

Smartphones at Work: A Qualitative Exploration of Psychological Antecedents and Impacts of Work-Related Smartphone Dependency

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Abstract

This study explores the impacts and psychological antecedents of smartphone dependency at work. Analyzing semistructured interviews with 32 full-time employees in China, the findings show that dependence on smartphones at work seems to increase workers' perceived job performance and workplace social capital. However, in the negative side, it seems to lead to the emergence of smartphone addiction symptoms such as anxiety and uncontrollable usage behavior. Notably, this study uncovers that, although smartphone dependency at work seems to enhance workers' job performance, once such dependency turned to addiction, they perceived their performance to diminish. Besides, the findings show that conscientious employees and those with high smartphone self-efficacy are more likely to develop dependence on their smartphones at work. Theoretical and practical implications are discussed.

Keywords

smartphone dependency at work, job performance, workplace social capital, smartphone addiction, psychological antecedents

Introduction

The impact of smartphones on the workplace is a hotly debated issue. Some scholars argue that smartphones tremendously benefit the workplace by assisting internal and external communications and cooperation, while allowing the flexible organization of work and

information sharing in real time ([Kossek & Lautsch, 2012](#); [Lanaj, Johnson, & Barnes, 2014](#)). However, others argue the opposite by emphasizing the unintended negative impacts on workers ([Derks & Bakker, 2014](#); [Derks, Duin, Tims, & Bakker, 2015](#); [Perlow, 2012](#)). For instance, some studies have demonstrated that for workers who are severely dependent on smartphones at work, it is very hard for them to detach themselves psychologically from their work and their phones, leading to serious anxiety and stress ([Derks & Bakker, 2014](#); [Perlow, 2012](#)).

Increasing dependence on smartphones in facilitating everyday working practice is a new trend among Chinese workers. A market survey undertaken by [Alliance \(2013\)](#) revealed that of a random selection of 10,233 Chinese white-collar workers, approximately 80% of them had developed a high level of smartphone dependency so that they could stay connected with their workplace outside of working hours in order to deal with work-related issues. Recent research conducted by [Li and Lin \(2017\)](#) also showed that young Chinese workers are heavily dependent on their smartphones for communicating and understanding work affairs and performing work-related actions. Furthermore, a growing number of anecdotal news stories and reports in China show that some young employees are highly dependent on their smartphones to meet various needs at work ([News.longhoo.net, 2013](#); [Qingdaonews.com, 2015](#); [Sina, 2013](#)). These reports indicate that smartphone dependency within the workplace is a noteworthy social phenomenon among Chinese workers. However, few empirical studies have deeply examined such dependency, especially its origins and impacts.

Therefore, to deepen the understanding of Chinese employees' dependence on smartphones, the central purpose of the current study is to explore the impacts and antecedents of smartphone dependency at work among Chinese workers. Through the lens of media system dependency (MSD) theory ([Ball-Rokeach & DeFleur, 1976](#)) and uses and gratification (U&G) theory ([Katz, Blumler, & Gurevitch, 1974](#)), this study aims to answer two research questions: (1) "what are the impacts of Chinese employees' smartphone dependency at work?" and (2) "what kinds of individual psychological attributes are related to such dependency?" To answer these questions, we adopted a qualitative approach by in-depth interviews of 32 full-time workers in mainland China.

As this is one of the first studies to explore the impacts and psychological antecedents of workplace smartphone dependency within a Chinese context, it has the potential to make a significant contribution to the body of knowledge of smartphone dependency within workplace settings, which had previously received little scholarly attention. In addition, the majority of previous studies have examined either antecedents or consequences of smartphone dependency (e.g., [Li & Lin, 2016, 2017](#)), but seldom both. Combining the MSD and U&G theories can help to generate a more holistic picture about the psychological origins and impacts of this phenomenon. Finally, by targeting workers in China, this study can contribute a Chinese perspective on smartphone dependency within the workplace. In practice, the results may alert employers to the intended and unintended outcomes of their

employees' smartphone dependency. By investigating the antecedents of smartphone dependency at work, it could provide Chinese companies with valuable knowledge to develop effective intervention strategies in controlling the negative outcomes of such dependency.

Smartphone Dependency

Research on smartphone dependency has expanded considerably over the past few years. In the field of information and communications research, there are two dominant approaches to conceptually defining smartphone dependency. One influential approach considers smartphone dependency as a type of behavioral addiction which is purely negative (H. I. Chen, Chen, & Lee, 2015; Lapierre & Lewis, 2016; N. Park, Kim, Shon, & Shim, 2013). It is often operationalized by the expression of a number of clinical psychological and behavioral symptoms, such as withdrawal, preoccupation, and being out of control, as discussed by most technological addiction studies (e.g., Bian & Leung, 2015). Another approach primarily follows the theoretical prism of the MSD theory (Ball-Rokeach & DeFleur, 1976). According to this approach, smartphone dependency is defined as the relationship reflecting individuals' reliance on their smartphones to fulfill goals, with different relationships developing because individuals rely on their smartphones to fulfill different goals (Li & Lin, 2016). Thus, smartphone dependency is regarded as a neutral concept that is based on the normal use of the device. In this study, we defined smartphone dependency from the perspective of the MSD theory, which is operationalized as the perceived helpfulness of a smartphone to an individual in meeting his or her goals (e.g., Ball-Rokeach, 1985; Harun, Soon, Kassim, & Sulong, 2015; Li & Lin, 2016, 2017).

Moreover, although a wealth of studies has investigated the topic of smartphone dependency, most attention has been paid to adolescents or college students (N. Park et al., 2013; Ting, Lim, Patanmacia, Low, & Ker, 2011). As there is growing evidence showing smartphone dependency prevailing among young working people in China (Alliance, 2013; Deal, 2013; Gartner, 2014), this study attempts to explore this phenomenon among this group of people, particularly focusing on investigating the impacts and antecedents of their work-related smartphone dependency.

Possible Impacts of Smartphones Dependency at Work

The MSD theory (Ball-Rokeach, 1985; Ball-Rokeach & DeFleur, 1976) was employed as the theoretical foundation to explore the impacts of smartphone dependency in the workplace. The reason for adopting the MSD theory is 2-fold. First, the MSD theory has been extensively employed in order to understand individual-media dependency relationships (e.g., Y. C. Kim, Jung, Cohen, & Ball-Rokeach, 2004; Li & Lin, 2016; Lyu, 2012). Second, the MSD theory provides a valid framework to explain the consequences of individuals' media dependency. In *Theories of Mass Communication*, DeFleur and Ball-Rokeach (1989)

divided media dependency into two levels: the macro and the microlevels. The macro-level deals with the relationships among various systems, including the media, economic, political, and all other societal systems, whereas the microlevel (individual-level) focuses on the relationship between an individual and his or her goals and media resources (Ball-Rokeach, 1985). Similar to much of the previous empirical research (e.g., Patwardhan & Yang, 2003; Sun, Rubin, & Haridakis, 2008), this study emphasizes an individual-level analysis of smartphone dependency and examines the impacts of such dependency within the workplace.

One basic assumption of the microlevel aspect of MSD theory is that because people are goal orientated, they establish dependency relationships with various forms of media since some of their goals require access to resources that the media provides (DeFleur & Ball-Rokeach, 1989). As the dependency of such individuals on the media to fulfill their needs grows, the media in turn naturally becomes more important to them, leading to its stronger effect on those individuals (DeFleur & Ball-Rokeach, 1989). Specifically, Ball-Rokeach and DeFleur (1976) pointed out that potential consequences could be cognitive (e.g., reduction or creation of ambiguity, belief, and attitude formation), affective (e.g., increase or decrease in an audience's feelings), and behavioral (e.g., reaction to a stimulus). This study will therefore follow this vein of thought to explore the effects of smartphone dependency at work among Chinese employees.

By reviewing the related literature covering various contexts, the major effects of smartphone use at work include improvements in productivity, the speed of communication, flexible working opportunities, and the quality of collaboration with colleagues and partners (Kossek & Lautsch, 2012; Kreiner, Hollensbe, & Sheep, 2009; Lanaj et al., 2014). For instance, Middleton (2007) found that smartphones can assist employees in completing their allotted tasks more efficiently by allowing them to carry out their duties irrespective of the time or their location. Frost and Sullivan (2016) reported that smartphones deliver significant value to workers as the devices allow them to stay up-to-date with the ongoing progress and to keep the business moving forward, while offering better time management. Pitichat (2013) found that smartphone use can greatly facilitate organizational communications and collaboration so as to indirectly enhance colleague-to-colleague relationships. However, with the increased use of smartphones within the workplace, there is an increasing number of scholars who have paid attention to the more negative impacts of smartphones at work (Derks & Bakker, 2014; Derks et al., 2015; Perlow, 2012). Derks and Bakker (2014) found that those employees who are most prone to depend on their smartphones to stay connected with their workplace find detaching themselves psychologically from work and their smartphones to be very difficult, resulting in increased anxiety. Since few empirical study has deeply investigated the impacts of smartphone dependency at work, especially with the context of mainland China, this study attempts to adopt a qualitative approach to explore this issue.

Based on the aforementioned discussion, we expect that dependence on smartphones at work may lead to better job performance and strengthened workplace social capital, and, at the same time, may result in the emergence of undesirable smartphone addiction symptoms. Specifically, job performance is defined as individuals' perception of whether they perform their work well, which is closely related to productivity and efficiency (Winter, 1980). Workplace social capital is a resource that represents the social relationships existing within a company, and is revealed by the employees' levels of collective goals, as well as a sense of shared trust (Leana & Van Buren, 1999). Smartphone addiction refers to excessive and pathological human-machine interaction and is measured by psychological and behavioral symptoms, such as withdraw and loss of control regarding smartphone use (Bian & Leung, 2015; Li & Lin, 2017; Park & Lee, 2014).

Psychological Antecedents of Smartphones Dependency at Work

In addition to the impacts, this study attempts to investigate the antecedents of smartphone dependency in the workplace. U&G theory (Blumler & Katz, 1974; Katz, Haas, & Gurevitch, 1973), which has been one of the most popular frameworks to study the origins of new media technology (Bian & Leung, 2015), was utilized as the theoretical underpinning for achieving this goal. The main premise of the U&G model is that the consumption of media produces a sense of fulfillment of basic human needs, and the needs of using media are associated with personal psychological characteristics (Katz et al., 1973). In other words, the theory suggests that individuals' media use is associated with their psychological traits.

In the field of mobile media research, extant research supported this argument by showing that people's mobile phone usage and dependency were associated with their psychological attributes (e.g., Butt & Phillips, 2008; Chittaranjan, Blom, & Gatica-Perez, 2011; Delevi & Weisskirch, 2013; Lane & Manner, 2011; Takao, 2014; Tosun & Lajunen, 2010). For instance, Bianchi and Phillips (2005) found that extroverts, disagreeable, and unconscientious people spent more time calling and sending text messages. Butt and Phillips (2008) found that extroverts reported spending more time making mobile phone calls. N. Park, Kim, Shon, and Shim (2013) observed that highly innovative individuals were more likely to depend on their smartphones than those with low levels of innovativeness. Lin, Chiang, and Jiang (2015) identified that the level of sociability of smartphone users was positively associated with their smartphone dependency. These results imply that personality traits of users would affect their dependence on smartphones. However, it is worth noting that all these factors were largely identified from adolescents or college students, which may not be applicable to working adult populations and specific work settings. Thus, in addition to exploring the impacts of smartphone dependency at work, this study investigates psychological antecedents of Chinese employees' smartphone dependency at work.

Based on the review of existing literature, we expect that individuals' smartphone self-efficacy and the personality trait of conscientiousness are potential antecedents affecting

their work-related smartphone dependency. Smartphone self-efficacy refers to people's judgments of their capabilities to use a smartphone to perform various actions ([Eastin & LaRose, 2000](#)). If one employee perceived himself or herself as capable of using and controlling smartphone technology, he or she will be more willing to adopt it at work, and therefore develop an intensifying dependency on it at work. Conscientiousness, which is characterized by competence, achievement, self-discipline, and dutifulness, is one of the Big Five personality traits proposed by [Goldberg \(1990\)](#). Conscientious individuals can control their impulses and strive to achieve goals ([John, Laura, & Christopher, 2008](#)). Extant scholarship shows that in fact, conscientiousness is the most valid and important personality trait of the Big Five in workplace settings because it represents personal characteristics such as responsibility, care, persistence, and diligence, which are important attributes for completing work tasks in all jobs ([Hurtz & Donovan, 2000](#); [Ones & Viswesvaran, 1999](#)). Thus, among the Big Five personality traits, conscientiousness should be the most relevant one when predicting an employee's dependence on smartphones at work.

Method

The purpose of the current study is to investigate the impacts and psychological antecedents of smartphone dependency in the workplace among Chinese workers. A qualitative research design was utilized to achieve research goals. The rationale behind this is that the holistic focus of the qualitative method can help us to achieve a more profound, unrestrained, and more flexible understanding of the target group's experiences, with higher levels of openness and the capability to adapt to change as the inquiry goes deeper ([Duffy, 1987](#)). Given that few prior studies have investigated the impacts and psychological antecedents of work-related smartphone dependency within a Chinese workplace context, a qualitative research design should be an adequate approach to enable us to obtain rich and unconstrained information about this topic.

One-to-one semistructured interviews were conducted from February to March 2015. The benefits of carrying out semistructured interviews are that they guarantee a predetermined set of the interview questions will be covered, yet remain open for relevant follow-up questions ([Berg & Lune, 2012](#); [Eriksson & Kovalainen, 2008](#)). By using semistructured interviews, we can inquire further in accordance with the participants' preliminary answers through follow-up questions, encouraging them to provide additional explanation and clarification, thus gaining potentially newer or more profound understanding with regard to their feelings and perceptions ([Wimmer & Dominick, 2011](#)). As such, the use of semistructured interviews was an adequate data collection method for this study.

Notably, before the data collection was carried out, approval was obtained from the institutional review board of Nanyang Technological University. Informed consent was obtained before interviewing the individuals who were informed that their participation was purely voluntary, and they were assured that their responses would only be used for

research and academic purposes. Their personal information and transcripts would be kept confidentially, and any information that could reveal personal identities would be removed during the data reporting.

Sample and Sampling

Working adults aged 18–35 years old in China were selected as the target participants of this study. According to iiMedia Research (2016), adults who are between 18 and 35 years old are the new-generation smartphone-equipped workforce in China and represent the largest number of smartphone users in the country (52.8%). It is therefore especially important to understand their smartphone dependence in the workplace. All interviewees were recruited via the researchers' professional networks by using a purposive sampling technique, a widely used nonprobability sampling technique employed in interview studies (Berg & Lune, 2012). The reason for employing this sampling method is that it can help to recruit "preferred participants" in accordance to their ability to elucidate on the phenomenon being studied (Creswell, 2007). Specifically, to represent diverse perspectives, young workers with different professions and gender were purposefully recruited. In terms of the sample size, the present study used the criterion of data saturation to guide data collection. Potential participants were contacted via WeChat in order to describe the study and make an appointment for a face-to-face interview or an online Skype interview. When no more useful information could be collected during an interview, it was considered finished, leading to that interview to be considered to have reached data saturation (Morgan, 1998).

In the end, 32 individuals participated in interviews. There were 17 males and 15 females, aged between 24 and 34 years (mean = 28.09, standard deviation = 2.79). These participants covered several industrial sectors in China (e.g., information technology, education, media, health care, telecommunications, finance, and manufacturing). They all regarded their smartphones as an indispensable tool in their work and personal lives. Over half of them admitted heavy dependence on their smartphones. Work and socialization were the main purposes of their smartphone usage. In addition to voice calls and short message services, they most frequently used their phones for mobile instant messages (e.g., WeChat) and mobile e-mails.

Data Collection

The interviews were conducted in face-to-face settings or via Skype after describing the study via WeChat. Prior to commencing each interview, the researchers spent around 3–5 min explaining the study to the participant and answering any questions they might have.

In the interview process, an interview guide (see Appendix) with a set of open-ended questions was used. Interviews began with some warm-up questions to obtain information about respondents' smartphone usage patterns and to serve to get them to start thinking about their smartphone dependency at work. Questions included how often they used smartphones at work, what smartphone functions they used most frequently, and to what

extent, they think they are dependent on their smartphones at work. Following these warm-up questions, two groups of questions targeting the impacts and psychological antecedents of smartphone dependency at work were asked. These questions were predominantly based on the research questions and a literature review. Specifically, questions began with general ones (e.g., “What are the impacts of your work-related smartphone dependency at work? Can you elaborate both positive and negative ones?”), then moved on to more specific questions (e.g., “Does your work-related smartphone dependency influence your job performance? If yes, how does it affects your job performance?”). Lastly, the interview ended up with some demographic questions. Follow-up questions were asked during the interviews in response to the participants’ answers. Since all participants felt more comfortable with speaking in Chinese, the interviews were conducted in that language. Each interview lasted for approximately 40 min and was audio-recorded using mobile devices (i.e., tablet or smartphone).

Data Analysis

The interview data were analyzed using the qualitative thematic analysis approach ([Patton, 2015](#)), which can be used to describe interview content and interpret findings by formulating themes. After the audio recordings were transcribed verbatim, all transcripts were imported into NVivo 10, a computer-assisted qualitative data analysis software, for conducting the coding process. With repeated reading of the interview transcripts, words, phrases, and sentences that were relevant to this research were coded. The coding results were then analyzed with respect to results from the current literature and the study’s research questions, with the most pertinent quotes selected to illustrate the outcomes. To keep the interviewees’ identities confidential, their names were concealed and are presented simply as “Respondent XX (number)” in the Results section.

Notably, although the interview coding was performed by the first author, we applied two strategies to ensure the credibility and reliability of the results. First, we used a peer debriefing strategy to ensure the credibility of the coding results. This means the coding process, the development of the emerging themes, and the composition of the results report was reviewed and examined by another researcher who is familiar with qualitative research. This peer debriefing process greatly contributed to the credibility of data analysis ([Spall, 1998](#)). In addition, to examine whether other researchers would code the same data in the same way, we checked the intercoder reliability of the coding. After the first author finished coding the first four transcripts, one graduate student was hired to recode them in the NVivo software. Then, the two coding outputs were compared using the “coding comparison” query provided by NVivo. The value of Cohen’s κ is used for determining the interrater coding reliability ([McHugh, 2012](#)). The result was a Cohen’s κ value of .76, which is greater than the recommended value of .70 ([Caceres, 1993](#)), suggesting that the coding achieved an acceptable level of interrater reliability.

Findings

What Are the Impacts of Smartphone Dependency at Work?

As expected, the coding results revealed that smartphone dependency in the workplace resulted in both positive and negative outcomes among Chinese workers. The positive outcomes include the participants' perception of increased job performance and workplace social capital. The undesirable consequences were the emergence of smartphone addiction symptoms. Notably, it was found that once workers became addicted to their smartphones, they perceived their job performance to greatly decrease. The following section demonstrates how the interview data supports these interpretations.

Job performance

Increasing young workers' job performance is the most frequently mentioned positive effect of their work-related smartphone dependency. Twenty-seven interviewees stated that dependence on their smartphones at work greatly increased their work efficiency. For instance, a salesperson who relies on his smartphone to communicate and negotiate with long-distance customers emphasized that:

With the help of my smartphone, I don't have to regularly drive to or fly to my customers' location to discuss work matters face to face. I can conveniently talk to them and negotiate with them using voice calling or the video conferencing function of my smartphone. It saves me a lot of time and energy, and tremendously increases my work efficiency. (Interviewee #19)

Some interviewees indicated that their dependence on their smartphones to perform work activities also enabled them to use their time more wisely and consequently increased their work efficiency. According to a 28-year-old IT manager (Interviewee #3),

Thanks to my smartphone, I can deal with my work tasks and reply to work e-mails anytime and anywhere...like when I'm waiting for a shuttle bus or taking a two-hour train ride.... To some extent, it has greatly improved my work efficiency.

A similar example was provided by a primary school teacher who relies on her smartphone to create or edit class materials. She said:

My smartphone helped me make good use of my fragmented time. For example, I often rely on my smartphone to edit my class syllabus or slides when I wait for my girlfriends while they try on clothes in the shop. It has really increased my work efficiency. (Interviewee #10)

Moreover, some respondents indicated that smartphone dependency improved their work quality. On the one hand, smartphones can help them remove some of the uncertainty that arises at work, hence lessening their chances of making mistakes. A young auditor (Interviewee #23) stated: "With the help of my smartphone, whenever I have uncertainty or a question regarding my work, I can immediately call or WeChat my colleagues for help. Consequently, unwanted mistakes are avoided and my work quality is enhanced." On the other hand, a respondent who works in the consultation industry (Interviewee #30)

mentioned that his smartphone enabled him to promptly respond to his customers' questions, and thus the quality of his service greatly improved. He said:

The timely response to our customers' questions and requests is the determinant of job performance in the consultation industry. With the help of my smartphone, I can always connect to my customers and respond to their requests. Therefore, it has significantly improved the quality of my work.

The above discussions therefore suggest that work-related smartphone dependency seems to increase young workers' perceived job performance.

Workplace social capital

Strengthening workplace social capital is the second positive consequence of smartphone dependency in the workplace. The coding results showed that dependence on smartphones for work purposes seems to increase Chinese workers' perceived workplace social capital, which is reflected in the three following dimensions.

First, over 20 respondents mentioned that dependence on their smartphones for interaction and communication at work helped them to maintain or strengthen their working relationships with their colleagues. As indicated by a 33-year-old mechanical engineer (Interviewee #15),

With the help of my smartphone, I can directly communicate work-related issues with my work partners and colleagues. Through frequent e-mails, messages, and voice calls on our smartphones, we become more familiar with each other and closer, thereby strengthening our relationships.

Another salesman (Interviewee #4) provided a similar response where the dependence on his smartphone to maintain frequent work-related discussions and communication among colleagues tremendously increased their mutual understanding at work. "The more we understood each other, the tighter our relationship became," he said. In particular, one respondent pointed out that such dependency enhanced her relationship with her boss. She said:

Thanks to my smartphone, especially the WeChat function, I can report on the work progress and discuss work-related matters with my boss in an easier and more relaxed way. For instance, I often use cute WeChat expressions to express my opinions during our discussion. Sometimes, my boss replies to me through some amusing expressions.... In this way, I feel that my relationship with my boss is getting better. (Interviewee #28)

Second, 14 interviewees stated that smartphone dependency at work created a "we are together" feeling within the workplace, and it increased their enthusiasm to achieve the goals and missions of the organization. According to a telecom manager (Interviewee #26)

With the help of smartphones, every organizational member got connected with each other at work. We share the work information and updated our work progress with each other everyday.

It really gives us a “we are together” feeling in the workplace and makes me become more enthusiastic about achieving the goals of the company.

Another example comes from a female project officer who described how dependence on her smartphone, especially its WeChat service, for sharing and discussing work-related matters with coworkers gave her the feeling of being together and promoted her working consensus and enthusiasm. She expressed the following:

Whenever we were confronted with difficulties at work, we would look for help through this WeChat group on smartphone. Whenever there was an emergency at work, we would discuss the measures and coordinate the task instantly within this group...it really makes me felt that we are a team and that “we are fighting together” in the organization. (Interviewee #7)

Finally, some interviewees indicated that smartphone dependency at work also helped them to build trust among organizational members. As indicated by a business developer in a car company (Interviewee #7), “With the help of my smartphone, I could deal with my colleagues’ requests instantly. As my colleagues have found that I can timely respond and handle their problems, they now think that I am a reliable partner at work.” Another respondent who worked in an accounting company (Interviewee #23) described a similar effect: “With the help of my smartphone, I am always connected at work. Whenever there is an emergency, I can be informed and respond to it immediately. Therefore, my boss considers me a reliable employee.”

Smartphone addiction

Aside from the abovementioned positive outcomes, some employees also indicated that their work-related smartphone dependency made them have various smartphone addiction symptoms, such as withdrawal and silence. In terms of the withdrawal symptoms, 30 young workers reported that their work-related smartphone dependency led them to have negative feelings (e.g., anxiety, feeling unsettled, and panic), especially when they could not use their smartphones. For instance, a 27-year-old male project manager whose job involved high mobility in a large educational institution reported the following:

My work requires me to travel a lot. In most situations, my smartphone is the only thing I can rely on to get information and to stay on top of what is happening at work. Consequently, whenever my phone is out of range for a while, I become very nervous.... (Interviewee #30)

Another example comes from a young doctor (Interviewee #25) who often relied on his smartphone to search for work-related medical information and documenting important work materials. He revealed, “My smartphone is very important for my work. If it ran out of battery, I freak out desperately.”

With respect to the silence symptom of smartphone addiction, 24 respondents admitted that their work-related smartphone dependency made them frequently and uncontrollably check their smartphone status throughout their daily activities. According to a 30-year-old business developer (Interviewee #2) who relied on his smartphone for receiving messages and

checking e-mails at work, “I check my phone every one or two minutes uncontrollably.... It bothers me a lot.” The coding results also revealed that this work-related smartphone dependency made these workers think about their smartphones all the time. A sales executive (Interviewee #13) stated that even if she was doing important tasks and her two hands were busy, she still could not help but think about her smartphone and if any new messages had come in.

Notably, although smartphone dependency at work could enhance their job performance, some respondents also stated that once such dependency turned to addiction, their job performance would decrease as it greatly distracted them from the work they were doing. For instance, a 28-year-old female sales executive who often depends on her smartphone to stay connected with work said:

Previously, I could focus on one task for one hour. Now, I am unable to concentrate on one task for five minutes. The work that I am currently doing is very easy to be disrupted because I uncontrollably think about my phone and keep checking my phone at work. It is like...the phone always distracts my attention. Consequently, my job efficiency is significantly decreased. Even worse, I often made mistakes due to such distractions. (Interviewee #13)

What Kinds of Individuals' Psychological Attributes Relate to Smartphone Dependency at Work?

To deepen the understanding about the impacts of smartphone dependency at work, our interviews also investigated the psychological antecedents of Chinese employees' smartphone dependency at work. Consistent with our expectation, the coding results revealed that conscientious workers and those with high smartphone self-efficacy are likely to depend on smartphones in the workplace.

Conscientiousness

Conscientiousness is characterized by carefulness, responsibility, self-discipline, and dutifulness (Goldberg, 1990; John et al., 2008). Twenty Chinese workers attributed their work-related smartphone dependency to their personality of conscientiousness. “I am a very conscientious person and take my work tasks seriously. I want everything to be well organized and in a good rate of progress. My smartphone is what enables me stay on top of what is happening at work and monitor the project's progress conveniently. That's why I have developed a strong dependency on it” commented a business developer in a car company (Interviewee #2). Similarly, a 33-year-old manager in a telecom company regarded himself as a reliable and cautious person and indicated the following:

My work involves a lot of urgent cases. I cannot allow (work-related) problems to happen due to my own carelessness or irresponsibility. Thus, I hold my smartphone all the time and rely on it to stay connected with my work. Whenever my colleagues call me, I respond to them immediately and handle the matters. (Interviewee #26)

A sales representative described the relationship between conscientiousness and smartphone dependency as follows:

When I come across problems and unclear matters regarding my work, I want to figure it out immediately.... I don't like to delay things.... A smartphone is very helpful to me, especially when I'm out of the office. For instance, I can use it to call for help from others or to search for related information online (e.g., Baidu). (Interviewee #14)

Smartphone self-efficacy

Smartphone self-efficacy, which refers to individuals' personal belief in their ability to successfully use smartphones to perform various actions, is the additional psychological factor identified as influencing Chinese workers' smartphone dependency in the workplace. More than half of the interviewees mentioned that they depended on smartphones at work mainly because they thought they have a high level of proficiency in smartphones use. A 33-year-old engineer explained this relationship through the following comment:

I depend on my smartphone simply because I feel that it is easy to use. As I can easily get my smartphone to do what I want to do, I have come to rely on it, whether for personal purposes or for work-related purposes. (Respondent #15)

It was similarly described by another employee who relies on his smartphone to perform work tasks. He stated that, "If I did not think I am proficient in using my smartphone functions or felt them difficult to use, I would not rely on my phone to deal with my work tasks" (Interviewee #26).

Moreover, some respondents depended on smartphones at work mainly because they considered that using smartphones to execute courses of action does not require them to put in much mental effort. According to a young worker (Interviewee #29),

With the technological development, most smartphones are very easy to use. Even my mum, a 60-year-old lady, could use most of the functions of her smartphone effortlessly. Since using a smartphone does not require me to spend much mental effort, I have definitely become dependent on my smartphone at work.

Discussion

This study explores the impacts and psychological antecedents of smartphone dependency at work among Chinese workers. Considering the impacts outlined in the previous section, it was found that workplace dependency on smartphones seems to increase Chinese employees' perceived job performance and workplace social capital. These positive outcomes are unsurprising as previous studies already reported that using smartphones can greatly increase work efficiency and productivity, as well as strengthen the work relationships of employees by facilitating organizational communication, information sharing, and collaboration (Cohen, 2011; Demerouti, Derks, Lieke, & Bakker, 2014; Middleton, 2007).

Moreover, these positive consequences indirectly explain the increasing number of companies who encourage the use of smartphones at work ([Karlson, Meyers, Jacobs, Johns, & Kane, 2009](#)). At the same time, this study also identified that dependence on smartphones at work seems to trigger negative consequences such as addiction symptoms. The MSD theory proposes that as individuals rely on the media more to satisfy his or her needs, the media becomes even more valuable to such individuals, and therefore, the stronger the effects the media will have on him or her ([DeFleur & Ball-Rokeach, 1989](#)). In relation to the results of this research, the more employees depend on their smartphones for meeting work goals, the more important smartphones are to them. As smartphones become an increasingly important device to workers, it is understandable that many people start to constantly and even uncontrollably check their smartphone status, to become preoccupied with mobile activities, and to experience anxiety without them. These findings are similar to what previous studies indicated as the double-edged sword of the use of smartphones in the workplace, which generates both positive and negative outcomes ([Derks & Bakker, 2014](#); [Derks et al., 2014](#); [Perlow, 2012](#)).

Moreover, the findings on job performance, workplace social capital, and smartphone addiction also corroborate to the propositions of the MSD theory, which posits that the individual–media dependency will likely lead to both strong and weak effects ([DeFleur & Ball-Rokeach, 1989](#)). According to [Ball-Rokeach \(1985\)](#), the possible effects of media dependency relations can be cognitive, affective, and behavioral. The cognitive consequences include effects on individual values, attitudes, and beliefs, whereas the affective consequences include the impacts on people’s feelings and emotional responses. In the current study, job performance can be viewed as a kind of cognitive outcome as it reflects young workers’ beliefs about their job performance. However, smartphone addiction can also be considered as a type of affective impact as it is related to the negative feelings and emotions of individuals regarding smartphone usage. Furthermore, workplace social capital can be viewed as akin to cognitive and affective outcomes. Thus, the results of the current study provided empirical evidence to support the application of the MSD in explaining the consequences of new media dependency of individuals, especially in the workplace.

More importantly, this study uncovered that, although smartphone dependency at work could enhance workers’ job performance, once such dependency turned to addiction, they perceived their performance to diminish as smartphone usage (or preoccupation) greatly distracted them from the work they were actually meant to be doing. This is an important finding identified from the current study. Job performance is often viewed as an important criterion of organizational success, as it is closely associated with the profit and accomplishments of companies. Our findings imply that, if companies aim to increase employees’ job performance by using advanced information communications technologies, such as smartphones, it is crucial for them to prevent employees from developing an addiction toward such devices. Future research should therefore consider investigating how worker’s dependence on smartphones at work turns to addiction. With such knowledge, the

companies can better design intervention strategies to ensure the increased job performance of workers. On the other hand, our findings also imply that influence of smartphone dependency at work on job performance may be mediated by smartphone addiction. Such mediation effects might be critical for understanding the impacts of smartphone use and dependency in the workplace and should help to prevent addiction arising. Hence, future studies using a quantitative research design can consider a mediational analysis ([Hayes, 2009](#)) to test the relationships among them.

In addition to these impacts, this study explored the psychological antecedents of Chinese workers' smartphone dependency at work. It is found that conscientiousness affected Chinese workers' smartphone dependency at work, where conscientious employees are more likely to depend on their smartphones at work. Conscientiousness is often characterized by achievement, self-discipline, responsibility, and dutifulness. If an employee is conscientious, then he or she should be very responsible in their work. As smartphones can keep employees always connected to and in control of their work, it is understandable that conscientious workers are likely to depend on them at work. However, it is worth noting that conscientiousness was often found to negatively relate to new media addiction, such as Internet addiction ([Gnisci, Perugini, Pedone, & Di Conza, 2011](#)), Facebook addiction ([Andreassen et al., 2013](#)), and social media addiction ([Wilson, Fornasier, & White, 2010](#)). That is, conscientious individuals are less likely to be addicted to new media addictions. Following this vein, if companies attempt to encourage their employees to rely on their smartphones to handle work matters and, in the meantime, prevent them from becoming addicted to their phones, then special intervention programs should be designed to build up the conscientiousness of workers.

In addition, this study found that employees' self-efficacy regarding smartphone use affected their smartphone dependency. Smartphone self-efficacy is a disposition that reflects one's confidence and ability to use a smartphone. Our results suggest that when people perceived themselves as being capable of using smartphones to perform various actions, they were likely to become dependent on them. This finding corresponds to prior studies that suggested that the self-efficacy of using new media technologies (e.g., computers, Internet, and mobile phones) influences an individual's actual usage and dependency upon such technologies ([J. V. Chen, Yen, & Chen, 2009](#); [Eastin & LaRose, 2000](#); [John et al., 2008](#); [Venkatesh & Davis, 2000](#); [Wang, Jackson, Wang, & Gaskin, 2015](#)). The result is also congruent with social cognitive theory, which posits that self-efficacy is a prominent predictor of people's behavior because an individual undertake a certain activity only if they consider themselves to be capable of performing it ([Bandura, 1977](#)). As such, if companies hope to promote the smartphone dependency of employees at work in order to enhance their job performance, providing tutorial programs (e.g., teaching employees how to use smartphone functions more effectively at work) to increase the smartphone self-efficacy could be an effective means of doing so.

Concluding Remarks

By employing in-depth interviews to explore the impacts and psychological antecedents of Chinese workers' smartphone dependency in the workplace, this study achieved several theoretical and practical contributions. First, as one of the first studies to explore the impacts and psychological antecedents of smartphone dependency in the workplace within the context of China, the findings of the current research contribute to the more in-depth understanding of smartphone dependency at work settings. In recent years, dependence on smartphones at work has become a widespread phenomenon. However, little academic research has paid attention to it. Thus, the findings of the present study add to alarming literature on this topic. For instance, this study identified that dependence on smartphones at work would increase workers' perception of their job performance and workplace social capital; however, on the negative side, it may lead to the emergence of smartphone addiction symptoms. Moreover, conscientious employees and those who perceived themselves as having good smartphone self-efficacy seem to be more likely to depend on their smartphones at work.

Second, the findings of this study provide a new theoretical approach understanding people's smartphone dependency at work. A majority of previous studies have examined either antecedents or consequences of smartphone dependency, but seldom both. Combining the MSD theory and U&G theory together as a theoretical underpinning, the findings of the present study generate a more holistic picture about the psychological origins and impacts of smartphone dependency in the workplace. On the other hand, by examining the impacts and psychological antecedents of smartphone dependency at work, the findings of the current study provide evidence to support the claims that the MSD and U&G theories are applicable to explaining dependencies within new media environments. Thus, the theoretical application of these theories is extended.

Third, this study observes important relationships between smartphone dependency, smartphone addiction, and job performance. Dependence on smartphones at work seems to increase the workers' perceived job performance, however, once such dependency leads to addiction, they perceived their job performance to be negatively affected. This adds to the current literature by suggesting that smartphone addiction might mediate the influence of smartphone dependency at work in terms of job performance. Future research using a quantitative approach should further investigate the relationships between these issues.

Fourth, this study contributes to new media research by showing that smartphone dependency and smartphone addiction are two different concepts. This suggests that future studies should use different conceptual and operational definitions of these two distinct concepts when examining their antecedents and impacts.

Fifth, by targeting workers in China, the results of the current study have contributed a Chinese perspective on employees' workplace smartphone dependency to the wider body of literature. As smartphones become increasingly popular for day-to-day working practices

globally, numerous Western scholars have also started to pay attention to work-related smartphone dependency in their countries. The findings of this study could therefore be used for cross-cultural comparisons, which can further benefit the understanding of work-related smartphone dependency within different cultural contexts.

In practice, the results of the current study should alert employers to the outcomes of employees' smartphone dependency at work. By investigating the antecedents of smartphone dependency at work, it provides Chinese companies with crucial knowledge to allow them develop effective intervention strategies to, respectively, maximize and minimize positive and negative consequences of work-related smartphone dependency. For instance, the findings of the current study revealed that conscientious workers and those with high smartphone self-efficacy are more likely to depend on smartphones for work-related purposes. Since smartphone dependency could enhance the job performance and workplace social capital of workers, companies could consider designing special intervention strategies or workshops to increase their conscientiousness and smartphone self-efficacy, thereby stimulating the more positive outcomes.

Finally, we must acknowledge several limitations of this study. First, a selection bias existed when we recruited interviewees from personal social networks. Despite the efforts made to recruit as heterogeneous sample of young working adults as possible, the easiest-to-approach participants were those who are related to the researchers so they might share similarities in personality and social resources, such as high levels of educational attainment. These could influence the interview results. A more rigorous sample selection approach should therefore be applied in future studies. Second, different interview technologies, such as face-to-face interviews and Skype calls, are used in the current study. Interviews via Skype restricted the researchers in capturing some important contextual information from the interviewees. Future studies with sufficient time and budget are recommended to conduct all interviews in face-to-face settings to ensure the validity of the results. Third, the interviews were conducted in Chinese and then translated into English when reporting the results. Although the translations were done thoroughly, specifically those that were related to key constructs, the risk of losing certain cultural or social meanings in the translation process remains. For future studies, researchers should be aware of this risk and consider recruiting a few bilingual experts to double check the accuracy of the translations. Last, instead of one-time-only interviews, diversified research methods could be employed to enhance the understanding of employees' smartphone dependency at work, such as longitudinal qualitative research design, which can explore the changes in smartphone dependency over time.

Appendix

Interview Guide

Warm-up questions

- What kind of job are you working on (e.g., salesmen, engineer, secretary...)?
- Do you think smartphone is an important device for your work? Why or why not?
- How often do you use your smartphone at work? What kinds of smartphone functions you use most frequently at work? Why?
- In your opinion, to what extent, you are dependent on your smartphone at work?

Possible impacts

- In general, what are the consequences of your work-related smartphone dependency? Can you elaborate both positive ones and negative ones?
- Does your work-related smartphone dependency influence your job performance? If yes, how it affects your job performance? If no, why?
- Does your work-related smartphone dependency influence your workplace social capital (e.g., relationships with colleagues, understanding, and trust among organizational members)? If yes, how it affects your workplace social capital? If no, why?
- Does your work-related smartphone dependency led you to have some smartphone addiction symptoms? If yes, how it affects your addiction symptoms? What kinds of smartphone addiction symptoms you experienced? If no, why? (smartphone addiction)

Psychological antecedents

- Based on your own experience, why do you become dependent on your smartphone at work?
- Based on your own experience, does some of your individual psychological traits affect your smartphone dependency at work? If yes, what are they? How they affect your work-related smartphone dependency? If no, why?
- Do you think you are a conscientious person (e.g., responsible, dutiful, and reliable)? If yes, whether this trait affects your smartphone dependency at work? How it affects?
- Do you think you are a person who has a high level of proficiency in smartphone use? If yes, whether this trait affects your smartphone dependency at work? How it affects?

Demographics

- How old are you?
- What is the highest degree you obtained?
- How many years have you worked?

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