

The Effects of Mobile Smart phone checking behavior on Distraction and Performance

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Abstract

While smartphones are tools that facilitate individuals' daily life practices, their intensive and unregulated use can adversely impact attention processes and performance. In particular, constant exposure to notifications in work and learning contexts leads to cognitive dissonance and disruption of task continuity. This study aims to examine the effects of mobile phone usage patterns on individuals' attention processes and perceived performance. Quantitative data were collected from 285 participants and tested using correlation, multiple regression, and path analyses. The findings reveal that daily screen time, social media intensity, and notification urgency strongly predict smartphone checking behavior; this behavior predicts "distraction"; and ultimately, distraction predicts "performance decline." 81.7% of participants stated that they needed a digital intervention tool to regulate their mobile use. The results point to a critical need for digital health solutions that support cognitive resource management and increase self-regulation.

Keywords: *problematic smartsmart phone checking behavior, attentional fragmentation, performance decline, digital regulation, notification urgency, path analysis.*

Introduction

The rapid spread of mobile technologies, which provide significant conveniences in communication and access to information, has made smartphones a central component of daily life. However, excessive and uncontrolled use has led to what is defined in the literature as "problematic smartphone use". The effects of smartsmart phone checking behavior on individual and organizational performance show a multifaceted structure in the contexts of productivity, job security, academic achievement, and psychological adjustment. Recent studies have shown that this problem is not merely a matter of psychological preference, but directly affects neurocognitive processes (Li et al., 2025; Böttger et al., 2023; Liu et al., 2022; Tanil & Yong, 2019), revealing that phone-related interruptions reduce attention resources in brain activity, and this effect persists even after task completion, creating an additional burden on the cognitive system (Suhail et al., 2025; Christodoulou & Poos 2025; Ji & Zhou, 2024; Böttger et al., 2023; Al-khlaiwi et al., 2020; Ward et al., 2017; Rosen et al., 2014). Attention resource management, a critical component of cognitive performance, can be impaired by constant notifications and environmental distractions. The literature has found strong correlations between phone addiction and procrastination in academic tasks and lack of self-control (Sarumaha, 2024; Liu, 2023). There is increasing evidence that even the physical presence of a phone, when not actively used, creates a cognitive load, and that the mental fatigue observed in individuals during active smartsmart phone checking behavior leads to impairment in cognitive functions such as attention and reaction control (Junco & Cotten, 2011). It has been reported that users' task-oriented thinking capacity is significantly reduced, especially in situations with high social media interaction (Tanil & Yong, 2019; Schwaiger & Tahir, 2022; Rosen et al., 2013). The unexpected nature of constantly incoming notifications also leads to interruptions in cognitive control processes, preventing the efficient use of cognitive resources (Stothart, Mitchum & Yehnert, 2015). This mechanism plays a significant role in the relationship between behavioral orientation and cognitive impairment. Systematic reviews conducted on university

students have found consistent negative correlations between uncontrolled smartphone checking behavior and academic achievement (Sarumaha (2024)).

From a business perspective, the situation takes on even more critical dimensions. Studies show that smartphone addiction increases cognitive errors, jeopardizing traffic and workplace safety (Talaie et al., 2025; Lenjani et al. 2024; Fayyaz et al. 2015). Particularly in high-risk sectors such as construction, healthcare, and logistics, phone-induced distractions pave the way for serious accidents. Employees who frequently check their smartphones struggle to concentrate on current tasks due to addiction-based interruptions and strain. The mere presence of a phone can diminish cognitive performance, forcing employees to constantly shift their attention between their primary responsibilities and mobile distractions.

Frequent phone checks and responses to notifications—defined as behavioral orientation cause persistent interruptions in attention. These interruptions divert cognitive resources from task-oriented processes, increasing cognitive load and subsequently decreasing performance. Consequently, behavioral orientation serves as a critical mediator between digital exposure and cognitive impairment.

Research indicates that even the mere physical presence of a smartphone can diminish attentional focus, as these devices tax the limited capacity of working memory (Ward et al., 2017). Furthermore, the mental fatigue associated with active smartphone-checking impairs essential cognitive functions, such as reaction control (Junco & Cotten, 2011; Böttger et al., 2023). Constant notifications not only disrupt behavioral attention but also compromise cognitive control processes, further hindering task efficiency (Stothart et al., 2015; Ji & Zhou, 2024). Therefore, digital exposure should be viewed beyond simple screen time or content consumption; it is a complex phenomenon reflected in behavioral orientation and cognitive inference. The tendency to frequently check devices leads to reduced information processing speed and an inability to use cognitive resources efficiently. Despite these findings, a gap remains in the literature regarding the specific cascading mechanism between behavioral orientation and cognitive impairment.

This study aims to address this gap by evaluating a holistic model: Uncontrolled Screen Time → Smartphone Checking → Attentional Switch Costs → Performance Decline. Based on our findings, we propose evidence-based design requirements for a mobile intervention application ("workplace app") intended to mitigate these negative effects.

Despite this, existing studies generally limit themselves to examining the cognitive effects of digital exposure through individual factors or do not comprehensively address the cascading effect mechanism between behavioral and cognitive processes. In particular, multivariate models that examine the relative and cascading effects of digital exposure on performance output through behavioral orientation and cognitive impairment are still limited. This study aims to evaluate the effects of impairment in cognitive processes that digital exposure can create through behavioral orientation on performance within a holistic framework. Thus, it aims to contribute to both theoretical knowledge and applied attention and performance research by revealing the dynamic effects of digital media on modern cognition and behavior. This study aims to fill this gap in the literature. It examines the necessity of a mobile intervention system to prevent smartphone-induced attention problems and performance decline. The research has the potential to transform theoretical knowledge into an applicable digital health solution. Based on the findings, it aims to develop evidence-based design proposals for a mobile application (workplace app) suitable for the workplace context.

The main limitation of this study is that all data were collected through self-report. Future research should validate these relationships with objective methods that combine objective data (screen time tracking, eye tracking, task completion times) in addition to self-report. The vast majority of the sample (87%) consists of young people aged 14-24. This is important in terms of revealing the effects of the research on Generation Z, who are called "digital natives".

Research Question

How does the intensity of screen time and notification-based stimulation affect individuals' performance through smart phone checking behavior and attentional switch costs?

Core Hypotheses:

- H1. Daily screen time positively and significantly affects smart phone checking behavior.
- H2. Level of social media use positively affects smart phone checking behavior.
- H3. Notification urge positively affects smart phone checking behavior.
- H4. Smart phone checking behavior increases attentional switch costs.
- H5. Social media use increases attentional switch costs.
- H6. Notification urge increases attentional switch costs.
- H7. Smart phone checking behavior positively affects attentional switch costs.
- H8. Smart phone checking behavior directly and positively affects performance decline.
- H9. Attentional switch costs strongly and positively affects performance decline.

Research Design and Sample

The correlational survey model, a quantitative research method, was adopted in the study. The sample consisted of a total of 285 participants, 87% of whom were young people aged 14-24, defined as "digital natives". 47.6% of the participants were high school students, 37.3% were university students; employees and other groups made up the remaining part of the sample. 56% of the participants were female, and 44% were male. 68.7% of the participants used their phones for more than 4 hours a day, and although 69.2% wanted to reduce their usage, 69.7% did not use any management tool.

Data Collection Tools

Data was collected via Google Forms during the period of October-December 2025. The scale used consists of four sub-dimensions: Daily Screen Time ($\alpha = 0.89$), Smart phone checking behavior ($\alpha = 0.83$), Attentional Switch Costs ($\alpha = 0.78$), and Performance Decline ($\alpha = 0.81$). Confirmatory Factor Analysis (CFA) revealed that the fit indices (RMSEA=0.065, CFI=0.91) were within acceptable limits. Pearson correlation and path analysis techniques were used to test the relationships between variables and hypotheses in the analysis of the data.

The results of the Confirmatory Factor Analysis show that the items in the scale loaded according to the factor structure and that the model has structural validity. The fit indices were found to be $\chi^2/df = 2.95$, RMSEA = 0.065, CFI = 0.91, TLI = 0.90, and SRMR = 0.067, all of which are within acceptable limits.

Findings

A significant majority of participants (72.4%) reported using their phones while working or studying. This digital distraction is closely linked to cognitive challenges, with 62.2% of respondents experiencing concentration difficulties due to screen time and 67% admitting to phone-induced procrastination.

Notably, 81.7% of participants (n=233) expressed a need—ranging from "sometimes" to "definitely"—for a digital application to regulate their mobile usage. These findings underscore a proactive demand for solutions, confirming that individuals are actively seeking ways to mitigate perceived attention deficits and performance declines.

Table 1. Pearson Correlation

Variables	Daily Screen Time	Social Media Use	Notification Urgency	Smartphone Checking Behavior	Attentional Switch Costs	Performance Decline
Daily Screen Time	-	.48*	.35*	.51*	.46*	.33*
Social Media Use	.48*	-	.42*	.57*	.44*	.29*
Notification Urgency	.35*	.42*	-	.49*	.51*	.38*
Smartphone Checking Behavior	.51*	.57*	.49*	-	.62*	.41*
Attentional Switch Costs	.46*	.44*	.51*	.62*	-	.58*
Performance Decline	.33*	.29*	.38*	.41*	.58*	-

* $p < .05$

Table 1 shows that there are positive and statistically significant ($p < .05$) relationships among all the variables considered. The correlation coefficients generally indicate a moderate to high level of relationship. The highest correlation in the table was found between Smart phone checking behavior and Attentional Switch Costs ($r = .62$). This finding shows that as the frequency of individuals phone checking behavior increases, the rate of attentional switch costs also increases significantly. The variable with the strongest relationship with performance decline is attentional switch cost ($r=.58$). In other words, the division in cognitive processes is seen as the most fundamental factor related to performance loss. There is also a strong relationship between social media use and smart phone checking behavior ($r = .57$). In addition, increased daily screen time is directly proportional to smart phone checking behavior ($r = .51$), social media use ($r = .48$), and attentional switch costs ($r = .46$). The impulse generated by notifications was most strongly associated with attentional switch costs ($r = .51$) and phone reach ($r = .49$). All variables showed significant positive correlations.

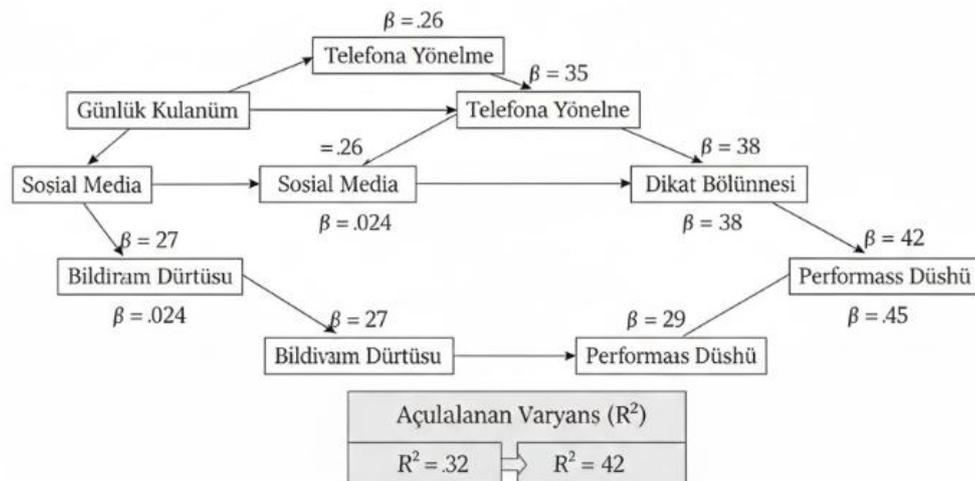
Table 2. Results of Path Analysis

Hypothesis	Path	β	R ²	SE	T	p
H1	Daily Screen Time → Smart Phone Checking Behavior	.26	.26	.05	5.20	.000
H2	Social Media Use → Smart Phone Checking Behavior	.35	.32	.04	8.75	.001
H3	Notification Urgency → Smart Phone Checking Behavior	.28	.30	.03	9.33	.000
H4	Daily Screen Time → Attentional Switch Costs	.24	.20	.06	4.00	.001
H5	Social Media Use → Attentional Switch Costs	.27	.24	.05	5.40	.001
H6	Notification Urgency → Attentional Switch Costs	.31	.28	.04	7.75	.001
H7	Smart Phone Checking Behavior → Attentional Switch Costs	.38	.38	.04	9.50	.001
H8	Smart Phone Checking Behavior → Performance Decline	.29	.35	.03	9.67	.000
H9	Attentional Switch Costs → Performance Decline	.45	.42	.04	11.25	.001

According to the results of the path analysis conducted to test the hypotheses established in the research model, all proposed hypotheses (H1-H9) are statistically significantly supported ($p < .05$). Daily screen time ($\beta = .26$, $t=5.20$), social media use ($\beta=.35$, $t=8.75$), and notification urge ($\beta = .28$, $t=9.33$) have positive and significant direct effects on smart phone checking behavior. Among these variables, social media use appears to be the strongest predictor of smart phone checking behavior.

The strongest factor affecting the attentional switch costs variable is smart phone checking behavior ($\beta= .38$, $t = 9.50$). This is followed by notification urge ($\beta = .31$) and social media use ($\beta = .27$), respectively. The effect of daily screen time on attentional switch costs is more limited but significant ($\beta=.024$, $t = 4.00$). The study found that both attentional switch costs ($\beta= .45$, $t= 1.25$) and smart phone checking behavior ($\beta= .29$, $t = 9.67$) had a significant positive effect on performance decline. In particular, attentional switch costs stood out as the strongest predictor of performance decline. Examining the explanatory power of the model, it was observed that 42% of the variance in performance decline ($R^2 = .42$) and 38% of the variance in attentional switch costs ($R^2 = .38$) were explained by the independent variables in the model. All direct path coefficients were positive and statistically significant ($p<.05$). These findings indicate that digital exposure (daily use, social media, notification urges) increases smart phone checking behavior and attentional switch costs, and that there are significant relationships between smart phone checking behavior, attentional switch costs, and performance decline.

Figure 1. Path Model Regarding the Relationships Between Smart Phone Use and Performance.



As daily screen time increases, smart phone checking behavior increases significantly (H1 supported).
As the level of social media use increases, smart phone checking behavior increases significantly (H2 supported).

As the urge to receive notifications increases, smart phone checking behavior increases (H3 supported).
As daily screen time increases, attentional switch costs increases (H4 supported).

Social media use increases attentional switch costs (H5 supported).

Notification urges positively affect attentional switch costs (H6 supported).

As smart phone checking behavior increases, attentional switch costs significantly increases (H7 supported).

Smart phone checking behavior positively affects performance decline (H8 supported).

Attentional switch costs strongly positively affects performance decline (H9 supported).

Discussion

The findings of the study clearly reveal the negative effects of digital technology usage habits on individual performance. The most significant result highlighted in the model is the dominant effect of attention splitting on performance decline ($\beta=.45$). This supports studies on "multitasking" in the literature; because when an individual's attention is constantly split, cognitive resources cannot be used efficiently, and this is directly reflected in their performance graph.

The negative impact of attentional splitting on performance ($\beta= .45$) found in your study aligns with the "Limited Capacity Model" in the literature. When cognitive resources are simultaneously occupied by multiple stimuli (phone notifications, social media), the processing capacity allocated to the primary task decreases. The effect of notification impulses on phone calls ($\beta= .28$) parallels studies on "Fear of Missing Out" (FoMO). This impulse leads the individual into a state of constant vigilance (hyper-vigilance), shortening the attention span. The strong influence of social media use on phone calls ($\beta= .35$) is a result of the variable-rate reinforcement mechanism (instant likes, new news) offered by digital platforms.

In conclusion, it has been proven that not only the amount of time spent with technology, but also the way that technology is used (responding to notifications, controlling social media) disrupts attention mechanisms. For individuals who want to maintain their performance, it is critical that they not only reduce screen time but also develop notification management and focus strategies.

The most striking finding of the study is that 81.7% of participants stated that they need a digital application to regulate their mobile usage. Currently, while 69.2% of users want to reduce their usage, the fact that 69.7% do not use any regulatory tool reveals the inadequacy of existing solutions on the market or the need for an accessible "smart intervention" system.

Technology-based, evidence-driven intervention systems offer significant opportunities in terms of both social impact and commercial potential. The research findings highlight the need for supportive, measurable, and scalable solutions instead of prohibitive approaches. Such systems are particularly critical for occupational safety in high-risk sectors, productivity in knowledge-labor-intensive industries, and academic success in educational institutions.

The findings of this study show that mobile applications developed for the work environment will not be sufficient to focus solely on screen time limitation. The findings point to three fundamental design principles: Considering the indirect effect of the notification control impulse, applications should classify notifications contextually and only allow critical notifications during working hours. Due to the strong predictive role of phone-reaching behavior, the application should detect short but frequent phone-checking behaviors and provide micro-feedback after these behaviors. Since attention splitting is the strongest variable affecting performance, mini-exercises and "Return to Focus" modules that support cognitive recovery time after focusing should be designed. This approach moves the application from a "time tracker" to a "cognitive companion".

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