pp. 741–749.
28
29
30 Peng, S., Zhou, B., Wang, X., Zhang, H. and Hu, X. (2020), "Does high teacher autonomy support
31 reduce smartphone use disorder in Chinese adolescents? a moderated mediation model",
32 *Addictive Behaviors*, Vol. 105, p. 106319, doi: 10.1016/j.addbeh.2020.106319.
33
34 Pfeil, U., Arjan, R. and Zaphiris, P. (2009), "Age differences in online social networking—a study
35 of user profiles and the social capital divide among teenagers and older users in MySpace",
36 *Computers in Human Behavior*, Vol. 25 No. 3, pp. 643–654.
37
38
39 Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method
40 biases in behavioral research: a critical review of the literature and recommended remedies",
41 *Journal of Applied Psychology*, Vol. 88 No. 5, p. 879.
42
43
44 Polites and Karahanna. (2012), "Shackled to the status quo: the inhibiting effects of incumbent
45 system habit, switching costs, and inertia on new system acceptance", *MIS Quarterly*, Vol. 36
46 No. 1, p. 21, doi: 10.2307/41410404.
47
48 Pollard, C. (2003), "Exploring continued and discontinued use of IT: a case study of
49 OptionFinder, a group support system", *Group Decision and Negotiation*, Vol. 12 No. 3, pp. 171–
50 193, doi: 10.1023/A:1023314606762.
51
52
53 Ravindran, T., Yeow Kuan, A.C. and Hoe Lian, D.G. (2014), "Antecedents and effects of social
54 network fatigue", *Journal of the Association for Information Science and Technology*, Vol. 65
55 No. 11, pp. 2306–2320, doi: 10.1002/asi.23122.
56
57
58 Richardson, C., Magson, N., Fardouly, J., Oar, E., Johnco, C. and Rapee, R. (2021), "A
59 longitudinal investigation of sleep and technology use in early adolescence: does parental control
60 of technology use protect adolescent sleep?", *Sleep Medicine*, Vol. 84, pp. 368–379.

1
2
3 Rose, A. and Brannon, L.A. (2022), "Using health intervention messages to reduce intentions to
4 spend time on social networks", *Journal of Media Psychology*, doi: 10.1027/1864-1105/a000368.

5
6 Ruiz-Palomino, P. and Martínez-Cañas, R. (2014), "Ethical culture, ethical intent, and
7 organizational citizenship behavior: the moderating and mediating role of person–organization
8 fit", *Journal of Business Ethics*, Vol. 120, pp. 95–108.

9
10 Sahoo, S., Sahoo, J., Kumar, S., Lim, W.M. and Ameen, N. (2023), "Distance is no longer a
11 barrier to healthcare services: current state and future trends of telehealth research", *Internet
12 Research*, Vol. 33 No. 3, pp. 890–944.

13
14 Salo, M. and Frank, L. (2017), "User behaviours after critical mobile application incidents: the
15 relationship with situational context", *Information Systems Journal*, Vol. 27 No. 1, pp. 5–30, doi:
16 10.1111/isj.12081.

17
18 Sanchez-Fernandez, M., Borda-Mas, M. and Mora-Merchan, J. (2023), "Problematic internet use
19 by university students and associated predictive factors: a systematic review", *Computers in
20 Human Behavior*, Vol. 139, p. 107532.

21
22 Shen, X.-L., Li, Y.-J. and Sun, Y. (2018), "Wearable health information systems intermittent
23 discontinuance: a revised expectation-disconfirmation model", *Industrial Management & Data
24 Systems*, Vol. 118 No. 3, pp. 506–523.

25
26 Shimoda, S., Shimoda, M. and Higuchi, O. (2022), "Effect of self-affirmation on smartphone use
27 reduction among heavy users", *Psychological Reports*, p. 003329412110695, doi:
28 10.1177/00332941211069514.

29
30 Shokouyar, S., Siadat, S.H. and Razavi, M.K. (2018), "How social influence and personality
31 affect users' social network fatigue and discontinuance behavior", *Aslib Journal of Information
32 Management*, Vol. 70 No. 4, pp. 344–366, doi: 10.1108/AJIM-11-2017-0263.

33
34 Sigerson, L. and Cheng, C. (2018), "Scales for measuring user engagement with social network
35 sites: a systematic review of psychometric properties", *Computers in Human Behavior*, Vol. 83,
36 pp. 87–105.

37
38 Sohn, S.Y., Krasnoff, L., Rees, P., Kalk, N.J. and Carter, B. (2021), "The association between
39 smartphone addiction and sleep: a UK cross-sectional study of young adults", *Frontiers in
40 Psychiatry*, Vol. 12, doi: 10.3389/fpsy.2021.629407.

41
42 Soliman, W. and Rinta-Kahila, T. (2020), "Toward a refined conceptualization of IS
43 discontinuance: reflection on the past and a way forward", *Information and Management*, Vol.
44 57 No. 2, doi: 10.1016/j.im.2019.05.002.

45
46 Soliman, W. and Tuunainen, V.K. (2022), "A tale of two frames: exploring the role of framing in
47 the use discontinuance of volitionally adopted technology", *Information Systems Journal*, Vol. 3,
48 pp. 473–519, doi: 10.1111/isj.12355.

49
50 Soror, A., Steelman, Z.R. and Turel, O. (2021), "Exhaustion and dependency: a habituation–
51 sensitization perspective on the duality of habit in social media use", *Information Technology and
52 People*, doi: 10.1108/ITP-11-2019-0603.

- 1
2
3 Soror, A.A., Hammer, B.I., Steelman, Z.R., Davis, F.D. and Limayem, M.M. (2015), “Good
4 habits gone bad: explaining negative consequences associated with the use of mobile phones from
5 a dual-systems perspective”, *Information Systems Journal*, Vol. 25 No. 4, pp. 403–427, doi:
6 10.1111/isj.12065.
7
- 8 Spada, M.M. (2014), “An overview of problematic internet use”, *Addictive Behaviors*, Vol. 39
9 No. 1, pp. 3–6.
10
- 11 Statista. (2022), “Daily time spent on social networking by internet users worldwide from 2012
12 to 2022”.
13
- 14 Sun, X., Duan, C., Yao, L., Zhang, Y., Chinyani, T. and Niu, G. (2021), “Socioeconomic status
15 and social networking site addiction among children and adolescents: examining the roles of
16 parents’ active mediation and ICT attitudes”, *Computers and Education*, Vol. 173, doi:
17 10.1016/j.compedu.2021.104292.
18
- 19 Tandon, A., Dhir, A., Almugren, I., AlNemer, G.N. and Mäntymäki, M. (2021), “Fear of missing
20 out (FoMO) among social media users: a systematic literature review, synthesis and framework
21 for future research”, *Internet Research*, Vol. 31 No. 3, pp. 782–821.
22
- 23 Tang, C., Raat, H., Yan, M., Zhang, Q., Li, K., Jiang, M., Tang, W., Chen, J., Zhao, Y. and Liu,
24 Q. (2021), “Application of the health action process approach model for reducing excessive
25 internet use behaviors among rural adolescents in China: a school-based intervention pilot study”,
26 *BMC Public Health*, Vol. 21 No. 1, p. 986, doi: 10.1186/s12889-021-10999-z.
27
- 28 Tang, Z., Chen, L. and Gillenson, M.L. (2019), “Understanding brand fan page followers’
29 discontinuance motivations: a mixed-method study”, *Information and Management*, Vol. 56 No.
30 1, pp. 94–108, doi: 10.1016/j.im.2018.07.004.
31
- 32 Teng, Z., Pontes, H.M., Nie, Q., Xiang, G., Griffiths, M.D. and Guo, C. (2020), “Internet gaming
33 disorder and psychosocial well-being: a longitudinal study of older-aged adolescents and
34 emerging adults”, *Addictive Behaviors*, Vol. 110, p. 106530.
35
- 36 Throuvala, M.A., Griffiths, M.D., Rennoldson, M. and Kuss, D.J. (2020), “Mind over matter:
37 testing the efficacy of an online randomized controlled trial to reduce distraction from smartphone
38 use”, *International Journal of Environmental Research and Public Health*, Vol. 17 No. 13, p.
39 4842.
40
- 41 Tran, S.T.T. and Chen, J.V. (2023), “Navigating the social media overload via control abilities:
42 coping strategies and practices”, *Behaviour and Information Technology*, pp. 1–20, doi:
43 10.1080/0144929X.2023.2276807.
44
- 45 Turel, O. (2015), “Quitting the use of a habituated hedonic information system: a theoretical
46 model and empirical examination of Facebook users”, *European Journal of Information Systems*,
47 Vol. 24 No. 4, pp. 431–446, doi: 10.1057/ejis.2014.19.
48
- 49 Turel, O. (2016), “Untangling the complex role of guilt in rational decisions to discontinue the
50 use of a hedonic information system”, *European Journal of Information Systems*, Vol. 25 No. 5,
51 pp. 432–447, doi: 10.1057/s41303-016-0002-5.
52
53
54
55
56
57
58
59
60

1
2
3 Turel, O. and Gaudioso, F. (2018), “Techno-stressors, distress and strain: the roles of leadership
4 and competitive climates”, *Cognition, Technology and Work*, Vol. 20 No. 2, pp. 309–324, doi:
5 10.1007/s10111-018-0461-7.
6

7 Turel, O. and Osatuyi, B. (2017), “A peer-influence perspective on compulsive social networking
8 site use: trait mindfulness as a double-edged sword”, *Computers in Human Behavior*, Vol. 77, pp.
9 47–53, doi: 10.1016/j.chb.2017.08.022.
10

11 Turel, O. and Qahri-Saremi, H. (2016), “Problematic use of social networking sites: antecedents
12 and consequence from a Dual-System theory perspective”, *Journal of Management Information*
13 *Systems*, Vol. 33 No. 4, pp. 1087–1116, doi: 10.1080/07421222.2016.1267529.
14

15 Turel, O. and Qahri-Saremi, H. (2018), “Explaining unplanned online media behaviors: dual
16 system theory models of impulsive use and swearing on social networking sites”, *New Media and*
17 *Society*, Vol. 20 No. 8, pp. 3050–3067, doi: 10.1177/1461444817740755.
18

19 Turel, O. and Serenko, A. (2010), “Is mobile email addiction overlooked?”, *Communications of*
20 *the ACM*, Vol. 53, pp. 41–43, doi: 10.1145/1735223.1735237.
21

22 Turel, O. and Serenko, A. (2012), “The benefits and dangers of enjoyment with social networking
23 websites”, *European Journal of Information Systems*, Vol. 21 No. 5, pp. 512–528, doi:
24 10.1057/ejis.2012.1.
25

26 Turel, O., Serenko, A. and Giles, P. (2011), “Integrating technology addiction and use: an
27 empirical investigation of online auction users”, *MIS Quarterly*, Vol. 35 No. 4, pp. 1043–1061.
28

29 Vaghefi, I., Lapointe, L. and Boudreau-Pinsonneault, C. (2017), “A typology of user liability to
30 IT addiction”, *Information Systems Journal*, Vol. 27 No. 2, pp. 125–169, doi: 10.1111/isj.12098.
31

32 Vaghefi, I., Negoita, B. and Lapointe, L. (2023), “The path to hedonic information system use
33 addiction: a process model in the context of social networking sites”, *Information Systems*
34 *Research*, Vol. 34 No. 1, pp. 85–110.
35

36 Vaghefi, I., Qahri-Saremi, H. and Turel, O. (2020), “Dealing with social networking site
37 addiction: a cognitive-affective model of discontinuance decisions”, *Internet Research*, Vol. 30
38 No. 5, pp. 1427–1453, doi: 10.1108/INTR-10-2019-0418.
39

40 Venkatesh, V., Sykes, T., Chan, F.K.Y., Thong, J.Y.L. and Hu, P.J.H. (2019), “Children’s internet
41 addiction, family-to-work conflict, and job outcomes: a study of parent-child dyads”, *MIS*
42 *Quarterly*, Vol. 43 No. 3, pp. 903–927.
43

44 Voorveld, H.A.M., Van Noort, G. and Duijn, M. (2013), “Building brands with interactivity: the
45 role of prior brand usage in the relation between perceived website interactivity and brand
46 responses”, *Journal of Brand Management*, Vol. 20, pp. 608–622.
47

48 Vrijheid, M., Armstrong, B.K., Bedard, D., Brown, J., Deltour, I., Iavarone, I., Krewski, D.,
49 Lagorio, S., Moore, S. and Richardson, L. (2009), “Recall bias in the assessment of exposure to
50 mobile phones”, *Journal of Exposure Science & Environmental Epidemiology*, Vol. 19 No. 4, pp.
51 369–381.
52
53
54
55
56
57
58
59
60

- 1
2
3 Wan, C.-S. and Chiou, W.-B. (2010), "Inducing attitude change toward online gaming among
4 adolescent players based on dissonance theory: The role of threats and justification of effort",
5 *Computers & Education*, Vol. 54 No. 1, pp. 162–168, doi: 10.1016/j.compedu.2009.07.016.
6
7 Wang, C. and Lee, M.K.O. (2020), "Why we cannot resist our smartphones: investigating
8 compulsive use of mobile SNS from a stimulus-response-reinforcement perspective", *Journal of*
9 *the Association for Information Systems*, Vol. 21 No. 1, pp. 175–200, doi: 10.17705/1jais.00596.
10
11 Wang, H. and Sun, C.-T. (2011), "Game reward systems: gaming experiences and social
12 meanings.", *DiGRA Conference*, Vol. 114, Citeseer.
13
14 Wang, J., Zheng, B., Liu, H. and Yu, L. (2021), "A two-factor theoretical model of social media
15 discontinuance: role of regret, inertia, and their antecedents", *Information Technology and*
16 *People*, Vol. 34 No. 1, pp. 1–24, doi: 10.1108/ITP-10-2018-0483.
17
18 Wang, X., Qiao, Y. and Wang, S. (2023), "Parental phubbing, problematic smartphone use, and
19 adolescents' learning burnout: a cross-lagged panel analysis", *Journal of Affective Disorders*, Vol.
20 320, pp. 442–449, doi: 10.1016/j.jad.2022.09.163.
21
22 Wang, Y., Wu, A.M.S. and Lau, J.T.F. (2016), "The health belief model and number of peers
23 with internet addiction as inter-related factors of Internet addiction among secondary school
24 students in Hong Kong", *BMC Public Health*, Vol. 16 No. 1, p. 272, doi: 10.1186/s12889-016-
25 2947-7.
26
27 Wang, Y.M. (2023), "Decreasing the problematic use of an information system: a conceptual
28 replication in the context of digital streaming services", *AIS Transactions on Replication*
29 *Research*, Vol. 9, pp. 1–30, doi: 10.17705/1atrr.00077.
30
31 Watson, R.T., Pitt, L.F. and Kavan, C.B. (1998), "Measuring information systems service quality:
32 lessons from two longitudinal case studies", *MIS Quarterly*, Vol. 22 No. 1, p. 61, doi:
33 10.2307/249678.
34
35 Webster, J. and Watson, R.T. (2002), "Analyzing the past to prepare for the future: writing a
36 literature review.", *MIS Quarterly*, Vol. 26 No. 2, pp. xiii–xxiii, doi: 10.1.1.104.6570.
37
38 Wiener, N. (2019), *Cybernetics or control and communication in the animal and the machine*,
39 MIT press.
40
41 Wolak, J., Mitchell, K.J. and Finkelhor, D. (2007), "Does online harassment constitute bullying?
42 an exploration of online harassment by known peers and online-only contacts", *Journal of*
43 *Adolescent Health*, Vol. 41 No. 6, pp. S51–S58.
44
45 Wunderlich, P., Veit, D.J. and Sarker, S. (2019), "Adoption of sustainable technologies: a mixed-
46 methods study of German households", *MIS Quarterly: Management Information Systems*, Vol.
47 43 No. 2, pp. 673–691, doi: 10.25300/MISQ/2019/12112.
48
49 Xu, X., Hu, J., Lyu, X., Huang, H. and Cheng, X. (2021), "Exploring the interdisciplinary nature
50 of precision medicine: network analysis and visualization", *JMIR Medical Informatics*, Vol. 9
51 No. 1, p. e23562.
52
53
54
55
56
57
58
59
60

1
2
3 York, C. and Turcotte, J. (2015), “Vacationing from Facebook: adoption, temporary
4 discontinuance, and re-adoption of an innovation”, *Communication Research Reports*, Vol. 32 No.
5 1, pp. 54–62, doi: 10.1080/08824096.2014.989975.

6
7 Young, K. (2009), “Understanding online gaming addiction and treatment issues for adolescents”,
8 *The American Journal of Family Therapy*, Vol. 37 No. 5, pp. 355–372.

9
10 Zhang, M., Li, S., Lin, W. and Zhang, Y. (2024), “Escape or return? users’ intermittent
11 discontinuance behavior in strong-ties social functions”, *Information and Management*, Vol. 61
12 No. 1, p. 103902, doi: 10.1016/j.im.2023.103902.

13
14 Zhang, S., Zhao, L., Lu, Y. and Yang, J. (2016), “Do you get tired of socializing? an empirical
15 explanation of discontinuous usage behaviour in social network services”, *Information and*
16 *Management*, Vol. 53 No. 7, pp. 904–914, doi: 10.1016/j.im.2016.03.006.

17
18 Zhao, X., Feng, X., Garg, R. and Kelly, K.M. (2019), “Reducing late evening bedtime electronic
19 device intentions and use among young adults”, *Sleep Health*, Vol. 5 No. 4, pp. 401–408, doi:
20 10.1016/j.sleh.2019.02.005.

Appendix A

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
Abreu and Campos, 2022	Nudging theory	Mobile device	Awareness	-	To delve into the introspective mind to enhance users' awareness of their usage patterns and subsequently encourage behavioral reductions	Self-tracking exhibits a high efficacy in facilitating behavior change.	16
Alotai bi et al., 2022	-	Mobile device	Awareness; routine	-	To gather the perspectives and experiences of students and university staff regarding excessive smartphone use or addiction	Both students and staff express mixed perceptions regarding smartphone usage, encompassing both positive and negative viewpoints.	33
Apaolaza et al., 2019	Mindfulness-based stress reduction	Social networking site	Mindfulness; self-esteem; social anxiety	-	To explore the relationships among mindfulness, self-esteem, social anxiety, compulsive mobile SNS usage, and stress derived from the use of WhatsApp	Practicing mindful awareness decreases the likelihood of developing problematic mobile social media usage.	346

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
Bickham et al., 2018	Social cognitive theory	Gaming, internet and television	Attention; retention; reproduction; motivation	More sleep	To address and prevent sleep deprivation, dysfunctional social-emotional behaviors, and poor academic performance	Students report longer sleep and less television viewing, background TV, after-school gaming, and weekend internet use.	529
Bottel et al., 2021	Motivational interviewing	Internet	Self-efficacy; social norm; cognitive dissonance	-	To evaluate the potential of the developed telemedicine intervention to enhance motivation for individuals to modify their dysfunctional internet use behavior	Two telemedicine sessions with a counselor increase participants' motivation to change and prompt initial steps to modify their internet use.	73
Brailovskaia et al., 2023a	-	Social networking site	-	Reduced work overload, stress symptoms, fear of missing out and addictive use	To examine the impact of reducing daily social media usage (SMU) on employees across various professional sectors in Germany	The results show that reducing SMU is linked to higher work motivation and better mental health. Employers may benefit from considering these findings to promote	84+ 82

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
						employee well-being and productivity.	
Brailovskaia et al., 2023b	-	Mobile device	-	Reduced symptoms of depression and anxiety. Increased life satisfaction and physical activity	To compare the effects of complete smartphone abstinence with a reduction of daily smartphone usage by one hour on well-being and healthy lifestyle among participants	Reduced smartphone usage correlates with increased well-being and a healthier lifestyle, suggesting that complete abstinence is not necessary.	200 +22 6+1 93
Chen et al., 2019a	Social cognitive theory	Gaming platform	Deficient self-efficacy; perceived difficulty	-	To uncover the underlying reasons why individuals addicted to smartphone games struggle to reduce their addictive behaviors	Gamers are likely to engage in a three-stage process to regulate their behaviors, which includes encountering barriers to reducing their usage.	381
Chen et al., 2019b	Social cognitive theory	Social networking site	Passive social use	-	To explore the positive and negative impacts of passive usage of WeChat, a popular social media platform	The effects of passive use dimensions vary depending on the perspective being analyzed.	295
Chen et al., 2020	Protection motivation theory	Gaming platform	Fear; self-efficacy; subjective	-	To identify the factors that	The decision to reduce	914

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
			norms; response efficacy		influence individuals' intentions to reduce problematic smartphone game usage	problematic smartphone game use can be influenced by a combination of factors from the protection motivation theory and social-normative influences.	
Das-Friebel et al., 2019	Health belief model	Electronic devices	Knowledge	Longer sleep duration	To reduce the usage of electronic media before bedtime and decrease caffeine consumption	Participants in the intervention group exhibit a significant but modest decrease in electronic media use compared to the control group.	352
Feng et al., 2024	Cognitive dissonance theory; neutralization theory	Mobile device	Attitudinal ambivalence	-	To understand the internal mechanism leading from mobile short-form video addiction to intermittent discontinuance	Cognitive dissonance and emotional fluctuation positively influence intermittent discontinuance through attitudinal ambivalence.	493
Frydenlund et al., 2023	-	Mobile device	-	-	To explore the risk of smartphone addiction and assess perceived problematic smartphone	One fourth of the participants are deemed to be at high risk of smartphone addiction.	1251

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					behavior among university college students	Among this high-risk cohort, 74% acknowledge their smartphone behavior as problematic, with 91% contemplating reducing their smartphone usage.	
Fu and Li, 2020	Social cognitive theory	Social networking site	SNS fatigue; dissatisfaction	SNS discontinuance	To examine two distinct patterns of social media disengagement—diminished usage and complete abandonment	Discontent plays a larger role in prompting abandoned usage than social media fatigue, but both equally influence reduced usage.	412
Gholamian et al., 2019	Theory of reasoned action; theory of planned behavior	Internet	Knowledge; attitudes; subjective norm; enabling factors	-	To assess the impact of an educational intervention on reducing excessive internet use among individuals	The results show changes in students excessive and unplanned use of the internet.	120
Hernan et al., 2018	Applied behavior analysis	Mobile device	Positive reinforcement	-	To mitigate the inappropriate use of mobile devices and enhance academic engagement	Both teachers and students perceive the Good Behavior Game intervention	30

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					t among individuals	n as acceptable.	
Hernan et al., 2019	Applied behavior analysis	Mobile device	Positive reinforcement	-	To enhance academic engagement and reduce the excessive use of mobile devices among students	The results indicate a rise in academic engagement and a decline in the inappropriate presence of mobile devices in classrooms.	1009
Hinsch and Sheldon, 2013	-	Social networking site and gaming	-	Life satisfaction; decreased procrastination	To investigate the effects of prompted reduction or cessation of usage on participants	On average, participants experience benefits during the reduction/cessation period, reporting higher life satisfaction and reduced procrastination.	143
Islam et al., 2022	Lazarus and Folkman's coping theory	Social networking site	Exhaustion	-	To examine the potential adverse consequences of using SNS as a coping mechanism for stressors arising from a global pandemic	Both the threat of COVID-19 disease and the fear of unemployment exert significant influences on COVID-19 obsession.	510
Keller et al., 2021	Self-determination theory	Mobile device	Self-efficacy; social norm	-	To assess the effects of the theory-based smartphone app "Not	Both conditions demonstrate significant reductions in	88

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					Less But Better" on individuals' smartphone usage patterns	problematic smartphone use and the overall time spent using smartphones.	
Kim et al., 2019	Stress-strain-outcome framework	Social networking site	Living disorder; privacy violations	-	To examine the influence of SNS usage and user characteristics on SNS fatigue, lifestyle disruption, and the intention to reduce SNS usage	SNS fatigue significantly impacts living disorders and reduces the intention to use SNS. Privacy violations also play a key role in the link between living disorders and reduced SNS use intention.	579
Kyong et al., 2023	-	Internet	-	-	To contrast the internet usage patterns of individuals aiming to minimize their online time with those who did not have such intentions	Overindulgent and undesired internet usage constitutes a problematic behavior sustained through negative reinforcement.	821
Lau et al., 2018	Health belief model	Internet	Perceived barriers; perceived benefits; perceived susceptibility; perceived self-	-	To examine the prevalence of self-corrective intention concerning internet addiction	The six constructs of the health belief model exhibit significant association	9618

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
			efficacy; perceived severity; cues to action		and explore the factors associated with it	s with self-corrective intention.	
Lau et al., 2017a	Health belief model	Internet	Cues to action; perceived barriers	-	To investigate the incidence and predictors of internet addiction among individuals	Perceived susceptibility to internet addiction, perceived barriers to reducing internet use, perceived benefits of internet use, and cues to action are significant predictors of conversion to internet addiction.	8286
Lau et al., 2017b	Health belief model	Internet	Boredom; loneliness; self-efficacy	-	To investigate the incidence of remission from internet addiction and examine prospective predictors of such remission among individuals	Addressing psychological problems such as depression, social anxiety, and loneliness is essential to promote remission from internet addiction.	1545
Lee et al., 2018	Transcranial direct current stimulation	Gaming platform	Self-control	-	To assess the feasibility and tolerability of the	Significant reductions occur in online game addiction	15

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					applied stimulation to reduce online game usage	symptoms, average game time, and subclinical depressive symptoms, while self-control increases without adverse events.	
Liu et al., 2021	Cognitive dissonance theory; regulatory focus theory	Social networking site	Injunctive norms; guilt	-	To elucidate the ways in which inhibiting factors and sustaining factors influence individuals' intentions to reduce problematic usage	The significance of regulatory focus lies in enhancing our comprehension of the differential impact between injunctive norms and neutralization.	346
Loh et al., 2022	Stimulus–organism–response framework	Social networking site	Technostress; exhaustion	-	To investigate the detrimental effects of mobile learning through social media platforms	Technostress and exhaustion play significant roles in diminishing students' intention to utilize mobile learning through social media platforms.	384
Loid et al., 2020	-	Mobile device	Notifications	-	To investigate the effect of excessive smartphone	Contrary to predictions, notifications about excessive	73

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					use related notification	smartphone usage do not reduce self-reported problematic smartphone use, nor do they affect screen time or the frequency of checking phones.	
Neves et al., 2022	Privacy calculus theory	Social networking site	Peer privacy concern; institutional privacy concern	-	To gain insight into the influence of privacy concerns on individuals' intentions to reduce their usage of SNS	Privacy concerns related to both institutions and peers significantly influence individuals' intention to reduce their SNS usage.	258
Neves et al., 2024a	Stress coping theory	Social networking site	Adaptive coping strategies	-	To understand social media use reduction by integrating privacy calculus and stress-coping theories	Privacy concerns act as a stressor that triggers adaptive coping mechanisms, leading to a reduction in use.	255
Neves et al., 2024b	Stress-strain-outcome framework	Social networking site	Fear; fatigue	-	To unravel the mechanism by which this concern leads to a reduction in SNS use and to investigate whether privacy fear	Privacy can indirectly reduce SNS use, while addiction hinders the adoption of healthy SNS habits. Privacy fear appeals effectively	213 +192

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					appeals can effectively reduce SNS use	encourage more limited and controlled SNS use.	
Ng, 2020	Innovation diffusion theory	Social networking site	-	-	To propose a conceptual framework for innovation post-adoption behavior	Permanent discontinuers are more likely to explore and try out alternative social networking sites, while intermittent discontinuers are more inclined to look for solutions to minimize disruptions.	253
Niu et al., 2020	Stimulus–organism–response framework	Social networking site	Information overload; negative social comparison; SNS fatigue	-	To explore the relationship between information overload and the intention to decrease SNS usage	A significant positive association is observed between information overload, negative social comparison, SNS fatigue, and the intention to reduce SNS usage for each pair of variables.	986
Ochs and Sauer, 2022	Nudging theory	Mobile device	Move app; greyscale	-	To tackle the problematic behavior by investigating the efficacy of two	In contrast to the week preceding the intervention, participants notably	97

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					commonly recommended strategies: relocating problematic applications to a separate page on the phone and converting the phone's display to greyscale	decrease their actual smartphone usage, yet their self-reported problematic smartphone use behavior shows an increase.	
Olson et al., 2023	Nudging theory	Mobile device	Notifications; greyscale	-	To test an intervention consisting of ten strategies aimed at nudging users to decrease their smartphone usage. These strategies included actions such as disabling non-essential notifications and converting the display to greyscale	In Study 1, problematic smartphone use, screen time, and depressive symptoms decrease after two weeks. Study 2 shows the intervention reduces problematic smartphone use, decreases screen time, and improves sleep quality compared to the control group.	51+70
Osatuyi and Turel, 2020	Social cognitive theory	Social networking site	Realization; peer use reduction; use reduction self-efficacy;	-	To develop a conceptual framework, formulate theoretical propositions, and	The reduction of IS use is conceptually and statistically distinct from other	384

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
			SNS addiction		conduct empirical testing on the reduction of information systems use	corrective behaviors. Both awareness of excessive use and peer influence can be manipulated to reduce actual SNS use.	
Pedersen et al., 2022	-	General HIS	-	High levels of physical activity in children and sleep in adults	To examine the impact of decreasing recreational screen media usage within households on the physical activity and sleep patterns of both children and adults	The main outcome focuses on the disparity between groups regarding non-sedentary leisure activities (measured in minutes per day) using a combination of thigh and waist accelerometry.	181 +164
Ravindran et al., 2014	Gratification theory	Social networking site	SNS fatigue	-	To elucidate the concept known as social network fatigue within the context of one of the primary purposes of social networks: maintaining	Users engage in brief rest breaks from the platform, reduce their activities, or even temporarily halt their social network interactions due to	201

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					social connections	experiences of fatigue.	
Rose and Brannon, 2022	Social norm theory	Social networking site	Social norm	-	To assess the effectiveness of employing behavioral feedback and social norms health message interventions in reducing SNS usage	There is a positive correlation between the social norms message and the intention to reduce future SNS usage.	107
Shen et al., 2018	Expectation - disconfirmation theory	Wearable health device	Neutral satisfaction; attitudinal ambivalence	-	To understand the factors influencing intermittent discontinuance of information systems in the context of wearable eHealth	Neutral disconfirmation has positive effects on both neutral satisfaction and attitudinal ambivalence, which in turn positively influence intermittent discontinuance.	428
Shimoda et al., 2022	Self-affirmation theory	Mobile device	Self-affirmation; awareness	-	To investigate whether engaging in self-affirmation prior to reading health risk information enhances the motivation of heavy smartphone users to	A significant interaction effect is observed between self-affirmation and smartphone use.	142

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					reduce their usage		
Shokuyar et al., 2018	Gratifications theory	Social networking site	SNS fatigue	-	To comprehend how individuals' social influence and personality distinguish between users' experiences of social network fatigue and their discontinuation behavior	When faced with social network fatigue, users tend to opt for reducing their activities rather than switching to alternative SNS or taking a brief hiatus from social network activities.	163
Sohn et al., 2021	-	Mobile device	Mobile addiction		To explore the correlation between smartphone addiction and sleep quality among young adults	The study finds that smartphone addiction correlates with poor sleep quality, regardless of usage duration, suggesting that usage duration alone is not a reliable indicator of harmful use.	1043
Tang et al., 2021	Health action process model	Internet	Outcome expectancy; intention; maintenance self-efficacy	-	To investigate the applicability and effectiveness of the health action process	The research model can effectively reduce excessive Internet use behaviors.	327

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
					approach in addressing excessive internet use		
Throuvala et al., 2020	-	Mobile device	Mindfulness; Self-monitoring; Mood tracking	-	To investigate the effectiveness of an intervention aimed at reducing excessive smartphone use and social media distraction among UK university students	The intervention does not succeed in decreasing habitual behaviors, nomophobia, or the amount of time spent on social media.	143
Tran and Chen, 2023	Stress coping theory	Social networking site	Emotional exhaustion; disturbance handling	-	To examine how users' networking ability and profile control ability can help alleviate the negative effects of social media overload	Emotional exhaustion and the ability to handle disturbances both forecast various social media management practices among users.	161
Wan and Chiou, 2010	Cognitive dissonance theory	Gaming platform	Threat severity; effort justification	-	To modify gamers' attitudes toward online gaming	Attitude changes are more pronounced when the perceived threat is lower. Participants who exert more effort in displaying behavior	96

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
						that contradicts their initial attitudes experience larger shifts in their attitudes.	
Wang, 2023	Protection motivation theory	Digital streaming services	Fear; perceived severity; perceived vulnerability; self-efficacy; response efficacy; response costs	-	To test a conceptual replication of Chen et al. (2020) study on digital streaming services	The protection motivation theory proves valuable in elucidating the reduction of problematic usage in contexts where threats are present.	437+428
Wang et al., 2016	Health belief model; peer cluster theory	Internet	Self-efficacy; social norm	-	To explore the role of the health belief model in understanding internet addiction and its associated factors	Perceived social benefits of internet use, perceived barriers to reducing it, and perceived self-efficacy to cut back are identified as risk factors for internet addiction.	9518
Zhang et al., 2024	Expectancy violation theory; push-pull-mooring theory	Social networking site	Usage fatigue; privacy concerns; alternative attractiveness; sunk costs;	-	To explore how contradictory psychology arises and influences users' intermittent	Core antecedents of high-degree intermittent discontinuance include technology overload,	383

Article	Theory/framework	Information system	Use reduction antecedents	Use reduction consequences	Goal	Key findings	Sample size
			transition fatigue; transition costs		discontinua nce of strong-tie social functions	usage fatigue, privacy concerns, and sunk costs.	
Zhao et al., 2019	Theory of planned behavior	Electronic devices	Attitudes; perceived behavioral control; knowledge	Longer sleep duration	To investigate the impact of the research model on the reduction of late evening electronic device usage	Attitudes and perceived behavioral control are found to be associated with the intention to reduce late evening e-device use.	308