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Addiction Research

Dependence and Awareness in the Human–Smartphone Relationship: A Narrative Inquiry

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ABSTRACT

Purpose: *Adopting a de-pathologizing and process-oriented perspective, this study explored how individuals' relationships with their smartphones gradually evolve, deepen, and transform throughout the development of smartphone addiction.*

Participants: *Twenty-three adults aged 20 to 45 who self-identified a tendency toward smartphone addiction were purposively recruited from community and university networks.*

Methods: *A narrative inquiry design was employed to capture participants' lived experiences across time. Each participant took part in three semi-structured interviews conducted at one-month intervals and completed two creative reflection tasks: My Smartphone Story Journal and the Addiction-Imagination Picture Book. The data corpus of interviews and creative artifacts was analyzed using a holistic–content narrative approach to construct temporal trajectories and thematic patterns.*

Results: *Three overarching themes were identified: (1) Experiencing the present: Smartphone use was marked by emotional ambivalence, combining comfort with restlessness and emptiness. (2) The path to smartphone addiction: Dependence developed gradually, with smartphones becoming steady yet consuming companions integrated into daily routines. (3) Human–smartphone relationships: Participants expressed concern about inseparability while striving to rebuild more human-centered and rational ways of use.*

Conclusions: *Smartphone addiction emerged as an evolving human experience rather than a clinical condition. The findings highlight reflection, self-awareness, and meaning reconstruction as essential steps toward more balanced and mindful digital engagement.*

Keywords

Smartphone addiction, Narrative inquiry, Self-awareness, Human–technology relationship.

Introduction

With the rapid advancement of information technology and the pervasive presence of smartphones, growing concern has arisen over the potential risks of smartphone addiction among everyday users. According to the Digital 2022: Taiwan report, as of January 2022, there were 21.72 million internet users, representing about 90% of Taiwan's total population, an increase of nearly 300,000 from the previous year. Notably, 95.8% accessed the internet via smartphones, and the average daily internet usage time reached 8 hours and 7 minutes, exceeding the global average of 6 hours

and 58 minutes [1]. These statistics underscore that smartphone overuse is no longer confined to clinically diagnosed cases but represents a widespread social and psychological phenomenon affecting the general population. Understanding how ordinary use evolves into dependence is crucial, as it sheds light on the psychological mechanisms that underlie the gradual loss of control over one's behavior.

From a clinical diagnostic perspective, the World Health Organization [2] defined three diagnostic features of the gaming disorder: (1) impaired control over gaming, (2) increasing priority given to gaming over other interests and daily activities, and (3) continuation or escalation of gaming despite negative consequences. This framework established a foundation for identifying behavioral addiction through clinical symptoms and impairment criteria. However, the digital landscape has evolved far beyond gaming. From a developmental perspective, why, then, do people overuse their smartphone without conscious awareness? Turkle [3] suggested that modern communication technologies have fostered an "always-on" condition, producing what she called a "tethered self". This constant digital connection erodes the capacity for meaningful, face-to-face interaction and cultivates a persistent psychological attachment to the device. Individuals feel compelled to check their smartphones repeatedly to maintain a sense of belonging and control.

For today's adults, smartphones are indispensable tools for communication, study, and leisure [4]. However, excessive use can trigger a maladaptive cycle of compulsive checking, anxiety, and emotional distress [5]. Loneliness further exacerbates this dependence, whereas supportive relationships can buffer against it [6]. A systematic review reported that 36.5-67% of university students show problematic smartphone use (PSU), with an average of about 52% [7]. If PSU begins in the university years, its persistence into adulthood is a foreseeable consequence. Yet, many hope to rebuild a more balanced and mindful relationship with their devices. Helping them develop awareness and intentional use is essential for promoting healthier digital well-being.

Accordingly, smartphone addiction should not be viewed merely as a clinical disorder but rather as a gradual psychological process that develops over time. This study adopts a de-pathologizing and temporal perspective, examining how individuals' relationships with smartphones evolve over time. This study explored how individuals' relationships with their smartphones gradually evolve, deepen, and transform throughout the development of smartphone addiction.

Purpose and Questions

Adopting a de-pathologizing and process-oriented perspective, this study viewed smartphone addiction as a dynamic psychological process rather than a fixed disorder. It aimed to explore how adults understand their self-perceived smartphone addiction across time, how it is experienced in the present, shaped by the past, and reimagined for the future. Using narrative inquiry, the study sought to reframe addiction as a process involving both self-awareness and dependence. Based on the aim of this study, three research questions were explored. (1) How do adults describe and interpret their current experiences of self-perceived smartphone addiction in everyday life? (2) How do adults narratively reconstruct the progression from ordinary smartphone use to a growing sense of dependence? (3) How do adults envision their future relationship with smartphones and the possibility of more intentional use?

Literature Review

The behavioral and emotional foundations of problematic smartphone use

The concept of excessive mobile device use has been framed through a range of overlapping terms, reflecting persistent debate regarding its conceptual boundaries and classification [4]. Among the most frequently cited are mobile phone addiction (MPA), smartphone addiction (SmA), and PSU, which are often used interchangeably across empirical studies. MPA is commonly defined as a compulsive and uncontrolled behavioral pattern in which individuals engage with their smartphones to an extent that disrupts physical health, psychological stability, and social functioning [8]. A defining characteristic of MPA is loss of control. Individuals struggle to regulate the timing, duration, and context of their smartphone use, even when such use interferes with important personal or professional activities [9]. This dysregulation often co-occurs with excessive use, in which individuals increasingly extend their screen time to achieve similar emotional or cognitive satisfaction [10]. These behaviors evolve into preoccupation, where smartphone-related thoughts and activities dominate one's attention, routines, and mental space, diminishing engagement in other meaningful pursuits.

Smartphone overuse is maintained not only by habit or dependence, but also by its perceived emotional and social benefits, creating a cycle that is difficult to break. Many users continue to engage in compulsive smartphone use even though they recognize its negative consequences, such as reduced academic performance, strained relationships, and diminished work efficiency. This persistence despite harm reflects functional impairment, a defining criterion within behavioral addiction frameworks [11].

Otherwise, smartphones frequently function as mechanisms for emotional regulation and social maintenance, offering temporary comfort, validation, or distraction from real-world stressors and social demands [10]. Recent research further elucidates the emotional processes underpinning such dependence. Loneliness has been identified as a key psychological predictor of PSU, operating through the mechanism of mobile phone anthropomorphism, in which individuals begin to ascribe human-like qualities to their devices and perceive them as meaningful companions [6]. Within this context, the smartphone transitions from a communication tool to a social surrogate, providing emotional reassurance and a sense of connection for individuals experiencing social isolation or relational difficulties. However, the strength and quality of offline relationships appear to moderate this process; individuals with more supportive and satisfying interpersonal ties are less likely to anthropomorphize their smartphones and, consequently, exhibit

lower susceptibility to problematic use [6].

Summerly, problematic smartphone use is grounded in both behavioral dysregulation and emotional dependence. What begins as habitual use may gradually develop into patterns of overreliance and emotional engagement, illustrating how smartphones become integrated into both behavioral routines and emotional coping processes.

Understanding smartphone addiction as a complex human process

Previous studies on smartphone addiction have often concentrated on identifying personality traits linked to excessive use. For instance, individuals characterized by higher impulsivity or neuroticism are more prone to developing addictive smartphone behaviors [12]. However, research in recent years has shifted beyond individual traits toward a broader understanding of contextual, emotional, and motivational factors. Jahan et al. [13] illustrated purposeful internet use for academic or informational purposes does not lead to problematic outcomes, whereas unstructured activities such as continuous messaging, social media browsing, or video watching are significantly related to maladaptive patterns. When the smartphone serves a defined goal, it tends to remain a tool; when it becomes a space for passive absorption, it begins to control its user. Similarly, Rahim et al. [14] differentiated between process usage, referring to browsing, entertainment, or information seeking, and social usage, referring to maintaining or strengthening real-life relationships. This distinction invites reflection on how design features of apps such as infinite scrolling or algorithmic feeds shape user habits and blur the line between deliberate use and compulsion.

As a complex human phenomenon, smartphone addiction arises from the intertwined dynamics of personality, emotion, and cognition. Elevated anxiety, depression, and perceived stress are consistently linked to both excessive smartphone engagement and its negative consequences [4,5]. These emotional pressures often manifest as academic anxiety and burnout, which mediate the relationship between PSU and declining academic performance [15]. At the cognitive level, the fear of missing out (FoMO) further reinforces this cycle—students who constantly worry about social exclusion or missing updates tend to engage in compulsive checking behaviors [15]. Meanwhile, failures in self-regulation exacerbate this pattern, as individuals with lower self-control are more prone to impulsive actions, digital temptations, and difficulty disengaging from online activities [15,16]. Taken collectively, these findings illustrate that smartphone is not a single-dimensional behavior but a multifaceted process shaped by emotional vulnerability, cognitive bias, and self-regulatory limitations.

Past studies have identified many factors linked to problematic smartphone use, such as personality, emotion, and self-regulation, yet most view it as a fixed condition rather than a changing human experience. Research rarely explores how people understand and make meaning of their own smartphone dependence over time. This study addresses this gap by examining how adults interpret their self-perceived smartphone addiction across the past, present, and future.

Methods

Design

We adopted a narrative inquiry design to examine how adults make sense of their self-perceived trajectory toward smartphone addiction. Narrative inquiry treats life as storied and emphasizes the organization of experience through stories [17-20]. Following this tradition, we attended to four structural elements—settings, characters, events, and plots—to contextualize participants' accounts and clarify what "self-perceived smartphone addiction" meant in their lives [21-24].

Participants and Recruitment

Participants were purposively recruited from community postings and university networks. The final participants included 23 adults aged 20 to 45 who self-perceived a tendency toward smartphone addiction. Interested individuals completed an online screening form assessing eligibility. To qualify, participants were required to endorse all of the following criteria: (1) smartphone use that exceeded their expectations and negatively affected daily life, work or study, or interpersonal relationships; (2) experiences of negative affect (e.g., anxiety, unease, anger) during periods without smartphone access; and (3) a persistent sense of needing to spend more time on the smartphone regardless of the original purpose of use. Eligible participants were contacted to schedule individual interviews and were enrolled after providing informed consent.

Procedure

Each participant completed three semi-structured individual interviews (approximately 45–60 minutes each) at one-month intervals. Between interviews, participants undertook two creative reflection tasks designed to deepen their narrative exploration and self-understanding.

Interview 1. Focused on current experiences and self-perceived smartphone-addiction narratives. One week prior, participants received a brief guide to facilitate reflection. Interim Task A – My Smartphone Story Journal. Over the following month, participants documented at least two meaningful episodes tracing their journey from smartphone use to awareness of addiction, writing from the phone's perspective ("it"). Optional photos or social-media images could be appended.

Interview 2. Conducted one month later, centered on discussing and reflecting on the Story Journal. Participants collaboratively organized their experiences into a coherent life story. Interim Task B – Addiction-Imagination Picture Book. Participants created a short illustrated picture book depicting their envisioned future relationship with the smartphone through metaphor and imagination.

Interview 3. Held one month after Interview 2, focused on sharing

the picture book and meta-reflecting on its meanings and insights. Within two weeks, participants received verbatim transcripts for review and provided feedback for member checking.

Across all participants, the procedure yielded 69 interview transcripts, along with 23 journals and 23 picture books, forming the corpus for narrative analysis. The research design was shown in Figure 1.

Data Management and Ethics

The study was approved by the Research Ethics Committee of National Taiwan University (NTU-REC No. 202305ES020). All research procedures, data collection, and data analysis were conducted in strict accordance with research ethics.

Analysis and Rigor

We employed the holistic–content mode of narrative analysis [18] to preserve contextual coherence and represent each participant's story as a whole. The analysis proceeded iteratively through five steps: (1) Immersion and pattern noticing: Analysts read and reread all texts to capture the overall picture of self-perceived addiction, developmental trajectories, interpersonal patterns, and imagined futures. (2) Within-case impressions: For each participant, analysts wrote an initial memo and overall case impression, noting convergences and divergences related to the research focus. (3) From cases to synthesis: Within-case insights were integrated across cases to construct the overarching storyline and thematic architecture. (4) Theme labeling and verification: Themes were identified from the complete narratives and verified against specific textual segments across data sources. (5) Analytic tracking: Each theme's emergence, contextual conditions, transitions, and relative salience were systematically traced to remain faithful to participants' accounts.

Each participant was assigned a unique alphanumeric identifier to ensure traceability throughout the analysis. The 23 participants were coded as C01-C23, and each of their three interview rounds was marked as -1, -2, or -3, followed by the line number of the quotation (e.g., *C05-1-015* refers to Participant 5, first interview, Sentence 15). Picture books were respectively labeled with -P.

To ensure rigor and trustworthiness, we applied strategies as follows: First, Credibility was supported through member checking (participant review of transcripts), data triangulation (interviews, journals, picture books, and field notes), and peer debriefing among the research team. Second, Dependability and confirmability were reinforced by maintaining an audit trail of analytic decisions, coding iterations, and theme matrices. Third, Reflexivity was fostered through analytic memos and regular discussions to consider researchers' perspectives and potential biases.

Results

1. Experiencing the present: Internal states of smartphone addiction

1.1 When connection feels empty: Searching for connection, finding emptiness

Participants who perceived a tendency toward smartphone addiction often described a sense of aimless and lonely connection in their relationship with the device. Although smartphones facilitated communication and accessibility, participants recognized that once the device was set aside, their underlying vulnerabilities, such as loneliness and emotional emptiness, remained. The very convenience that allowed instant access to information and interaction also deepened the gap in authentic interpersonal contact, reinforcing feelings of isolation.

I feel it's something bad, and I know I often just can't help myself. I even picture myself smashing my phone. In junior and senior high school, phones weren't used at school; then suddenly in college the phone became essential. I still feel it's meaningless—I know it doesn't really solve the problem. (C05-1-015)

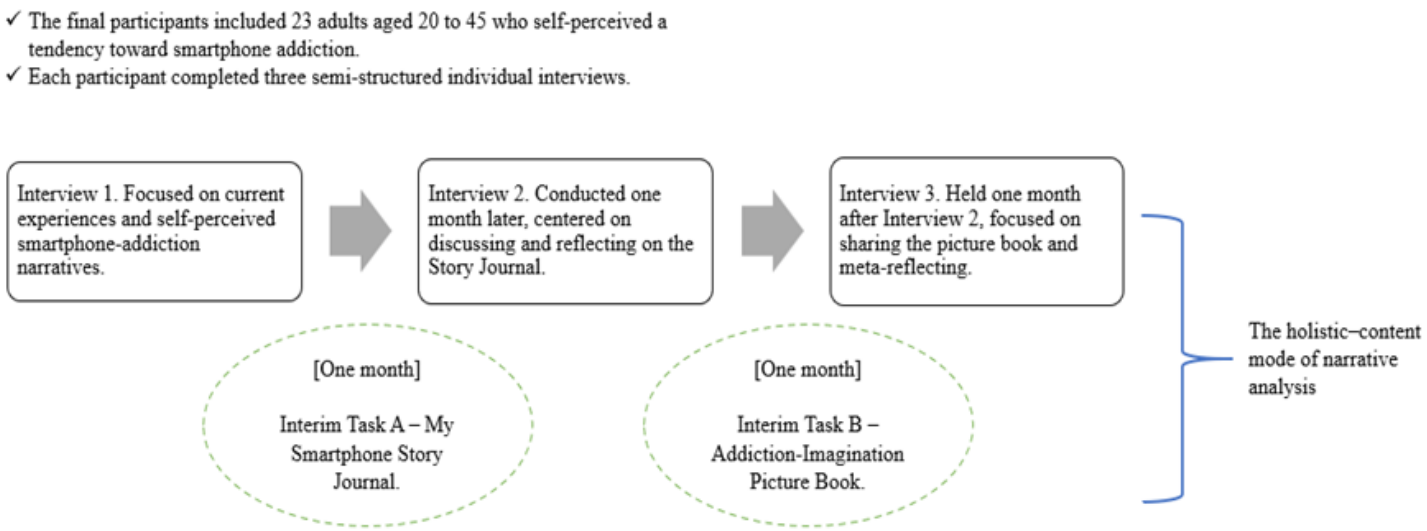

Figure 1: The research design.

As illustrated in C05's account from Interview 1, when the smartphone became a daily necessity that conflicted with earlier habits and inner values, participants experienced psychological ambivalence—resistance coexisted with compulsion. They realized that the issues they attempted to escape through the smartphone, such as boredom, anxiety, or loneliness, persisted beneath the surface. Otherwise, as C10 reflected, some participants acknowledged their addictive tendencies yet could not clearly identify what they were searching for; rather, the act of scrolling itself became rewarding, even when the content felt purposeless.

Overall, participants believed that their frequent smartphone use stemmed from a longing for connection. Yet even after connecting, they continued to feel empty.

1.2 Rest as reward, stimulation as escape: Dual meanings of smartphone use

For many participants, smartphone use fulfilled internal needs, serving as both relaxation and self-reward after a demanding day, while others described an inability to tolerate unstructured time, turning to the smartphone to fill the void. Participants used smartphones as a means to relax, to reward themselves, and to fill the empty spaces in their daily lives.

I can't accept having things undone and time just sitting there. When I don't want to do the task, that blank time feels like self-reproach, not relaxation. So I need to do something else, like scroll, to use up that time, as if it's rest. (C03-1-031)

These narratives reveal that smartphone use often compensated for solitude or internal restlessness. Yet participants also expressed more positive meanings:

It satisfies the need for new stimulation. Otherwise, in daily life I might not access information from elsewhere. With the smartphone, I can know what's happening beyond my immediate world. (C22-1-021)

For some, the smartphone introduced novelty and broadened the texture of daily experience, momentarily transforming boredom into curiosity. Smartphone use thus oscillated between avoidance and engagement, reflecting participants' attempts to reclaim agency within daily routines.

In sum, participants' narratives revealed that smartphone use was intertwined with both self-reward and escape, serving as a way to rest, to ease unease, and to seek new stimulation that momentarily expanded the dimensions of daily life.

1.3 Between comfort and restlessness: The emotional ambivalence of smartphone use

The ubiquity of smartphones reshaped social routines, some participants described compulsively checking messages, fearing they might miss something important, yet simultaneously feeling frustrated while waiting for responses.

Waiting for replies—I keep checking to see when they'll respond…… I keep looking, and if there's no reply, I get annoyed. (C10-1-039)

Participants felt a constant desire to stay updated, ensuring they were aware of what was happening around them. This led to continuous smartphone use, though they later realized that knowing these pieces of information did not significantly benefit their daily lives. Still, they worried about missing out, and using the smartphone became a kind of reassuring ritual.

If I like someone's work but can't meet them—maybe I saw an exhibition but the artist wasn't there—messaging creates a new opportunity to connect with someone I'm genuinely interested in. (C09-1-021)

On the other hand, C09 expressed that browsing social media allowed them to connect with like-minded friends, as if the smartphone had opened up a new world full of possibilities. It provided easy access to experiences and interactions that would otherwise be unreachable in everyday life—low-cost, low-risk, and unburdened by the fear of rejection. This sense of possibility, they said, was what made it so appealing.

This theme shows the ambivalence of smartphone connection. Participants kept checking messages and updates, seeking reassurance but often feeling frustrated. Yet, smartphones also opened new possibilities for connection and self-expression, offering low-risk ways to reach others. Smartphone use thus reflected both dependence and empowerment in everyday life.

2. The path to smartphone addiction

2.1 A dependence without a clear onset

After Interview 1, participants spent a month compiling My Smartphone Story Journal, a process that prompted deep self-reflection. Many reported feelings of regret or mild self-mockery for "wasting time," while others were surprised by how seamlessly their use had turned habitual. Some struggled to locate defining moments of "becoming addicted".

I mostly thought about what impact it has on me, and what exactly makes me want to keep scrolling. (C03-2-001).

I don't even know why, I just keep wasting time like this, and it's getting more and more. Looking back, I really can't tell when it all started. (C15-2-026)

When participants recalled these stories, they realized that most took place during periods of already heavy smartphone use. As a result, it was difficult for them to identify key moments that explained why they had become addicted. In other words, participants could not pinpoint any specific cause; rather, their smartphone use had gradually intensified in an almost natural, unconscious way. C06 noted that, at first, smartphone use did not seem to have much of a negative impact on daily life. They thought it was just spending a little time and would not interfere with work or other responsibilities. Yet it was precisely this seemingly insignificant

impact that allowed smartphone use to gradually extend, bit by bit, into a persistent habit.

Basically, participants realized that their smartphone dependence did not begin with a clear turning point but accumulated gradually through unnoticed, habitual use in daily life.

2.2 Always there as steady companionship

Participants gradually became aware that the smartphone had come to occupy a dominant part of their daily lives, almost becoming a survival necessity. Moments without the device were rare and unsettling. They described the smartphone as more reliable than the people around them, always present and never interrupting. Yet it was also likened to a black hole or a leech, clinging to them, consuming time, delaying sleep, and generating guilt.

The smartphone has to be with me at all times; if it isn't, I feel insecure. It is a quiet and gentle companion that I can turn to whenever I need it. And because of that, it keeps me attached and unable to pull away.
(C18-2-19)

As participants revisited past events, they became aware of the ambivalence in their relationship with the smartphone, feeling deeply dependent on its presence while simultaneously experiencing guilt. Some recalled that their addictive patterns might have begun during periods of "revenge use," when a small sense of relief or satisfaction led to increasingly excessive engagement. The initial trigger often involved using the smartphone to cope with loneliness or distress, especially when they did not want to talk to others or could not find someone suitable to confide in. The smartphone offered music, videos, and entertaining stories, providing participants with companionship in whatever form they needed.

It can give me what I want, offering constant and deeply supportive companionship. Gradually, I began turning to my smartphone for solutions to anything, big or small. (C04-2-37)

Taken together, these accounts show how the smartphone shifted from a convenient tool to an emotionally charged companion that offered security, comfort, and relief. Participants increasingly depended on its constant availability and nonjudgmental presence, even as they recognized the guilt, lost time, and disrupted sleep it caused. Over time, the smartphone became both a source of reassurance and a source of entanglement, gradually shaping daily habits into automatic reliance.

2.3 Living within an unavoidable cycle

When daily life became overwhelmingly stressful, participants reported turning to their smartphones more frequently, creating a cycle in which heightened tension alternated with brief moments of relief. This pattern offered temporary coping for day-to-day pressures but also reinforced their reliance on the device. C05 described this dynamic vividly, explaining that the smartphone felt like a battle companion, supporting them through intense academic and life demands. Even when frustration eventually developed between the two, they still remained inseparable.

The later it gets, the more anxious I feel, but I still use my smartphone while my mind keeps racing. I watch videos and then start thinking that I need to improve. It turns into a vicious cycle. (C07-2-029)

Participants used their smartphones to relieve daily stress, gaining immediate pleasure that led to continued, unconscious use. Later, they realized they had wasted time and felt guilty, and this guilt triggered anxiety, which pushed them to use the smartphone again. The pattern became a cycle of pleasure, unconscious use, guilt, and anxiety. C02's account described the smartphone as a piece of poisonous candy—something they would pursue at any cost just to obtain that brief moment of pleasure.

It's not necessarily bad, but I need to learn effective use—be precise, finish what I need, and stop. Time allocation, frequency, and needless anxiety could be avoided—though I haven't found the method yet. (C20-2-045)

Even with the awareness that their patterns were problematic, participants described an almost inseparable attachment to the smartphone, in which pleasure led to unconscious use, followed by guilt and anxiety that pulled them back again, forming a reinforcing cycle they felt unable to break.

3. Human–smartphone relationships in the future

In the final month, participants completed the Addiction-Imagination Picture Book and revisited their evolving relationships with the smartphone—imagining healthier ways of integrating it into daily life. The process allowed participants to externalize their struggles, visualize change, and narratively reconstruct their desired future relationships with technology.

3.1 Concerns about an inseparable bond

Several participants reflected that immersion in the samrtphone compensated for unmet needs, unfulfilled aspirations, or real-life disappointments.

If life is full of failures, you can gain a sense of achievement in smartphone games, and you get stuck and don't come out. That is my story. (C19-3-003)

Participants envisioned a future relationship in which the smartphone would remain constantly by their side, helping them solve problems and serving as a reliable assistant in daily life. Yet they also acknowledged a potential risk: this relationship might drift toward loss of control, becoming inseparable and overly dependent. Some even wondered whether, if one day people no longer had smartphones, they would feel utterly alone in the world.

I created a picture book titled When the Smartphone Knocks. The smartphone is constantly tempting us to enter a close, inseparable relationship with it. (C02-3-05)

Participants felt that the issue was not entirely their own; as smartphones become increasingly convenient, their features also draw users deeper into their world. Alerts, notifications, and other prompts constantly invite engagement, creating a mutually reinforcing relationship of attraction.

My owner really likes me. She sticks with me every day—whether waiting for the bus, eating, or even sleeping. (C01-P)

3.2 Hoping to become a human-centered and rational relationship

Participants envisioned more autonomous and balanced relationships with their smartphones—goal-directed and supportive of daily living, yet consciously regulated. They hoped to move from impulsive attachment to deliberate choice.

I want to be able to choose whether to use it—even when I see it.(C09-3-028)

This aspiration captured an emergent theme of agency within adhesion: even while acknowledging their ongoing attachment, participants expressed the desire to act intentionally rather than reactively. The smartphone remained present but no longer dictated behavior; control was gradually redefined as mindful engagement.

There are millions of worlds inside our smartphones. We can't help but lose control, trapped within this invisible cage. Our moods rise and fall with the battery's charge, and, little by little, we grow distant from the real people who are truly with us. (C20-P)

Overall, participants expressed a wish to shift from automatic attachment to more intentional use. They recognized the smartphone's strong pull but also believed they could choose how to engage with it. The many worlds inside the smartphone often drew them in and pulled them away from real people, yet this awareness led to a hopeful outlook. They believed that in the future, people should regain control and become the ones directing their smartphone use.

3.3 Refocusing on self-care and meaning in life

Most participants recognized that meaningful change required a turning point—an awareness of how over-involvement with the phone reflected unmet emotional or existential needs. They began to redirect attention toward tangible, real-world commitments and self-care.

I still feel lonely at times. I can't fully digest loneliness yet, but spending time alone helps—especially as I focus on self-growth and work. I rely less on my phone now—less time, less use. (C23-3-030)

Even though it's hard to part with the smart phone. Participants realized that when life regained depth—through self-development, relationships, or purposeful activity—smartphone use naturally declined. Rather than enforcing restriction, they cultivated

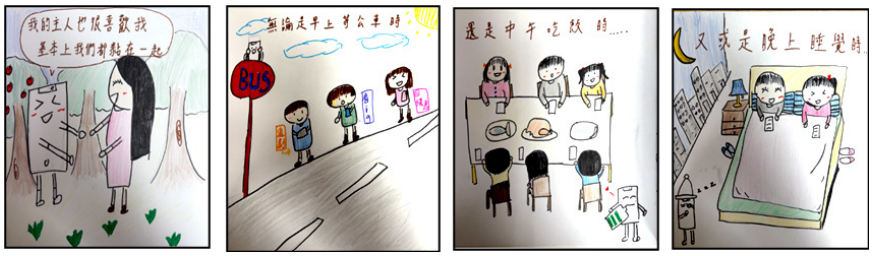

Figure 2: C01-P.

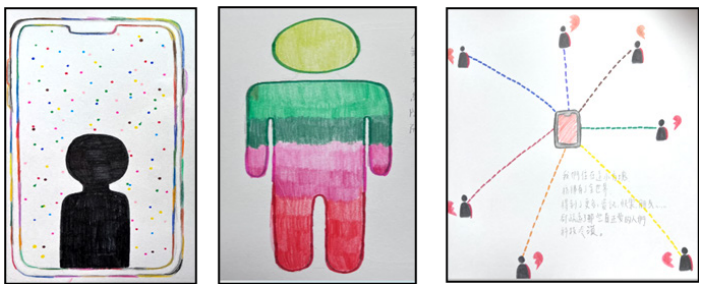

Figure 3: C20-P.

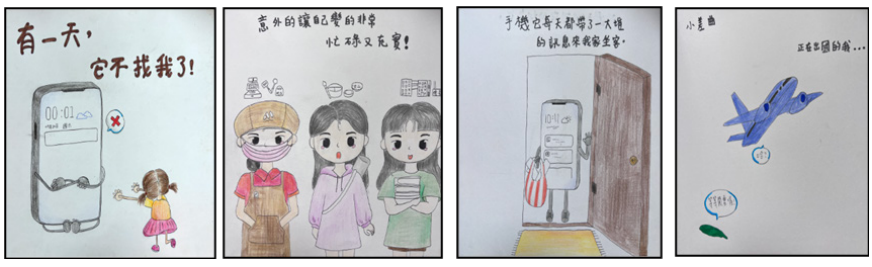

Figure 4: C18-P.

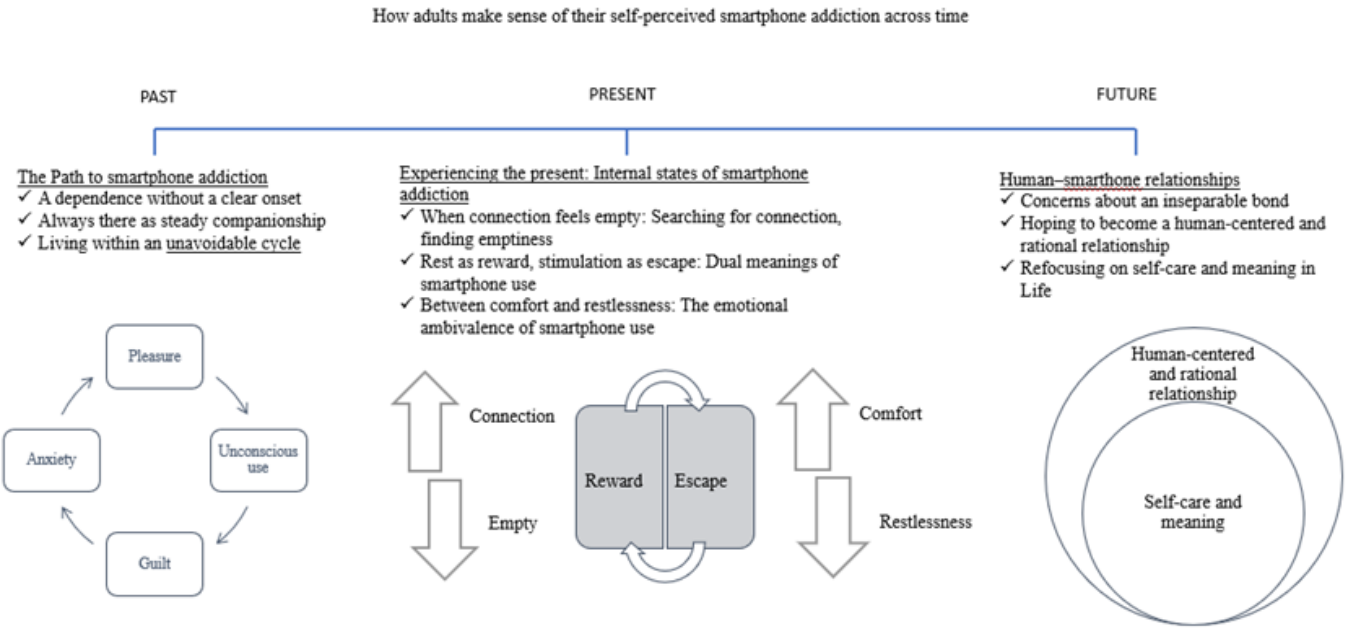

Figure 5: The process of smartphone addiction.

intentional balance between connection and solitude.

One day, my smartphone couldn't find me. My life suddenly felt full and exciting. But then, one day, my samrtphone rang my doorbell again— and I was back to endless messages. Even when I went abroad, it reminded me I had meetings to attend. It's a relationship that's nearly impossible to break away from (C18-P).

It is a difficult challenge to stop being controlled by the smartphone and return the focus to oneself, yet participants still held hope that one day they could shift their attention back to their own lives.

Conclusions

The study reveals that self-perceived smartphone addiction unfolds as a gradual and evolving process across time. In the past, dependence developed without a clear onset, forming an unavoidable cycle of pleasure, unconscious use, guilt, and anxiety. In the present, participants described ambivalent experiences—seeking connection yet feeling emptiness, using the smartphone for both reward and escape. Looking toward the future, they expressed awareness of an inseparable bond but also a desire to rebuild a more human-centered and rational relationship. Collectively, these findings portray smartphone addiction as a lived psychological process shaped by changing awareness and reflection over time. The overall process of smartphone addiction was illustrated in Figure 2.

Discussion

Unnoticed beginnings and unavoidable cycles in smartphone addiction

The findings of this study both confirm and extend existing understandings of how smartphone addiction begins. Consistent with previous research, the early stage of dependence is often associated with positive experiences rather than explicit distress. Similar to Kuss and Griffiths [25] and Billieux et al. [26], participants initially described their smartphone use as enjoyable and purposeful. It served as a convenient tool for communication, curiosity, and relaxation, providing emotional gratification and a sense of social connection. These results echo earlier findings that the onset of problematic smartphone use frequently emerges from behaviors that are adaptive and meaningful at first, reflecting how technology fulfills basic psychological needs for stimulation, belonging, and control.

However, the current study reveals a more gradual and ambiguous process than previously reported. Unlike prior quantitative models that emphasize personality traits or emotional deficits such as anxiety and loneliness [5,27], participants rarely identified a clear cause or turning point. Instead, dependence emerged silently through daily repetition and normalization. The smartphone gradually became a steady companion, embedded in moments of rest, boredom, and transition. What began as ordinary use slowly transformed into habitual reliance, until the boundary between deliberate engagement and automatic use became indistinct. This finding highlights that addiction may not always arise from an emotional void but from the quiet accumulation of rewarding routines that erode self-awareness over time.

At the behavioral level, the loss of control described by participants is consistent with the definition of smartphone addiction [8]. Yet, unlike the abrupt loss of control portrayed in much of the literature, this study shows a progressive erosion of intentionality shaped by emotional ambivalence. Participants depicted a recurring cycle of pleasure, unconscious use, guilt, and anxiety, suggesting that dependence develops through alternating moments of satisfaction and discomfort. This cyclical experience provides a more dynamic understanding of behavioral dysregulation, in which individuals oscillate between enjoyment and self-reproach rather than moving from control to compulsion in a linear way.

Another meaningful insight lies in the relational aspect of early dependence. While previous research has often focused on individual psychological factors, participants in this study described their smartphones as quiet companions that replaced silence and solitude. This finding resonates with Wang et al. [6], who identified loneliness as a key factor predicting smartphone anthropomorphism, yet it extends that argument by revealing that the sense of companionship can develop even before loneliness becomes pronounced. The smartphone did not simply fill an emotional absence but gradually displaced moments of stillness, functioning as a relational substitute that sustained a sense of presence.

Positive functions and ambivalent coexistence

The findings of this study support previous research highlighting the dual nature of smartphone use. Similar to Kuss and Griffiths [25] and Billieux et al. [26], participants initially experienced smartphone use as meaningful and rewarding. It provided comfort, connection, and convenience, fulfilling needs for communication, relaxation, and emotional support. These positive functions echo earlier findings that technology can enhance daily life and psychological well-being.

At the same time, the results reveal that these positive experiences coexist with dependence rather than merely preceding it. Participants described alternating states of connection and emptiness, reward and escape, showing that the smartphone served both adaptive and maladaptive roles. This ambivalence aligns with recent studies suggesting that problematic smartphone use exists along a continuum of engagement [28]. Yet, in this study, ambivalence was not simply a sign of conflict but reflected growing awareness of the tension between control and comfort.

The present study differs from prior literature by adopting a de-pathologizing perspective. Instead of portraying addiction solely as loss of control or dysfunction [8], participants viewed their relationship with the smartphone as something to be rebalanced rather than rejected. Their reflections on wanting to "use the phone more intentionally" represent an attempt to build a more human-centered and rational connection while recognizing the difficulty of separation. This suggests that dependence can also reflect a process of awareness and negotiation in adapting to technology's presence in everyday life.

Smartphone use in this study carried both positive and constraining meanings. The coexistence of comfort and unease illustrates how dependence develops within ordinary experiences and how awareness may lead to a more reflective and balanced relationship with technology. The coexistence of attraction and resistance highlights how individuals live within a constant tension between dependence and autonomy.

Recommendations

Integrate reflective smartphone literacy programs into counseling and education

Based on the participants' accounts of unconscious dependence, intervention programs should emphasize reflective awareness rather than prohibition. Counseling centers and educational institutions can design workshops where individuals map their smartphone routines, identify emotional triggers, and reframe their digital habits using self-monitoring tools and journaling. These programs should highlight both the adaptive and maladaptive aspects of smartphone use, helping users internalize strategies for balanced engagement.

Encourage human–technology coexistence models in digital well-being design

The finding that individuals desired coexistence rather than abstinence suggests a need for technology design that supports autonomy. Collaboration between psychologists, educators, and app developers could promote features such as mindful use reminders, intentional pauses, and contextual feedback systems that allow users to regain agency without rejecting technology altogether.

Expand longitudinal narrative studies to capture temporal change

Because participants' reflections indicated gradual shifts in awareness, future studies could adopt longitudinal narrative designs to trace how self-perceived dependence and intentionality evolve over time. Such research would clarify how momentary awareness translates into sustained behavioral change.

Investigate contextual and situational moderators of dependence

Future research should explore how situational factors such as academic stress, occupational demands, and social transitions shape the onset and intensity of smartphone dependence. Comparative case studies or experience-sampling methods could examine how environmental pressures interact with emotional needs to sustain or mitigate problematic use.

Clinical Trial Registry or Grant Details

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