

Smartphone addiction and cultural dimensions

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Abstract

Smartphone addiction is causing severe damage to individuals and societies alike. Previous studies have mainly focused on the effects of smartphone addiction, but they hardly focused on the cultural aspects leading to addiction. This study attempts to fill this void by shedding light on how Hofstede's four cultural dimensions, including 1) individualism-collectivism, 2) masculinity-femininity, 3) power distance, and 4) uncertainty avoidance, affect individuals' smartphone addictive behavior through the lens of attachment and coping theories. We offer suggestions for future research and practical implications based on these findings.

Keywords: smartphone addiction, Hofstede's cultural dimensions, attachment theory, coping theory.

1. Introduction

Addiction is a chronic condition that involves strong motivation for repeatedly participating in a rewarding behavior that typically causes unintended harm to the addicted person and the people surrounding them (West & Brown, 2013). There are two main types of addictions – substance (drug addiction) and non-substance/behavioral (gambling, gaming disorder, eating disorder, smartphone addiction) addictions (Zou et al., 2017). Recently, behavioral addiction has been introduced as a psychiatric disorder (Petry et al., 2014).

Excessive technology use is considered a behavioral addiction that may negatively affect a person's life and may even require treatment (Young,

2007). Technology addiction may impede an individual's education, work, and social life, resulting in the disturbance of one's emotional balance and potentially negatively affecting close interpersonal relationships (Samaha & Hawi, 2016). Recent studies have confirmed that addiction to technology, including smartphones, is a concern for the present and future generations (Choi et al., 2015; Haug et al., 2015; Samaha & Hawi, 2016).

Smartphones have been recognized as revolutionary in the technology industry due to their growing multi-functional features. Along with replacing cellphones, smartphones have replaced a plethora of other daily used devices, including clocks, computers, TVs, radios, and calculators. According to Pew (2021) research, around 85 percent of adults in the United States use smartphones. People socialize with others using various mobile applications, which often leads to addiction (Chen, 2020).

Smartphone usage has changed individuals' daily routines, habits, relationships with family, moral values, and social engagement. As a result, this causes stress, sleep disturbance, technostress, anxiety issues, lower performance, and overall dissatisfaction in life (Samaha & Hawi, 2016). In recent years, researchers have shown a growing concern regarding the excessive use of smartphones, unlike previous researchers who have mostly supported its advantages (Kim et al., 2014; Masiu & Chukwuere, 2018). Now researchers are focusing more on the dark side of excessive smartphone usage and how it impacts individuals' personal and social lives (Duke & Montag, 2017b; Moqbel, 2020; Samaha & Hawi, 2016).

Previous research has looked into various factors and situations that lead to smartphone addiction, such as personal traits (Volungis et al., 2020) and excessive use by certain age groups (Csibi et al., 2021), as well as its impact on individuals and society, such as loneliness and depression (Enez Darcin et al., 2016), and mindfulness (Moqbel, 2020). However, the cultural dimensions' impact on smartphone addiction has not been studied, particularly in understanding the motivation behind individuals becoming addicted to smartphones. We propose that cultural dimensions navigate an individual's smartphone adoption and eventual addiction. This study helps understand why individuals with specific cultural dimensions are more prone to smartphone addiction.

For this study, we will collect data from a medical center situated in the Midwest of the USA. We will measure individual-level cultural dimensions following the espoused cultural values study of Srite and Karahanna (2006).

2. Theory and Hypothesis Development

2.1. Attachment Theory

Attachment theory (Bowlby, 1973, 1980, 1982) has become an important framework for researching interpersonal relationships, including how these relationships develop and impact individuals' lives. The notion of attachment is a common need to form close and affectionate relations. Attachment is a mechanism used for regulating distress throughout life (Berry et al., 2008). The theory suggests that earlier personal events impact future attachment behaviors.

Attachment styles have been classified into three distinct categories: 1) anxious, 2) avoidant, and 3) secure. Both anxious and avoidant attachment styles negatively affect the user, as they encourage a denial of attachment. Secure is neutral, demonstrating that the user is satisfied with their attachment state (Seol, 2016). Our study focuses on insecure (opposite of secure) and anxious attachment styles because prior research has found that individuals with insecure and anxious attachments seek social support when they face attachment issues (Frías et al., 2014). Individuals with secure attachments are more likely to have developed skills to deal with stress effectively, but insecure individuals rely on emotion-focused strategies (Mikulincer & Florian, 1995; Mikulincer et al., 1993). Individuals with anxiety attachment styles are more likely to seek social support (e.g., through smartphones), whereas individuals with avoidance attachment interpret social support negatively (Frías et al., 2014). In the next section, attachment theory will be discussed within the cultural dimensions of

collectivistic/individualistic and masculinity/femininity cultures.

2.2. Collectivistic/Individualistic Cultural Dimension and Smartphone Addiction

There is evidence that collectivistic and individualistic cultures vary in attachment styles. For example, Schmitt et al. (2004) found that North America and Western Europe are more attachment avoidant than East Asia because of their individualistic orientation. According to Markus and Kitayama (1991), a collectivistic culture may prefer seeking social support and sharing stressful events because they view themselves as profoundly connected to others. The Mexican culture, which is collectivistic, scored higher on coping due to reassessing and exhibiting positive reactions while receiving social support (Frías et al., 2014). However, according to Jiang et al. (2018), individuals with more collectivistic values faced extreme loneliness and smartphone addiction. Thus, there seems to be a possibility of social support turning into addiction in collectivistic individuals.

Attachment theory relates directly to the excessive use of technology – particularly smartphone addiction. This is because the overarching idea behind this theory is that attachment causes individuals to experience possessiveness with their smartphones (Holte & Ferraro, 2021). Attachment theory explains possessiveness tendencies and how collectivists interact with their smartphones. Collectivistic individuals are more prone to seeking social help or attachment, making them more addicted or possessively attached to their smartphones. This study proposes the following hypothesis:

Hypothesis 1: Collectivistic culture is positively associated with smartphone addiction

2.3. Masculine/Feminine Culture Dimension and Smartphone Addiction

We posit that the masculine cultural dimension is positively linked to smartphone addiction. Masculinity refers to the extent to which cultures and individuals accentuate material accomplishments (Hofstede et al., 2010). According to Wautier and Balter Blume (2004), gender role orientation (i.e., masculinity and femininity) rather than genetic sex is strongly connected to outcome variables such as adult attachment styles, care-based reasoning of morals, and romantic relationship.

Individuals with high masculinity values are obsessed with competition and success; thus, they perceive technology, such as smartphones, as something they constantly need to leverage for competing purposes (Ma & Turel, 2019). Individuals with high masculinity values who also have attachment anxieties may further use smartphones to gain an edge over coworkers and competitors to advance their careers. According to Hofstede (1998), individuals with masculine cultural tendencies focus more on assertiveness, goal achievement, and material success. In contrast, individuals with feminine cultural values concentrate on their quality of life, self-consciousness, and nurturing characteristics. Suppose a new technology has a greater impact on social outcomes. In that case, those with masculine cultural values with attachment issues may use technology more since it supports their necessity for success and accomplishment (Zhang & Maruping, 2008). Thus, people high in masculinity will handle their attachment anxiety by concentrating more on self-empowerment and success that can be leveraged through greater technology usage. It is reasonable to propose that individuals with high masculinity values are more prone to smartphone use and addiction.

***Hypothesis 2:** Masculine culture is positively associated with smartphone addiction.*

2.4. Coping Theory

Coping is seen as a response to stress or a certain unpleasant situation. Any stressful event has implications for wellbeing, which can cause multiple possibilities for coping (Folkman & Lazarus, 1986). Stress is conceptualized as the relationship between a person and the environment that is appraised as harmful. This theory by Folkman et al. (1986) introduces two processes; cognitive appraisal and coping. Cognitive appraisal is "a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her wellbeing, and if so, in what ways" (Folkman et al., 1986). The cognitive appraisal includes primary and secondary appraisal (Lin et al., 2013). In primary appraisal, individuals evaluate whether the encounter is stressful. In secondary appraisal, individuals assess whether they can cope with the situation – and thus, builds a coping response to tackle the stress from that encounter. From the cognitive appraisal theory, individuals tend to determine the stress level they feel in response to an environmental stimulus (Lazarus & Folkman, 1984). Cognitive appraisal theory also considers that some individual characteristics, such as values, influence a wide range of behaviors (Fischer & Smith, 2006; Stone-Romero et al., 2003). This

influence is determined by the significance of an event, shaping the understanding and providing the basis for evaluating the outcomes (Lazarus & Folkman, 1984).

Different authors proposed different hierarchies for the coping process (Haan, 1969; Menninger, 1963; Vaillant, 1995). Menninger (1963) formulated five steps in the hierarchy that are ranked based on internal disorganization (type of emotional or behavioral disorder) a person indicates. At the top of the hierarchy is the strategy for reducing stress; these strategies are called coping devices that include self-control, humor, weeping, working off energy, etc. The second-order device includes withdrawal by disassociation, displacement, the substitution of the symbol, and substitution of the self (self-imposed restriction). The aggressive outburst represents the third-order device. The fourth order is extreme disorganization, and the fifth is total disintegration of the ego. In this study, the first and second-order coping hierarchy will be focused on relating to Hofstede's cultural uncertainty avoidance dimension. Coping styles refer to broad ways of relating to particular types of people, such as powerless or powerful, controlling or permissive, hostile or friendly, or particular types of situations such as ambiguous or clear, temporary or permanent, and evaluative non-evaluative (Lazarus & Folkman, 1991).

2.5. Power distance, Coping, and Smartphone Addiction

Power distance and uncertainty avoidance could be applied to how individuals implement stress relief coping styles. The coping mechanisms for stress rely heavily on societal values, personal characteristics, and cultural exposures (Etzion & Pines, 1986). Thus, due to high-power distance, a sense of powerlessness could arise among employees when they do not have a large role in decision-making or in making appeals. In such situations, they could find their organizations unfair (Greenhalgh & Rosenblatt, 1984).

Employees tend to personally interpret the situation based on their characteristics and societal values, which ultimately influences how the situation is perceived as stressful. This refers to cognitive appraisal. When individuals appraise their environment as stressful, they deal with that situation using a coping mechanism. This process is determined by the degree of significance of an event, shaping the understanding and providing the basis for evaluating the outcomes (Lazarus & Folkman, 1984). Power distance orientation (the extent to which an individual accepts the unequal distribution of power) mostly could influence the primary appraisal (Lazarus &

Folkman, 1984) because power distance orientation is closely linked to an employee's interpretation of a supervisor's relationship and their evaluation of whether this situation is stressful.

Employees with high power distance cultures may become more responsive to their supervisors' calls, messages, and emails during off-hours than those with low power distance cultures (Lee et al., 2018). Since smartphones also offer a variety of social functions, such as sharing multimedia and managing social networks, the convenience of using smartphones may entice people to use them as a primary tool in maintaining their social status, which is considered more important in individuals in high power distance cultures (Winterich & Zhang, 2014). Thus, higher smartphone usage is likely for individuals with high power distance. By interacting with others through smartphones as a coping mechanism, individuals can primarily benefit from reducing social anxiety and stress (Lee et al., 2018). Still, later it can lead them to overuse the device and get addicted to it.

Among other factors, the power distance dimension's impact is high in predicting the overuse of smartphones. Smartphone addiction and stress are directly related (Duke & Montag, 2017a). For instance, people use smartphones extensively to check their emails. This activity can result in high stress and negative emotions (Kushlev & Dunn, 2015). Regarding relationships, individuals in high power distance cultures have high supervisor-subordinate relationships (Hofstede, 2011). In high power distance cultures, increased supervision has high stress-related effects on subordinates (Peltokorpi, 2019). Thus, high power distance culture promotes a type of servant-master relationship, making it difficult for employees to challenge and express potential stressors, which could exacerbate their stress levels (Oruh & Dibia, 2020). As a coping mechanism, individuals in high power distance cultures reportedly show less confidence and a strong sense of caution toward other members of the hierarchy (Hofstede, 1980). They accept the imbalance in power. Without having a self-confident style in coping with stress, people with high power distance may use smartphones to release their pent-up emotions and stress. Thus, those in high power distance cultures have a higher degree of smartphone addiction than others (Alan & Senay Guzel, 2020). Therefore, based on the coping theory, we believe high power distance culture is positively linked to smartphone addiction.

Hypothesis 3: Power distance culture is positively associated with smartphone addiction.

2.6. Uncertainty Avoidance, Coping, and Smartphone Addiction

This study asserts that uncertainty avoidance is negatively associated with smartphone addiction. Uncertainty avoidance refers to the stress level of individuals in the presence of an unknown future (Hofstede, 2011). Research has shown that people in uncertainty avoidance cultures are less tolerant and self-motivated. In contrast, people from uncertainty-accepting countries are more tolerant of new opinions and adopt new things (Hofstede, 2011). Previous studies confirm that people from low uncertainty avoidance cultures tend to adopt technology more than people from high uncertainty avoidance cultures (Belkhamza & Wafa, 2014).

Coping is a process that individuals follow to avoid being harmed by certain situations (Pearlin & Schooler, 1978). Historically, coping has been seen as a response to stress. Within the ego psychology model, coping involves cognitive processes, such as repression, retraction suppression, intellectualization, and problem-solving behaviors that are used to manage and reduce restlessness and other distressing emotional states (Menninger, 1963; Vaillant, 1995). Menninger (1963)'s five hierarchical steps for coping include withdrawal. Higher uncertainty-avoiding individuals tend to use this coping withdrawal mechanism regarding the smartphone. According to prior research, individuals with high uncertainty avoidance cope by choosing not to use smartphones due to uncertainties. Previous studies confirm that they are less interested in online shopping and new technologies (Yoon, 2009). Prior research has also shown that individuals with high uncertainty avoidance do not involve themselves with changes and have trust issues when using new technology (Belkhamza & Wafa, 2014). For this reason, they tend to choose other venues for activities than on their smartphone. Thus, this study expects high uncertainty avoidance values to be negatively associated with smartphone addiction.

Hypothesis 4: Uncertainty avoidance culture is negatively associated with smartphone addiction.

3. Research Methodology

We will collect data via an online survey from employees at a major medical center in the Midwest region of the United States. Extant validated scales for cultural dimensions (i. e., masculinity, power distance, individualism, and uncertainty avoidance) and smartphone addiction will be employed from the literature. The institutional review board will approve

the research procedures of a major university in the Midwest region of the United States. To be eligible to participate, individuals have to be 18 years old or older, own a smartphone, and consent to participate. We will assure subjects that participation in the survey will be voluntary, and data will be saved anonymously to reduce response bias.

Due to space limitations, the scales will not be given. PLS-based structural equation modeling will be used for data analysis.

4. Expected Contributions

Researching the interdependencies between culture and smartphone addiction makes important contributions. This study contributes to advancing research on technology addiction, particularly smartphone addiction. Understanding the link between cultural dimensions and smartphone addiction helps offer practical guidance to managers, individuals, and healthcare practitioners on how to develop intervention strategies. Therefore, this study tries to offer an explanation of the link between culture and smartphone addiction.

Every research has limitations, and this study is no exception. One of the limitations of this study is the use of a cross-sectional method. Future research should use the longitudinal data collection design. Another limitation is the use of samples of employees in only one medical center, which might affect the generalizability of the results. Hence, future research should collect data from multiple locations within the USA and other countries. Additionally, we chose to focus on attachment theory but acknowledge that other dynamics could also be a factor, especially in collectivism-individualism and masculinity-femininity dimensions.

The current research investigates four dimensions of Hofstede's cultural dimensions; 1) collectivism/individualism, 2) masculinity/femininity, 3) power distance, and 4) uncertainty avoidance, but to the best of our knowledge, this is the first study that incorporates these cultural dimensions with attachment and coping theories. These two theoretical lenses help explain how collectivists are more addicted to smartphones than individualists – possibly due to them seeking support from others when experiencing greater anxieties. Since collectivistic users are more social, friendly, and extroverted (Hofstede, 2003), they may choose to connect with others through social media sites using smartphones.

Second, this study contributes to theory by improving our understanding of the masculine cultural dimension in light of their attachment styles. This study proposes that individuals with masculine

cultural tendencies tend to depend on their smartphones, and attachment anxieties can be one of the reasons causing this addiction. Hayslett-McCall and Bernard (2002) theorized that many facing attachment anxieties deal with low self-control, leading them to engage in harmful activities. Third, this study contributes to the theory by attributing the uncertainty avoidance cultural dimension to coping strategies. The findings show different types of hierarchical coping mechanisms used by people dealing with stress (Menninger, 1963). People high in uncertainty avoidance tendencies may use second-level coping mechanism withdrawal, and therefore based on this, they may avoid smartphone usage. Further research should be done to focus on attachment styles and coping strategies to confirm why some of Hofstede's cultural dimensions relate to smartphone addiction.

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