



## Full length article

## Smartphone withdrawal creates stress: A moderated mediation model of nomophobia, social threat, and phone withdrawal context

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## ABSTRACT

A growing body of literature demonstrates that smartphone use can become problematic when individuals develop a technology dependency such that fear can result. This fear is often referred to as Nomophobia, denoting the fear of not being able to use one's phone. While the literature (especially on technostress and problematic smartphone use) has shed ample light on the question of which factors contribute to the development of Nomophobia, it remains less clear how, why, and under what conditions Nomophobia, in turn, results in negative consequences, especially stress. Drawing on the demand-control-person model, this study develops a novel research model indicating that Nomophobia impacts stress through the perception of a social threat and that this indirect effect depends on the context of a phone withdrawal situation. Data collected from 270 smartphone users and analyzed using multi-group path analysis supported our model. The results showed that the proposed indirect effect is non-significant only when situational certainty and controllability come together, that is, when people know for how long they will not be able to use their phones and when they have control over the situation. Managers can help their nomophobic employees by instilling in them trust and perceptions of social presence while also giving them more control over their smartphone use during meetings.

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## 1. Introduction

A growing trend in corporate environments is to require employees to leave their communication devices, especially smartphones, outside the meeting room (Forbes, 2014). This well-intended policy is often meant to create more productive and respectful work contexts in which employees are not constantly distracted by technological interruptions (e.g., checking and writing e-mails via smartphones). However, we argue in this article that such a policy may have unintended consequences for employees and organizations alike because smartphone withdrawal may create a new social phobia: Nomophobia or the fear of not being able to use one's smartphone and the services it offers (Kang & Jung, 2014; King, Valença, & Nardi, 2010a, 2010b; King et al., 2013; Park, Kim, Shon, & Shim, 2013). Nomophobia is a modern phobia related to the loss of access to information, the loss of connectedness, and the loss of communication abilities (King et al., 2013, 2014; Yildirim & Correia, 2015). Nomophobia is situation-specific such that it is evoked by situations that engender the

unavailability of one's smartphone (Yildirim & Correia, 2015).

As a situation-specific phobia, Nomophobia has recently been suggested to lead to strong perceptions of anxiety and distress (Cheever, Rosen, Carrier, & Chavez, 2014; Choy, Fyer, & Lipsitz, 2007; Yildirim & Correia, 2015). In fact, some suggested that Nomophobia could be so stressful that it warrants to be considered a psychopathology (Bragazzi & Del Puente, 2014). Recent empirical research supported this idea, indicating that nomophobic individuals suffer from stress when their smartphones are out of reach (Samaha & Hawi, 2016). Stress, in turn, has various negative consequences for individuals and organizations, including reduced well-being, acute and chronic health problems, as well as diminished organizational productivity (Ayyagari, Grover, & Purvis, 2011; Lazarus & Folkman, 1984; Lazarus, 1999; Riedl, Kindermann, Auinger, & Javor, 2012; Tams, Hill, de Guinea, Thatcher, & Grover, 2014). Hence, stress is an important dependent variable to study in the context of Nomophobia.

Yet, while recent research offers clear and comprehensive explanations of how Nomophobia develops (Bragazzi & Del Puente, 2014; Hadlington, 2015; King, Valença, & Nardi, 2010a, 2010b; King et al., 2014; Sharma, Sharma, Sharma, & Wavare, 2015;

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Smetaniuk, 2014; Yildirim & Correia, 2015), it remains unclear how, why, and when (i.e., under what conditions) Nomophobia, in turn, leads to stress. Absent understanding of the mechanisms connecting Nomophobia to stress, research can offer only limited practical guidance to individuals as well as to health-care practitioners and managers on how to develop intervention strategies (MacKinnon & Luecken, 2008). To more fully understand the implications of Nomophobia for stress and to offer enhanced practical guidance, research must generate more detailed and specific explanations of intervening and contextual factors. First, research must generate more comprehensive explanations of the causal pathways involved in the process by which Nomophobia-related impacts unfold (i.e., mediation).<sup>1</sup> Second, it has to shed light on the contextual factors on which Nomophobia-related impacts depend (i.e., moderation). In other words, research needs to generate explanations of factors that carry the influence of Nomophobia on to stress (mediation) and of contextual factors on which this influence depends (moderation). Consequently, the present study begins to open the black box of the interdependencies between Nomophobia and other factors that *explain in greater detail how and why Nomophobia can lead to stress (mediation) and when or under what conditions the stress-related effects of Nomophobia crystallize (moderation)*.

To understand the effect of Nomophobia on stress in greater detail, we draw on the demand-control-person model developed by Bakker and Leiter (2008) as well as Rubino, Perry, Milam, Spitzmueller, and Zapf (2012). This theoretical framework is an extension of Karasek (1979) demand-control model, one of the most important theories of stress (Siegrist, 1996). The demand-control-person model can provide a theoretical explanation for the negative impacts of Nomophobia on stress in a context where phobic traits of the individual (*Nomophobia*) are exacerbated by stressful demands, particularly *uncertainty*, and by a lack of management interventions in terms of providing *control*. The model further suggests that stressors, such as a nomophobic personality facing a phone withdrawal situation, lead to stress by *threatening* other valued resources (e.g., social esteem, social acceptance, or social respect). Using this model, we examine whether the impact of Nomophobia on stress is mediated by social threat and whether this indirect effect varies under different conditions of uncertainty and control, which are important work conditions in contemporary organizational arrangements (Galluch, Grover, & Thatcher, 2015).

By investigating interdependencies between Nomophobia, social threat, uncertainty, and control in the prediction of stress, this study makes important contributions. Perhaps most importantly, the study helps research on Nomophobia progress toward *more detailed and specific explanations of the process* by which Nomophobia results in stress (we find that Nomophobia leads to stress by generating a perceived social threat). Furthermore, the study *establishes certain work conditions (uncertainty and control) as contextual factors on which the negative impacts of Nomophobia depend*. Overall, this study yields an enriched explanation and prediction of how, why, and when Nomophobia leads to stress.

The paper proceeds as follows. The next section provides a background on the study context as a means to frame an integrative research model of Nomophobia, stress, as well as relevant mediating and moderating factors. This integrative model hypothesizes that Nomophobia leads to stress via a perceived social threat and that this indirect effect is strengthened by uncertainty about the phone withdrawal situation and weakened by control over the

situation. The section thereafter reports on the method employed to test our integrative model and on the results obtained. Finally, we discuss implications for research and practice.

## 2. Background and hypotheses

Our approach focuses on integrating the concepts of Nomophobia, stress, and social threat as well as work conditions (i.e., uncertainty and control), which have mostly been studied in isolation before (see Fig. 1). Only a few studies have looked at the intersection of two such areas (e.g., Samaha and Hawi (2016) examined whether Nomophobia can generate stress), and no research to date has examined empirically the point at which all three areas intersect. It is precisely this intersection that holds strong potential to explain the stress-related impacts of Nomophobia in greater detail; according to recently-advanced conceptual ideas, social threat could be relevant to both Nomophobia and stress, and work conditions such as uncertainty and lack of control could be relevant factors in exacerbating phobic traits such as Nomophobia (Cooper, Dewe, & O'Driscoll, 2001; Dickerson, Gruenewald, & Kemeny, 2004; Dickerson & Kemeny, 2004; King et al., 2014; Rubino et al., 2012; Yildirim & Correia, 2015).

To integrate the concepts of Nomophobia, stress, and social threat as well as work conditions, we draw on the demand-control-person model (Bakker & Leiter, 2008; Rubino et al., 2012), an extension of Karasek (1979) demand-control model. The latter indicates that environmental demands interact with the control people have over their environment in generating stress, that is, it is the interaction between demands and control that determines the amount of stress people experience. As regards demands, these are generally perceived as stressful; therefore, stress increases with high demands. An important demand in the context of our study is uncertainty (Best, Stapleton, & Downey, 2005). Uncertainty is an *ambiguity-type* stressor that refers to the lack of information people perceive in relation to their environment (Beehr, Glaser, Canali, & Wallwey, 2001; Wright & Cordery, 1999). For example, the lack of information on the duration of a meeting can be perceived as stressful. According to the literature on organizational stress, this lack of information, or uncertainty, can generate different types of stress, such as dissatisfaction, burnout, and general perceived stress (Rubino et al., 2012).

As regards the control dimension of Karasek (1979) model, it refers to decision latitude, that is, control refers to peoples' freedom, independence, and discretion in terms of determining how to respond to a stressor. As such, control enables people to better manage environmental demands. In doing so, control serves as a buffer against stress, as a shield protecting people from the adverse consequences of stressors in their lives. In line with this notion, research has consistently shown that people who control their environment are less stressed (Van der Doef & Maes, 1999).

The demand-control model (Karasek, 1979) has been very successful in the study of stress (Siegrist, 1996). However, the model has important limitations, especially regarding construct dimensionality; the model has been criticized for not being sufficiently comprehensive (Van der Doef & Maes, 1999). Therefore, recent research suggests extending the model by incorporating peoples' individual differences (Bakker & Leiter, 2008). Individual differences determine how people perceive their environment and react to it. In doing so, they determine peoples' predispositions to being stressed. Based on these ideas, Rubino et al. (2012) developed the demand-control-person model. This model is an extension of the demand-control model that includes individual differences. Thus, the demand-control-person model specifies three factors that determine the level of stress: environmental demands such as uncertainty, control over one's environment, and individual

<sup>1</sup> Preacher et al. (2007, p. 188) amongst others, clarify that "Mediation analysis permits examination of process, allowing the researcher to investigate by what means X exerts its effect on Y."

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