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The paradox of phone attachment: Development and validation of the Young Adult Attachment to Phone Scale (YAPS)

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ABSTRACT

Accurate evaluation of people's attachment to phones is crucial to understanding the impact of phone use in everyday life. The *Young Adult Attachment to Phone Scale* (YAPS) is a concise instrument, representing the first multi-dimensional measure of phone attachment. After item development involving focus groups with young adults and content validity analysis from attachment experts, a preliminary version of the YAPS was administered to 955 participants ages 18–29. Exploratory and confirmatory factor analyses supported a 2-dimension structure: *Refuge*, characterized by feeling safe with the phone and uncomfortable upon separation; and *Burden*, characterized by relief upon separation from the phone and the perception that it diminishes enjoyment of a given moment. Findings reflect the strong psychometric properties of the YAPS, including reliability, factorial validity and criterion validity with relevant constructs. The YAPS appears promising for future research aimed at understanding the nature of attachment to phones in human behavior.

1. Introduction

The purpose of the work presented here was to develop a valid and reliable measure of attachment to phones, a prerequisite for any examination of the pervasive yet ambivalent role of phones in people's lives and a better understanding of consequences associated with phone use. This measure aims to address the need to develop measurement of phone use and misuse that offers an alternative to simply applying concepts of addiction to phone use (Billieux et al., 2015). Further, given the need for short measures that can be used to study young adult behaviors and experiences, we aimed to develop a short, concise measure of this construct, which we considered to be relatively narrow and well-defined. Young adults aged 18–29 were of particular interest, in order to isolate the experiences of "digital natives" (Prensky, 2001). Specifically, we aimed to develop a new measure of phone attachment mapping onto the dimensions of attachment anxiety and avoidance, consistent with preliminary evidence that attachment phenomena may be relevant to understanding people's relationships to their phones (e.g., Keefer, Landau, Rothschild, & Sullivan, 2012) as well as mounting evidence regarding the paradoxical emotions that are elicited by them (e.g., Baron, 2011; Jarvenpaa & Lang, 2005; Turkle, 2011). To that end, the development of the *Young Adult Attachment to Phone Scale (YAPS)* involved creating items through focus groups in consultation with experts in the field of attachment, as well as gathering pilot data on item functioning and underlying structure (Study 1), followed by a validation study in a larger group of young adults, encompassing an examination of YAPS scales scores internal consistency, factorial validity and measurement invariance across gender, as well as criterion validity analysis using relevant external measures (Study 2). Both studies were rooted in the literature on phone addiction and attachment, which are reviewed below.

2. Literature review

2.1. Smartphone behavior and attitudes

Smartphone ownership among American adults has doubled since 2011 to 64% (Pew Research Center, 2015b) and to 85% among young adults aged 18–29 (Nielsen, 2014). This has produced a host of societal changes. On the negative side, the expectation that messages will get an immediate response (Hall & Baym, 2012) may contribute to the 26% of reported motor vehicle accidents in 2014

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involving texting (National Safety Council, 2015) and the sixfold increase in phone-related pedestrian injuries resulting in visits to the emergency room between 2005 and 2010 (Nasar & Troyer, 2013). Sexting and cyber-bullying are prevalent among young people and are associated with a range of negative mental and physical health outcomes (e.g., Hinduja & Patchin, 2010; Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Temple et al., 2012). Also, anxiety or fear in response to being separated from one's phone is an increasingly common phenomenon (Bragazzi & Del Puente, 2014).

These and other adverse consequences of phone use upon individuals and society have prompted extensive research into problematic or addictive smartphone behavior (Bianchi & Phillips, 2005). As a result, the language and constructs used to describe and categorize people's relationship to mobile devices is often couched in terms related to addiction, such as withdrawal, anxiety, craving, and complaints from others about use (Billieux, Van der Linden, & Rochat, 2008; Leung, 2008). This conceptualization presents several limitations. First, the application of drug addiction to mobile phone overuse may be overly simplified and limited in terms of clinical applications (Billieux et al., 2015). Also, even if these constructs are relevant to understanding maladaptive aspects of phone use, they disregard the benefits people derive from them. Aside from functional tools (e.g., calendar, camera, flashlight, ability to do work on the go), there are a range of social and emotional benefits derived from the increased convenience and accessibility enabled by smartphones (see Subrahmanyam & Smahel, 2011), including enhancement of romantic feelings (Schade, Sanberg, Bean, Busby, & Coyne, 2013; Jin & Peña, 2010), greater interaction and collaboration in learning environments (Gikas & Grant, 2013), increased compliance with medical care (Luxton, McCann, Bush, Mishkind, & Reger, 2011), and increased efforts towards self-actualization through use of apps that promote healthy behaviors and practices (e.g. West et al., 2012)

With these benefits, however, come a host of psychological challenges. Along with increases in people's constant connection to devices comes feelings of stress and social overload (Maier, Laumer, Eckhardt, & Weitzel, 2012). Over-reliance on text messaging in romantic relationships can come at the expense of more intimate forms of interaction necessary to sustain them (Reid & Reid, 2007). People who perceive the phone as a source of interference in romantic relationships are more likely to experience poorer relationship satisfaction and depression (McDaniel & Coyne, 2014). Similarly, in non-romantic relationships, the mere presence of a phone has been found to inhibit the development of interpersonal trust (Przybylski & Weinstein, 2012).

2.2. The paradox of constant connectivity

Taken together, these findings point to a paradoxical experience generated by smartphone use, where people celebrate the benefits and conveniences of constant contact while also resenting the high level of accessibility they demand (Baron, 2011). In 2005, Jarvenpaa and Lang held focus groups in four countries and concluded that the increased sophistication of handheld devices triggered paradoxical experiences in individuals, including: empowerment and enslavement; independence and dependence; fulfillment of needs and creation of needs; engagement and disengagement; and the collapse of public and private space. This has led to the conclusion that as people feel more dependent upon a device that feels increasingly out of their control, phones are simultaneously becoming vehicles of connection that contribute to people's loneliness and isolation (Jarvenpaa & Lang, 2005; Turkle, 2011).

Recent research supports the notion of intense but contradictory emotions being elicited by and towards phones, though participants are often forced to endorse only one of two opposing feelings, without an option to endorse both. In a large-scale study, half of U.S. adults (46%) reported that it would be impossible to live without their smartphones, with the other half saying the opposite. Similarly, 70% described the phone as offering "freedom", whereas 30% indicated that it feels like a "leash." Lastly, 72% described the phone as "connecting," with the other 28% describing it as "distracting" (Pew Research Center, 2015b). In another study, some participants responded to the loss of their phone with feelings of anxiety about disconnection, whereas others felt relieved to be out of touch with people (Hoffner, Lee, & Park, 2015).

Although researchers have developed items or scales measuring phone attachment in individual studies (see Kolsaker & Drakatos, 2009; Weller, Shackleford, Dieckmann, & Slovic, 2013), no scales have captured contradictory feelings. Also, in much of the research highlighting the paradoxical nature of relationships to phones, it is difficult to isolate feelings about the device itself from feelings about its social and technical functions. However, attempts to do so have suggested that the intense feelings people express go beyond the actual value of the phone to encompass feelings of attachment to the device itself (Kolsaker & Drakatos, 2009). Deepening our understanding of this experience is crucial for addressing the impacts and consequences that arise from it.

2.3. Attachment to smartphones (and other objects)

Attachment theory (see Bowlby, 1969) was originally used to conceptualize the bonds that develop between caregivers and their children and has more recently proven useful in understanding other important relationships, including those between humans and inanimate objects, and may thus offer insight into the experience of phone attachment. Attachment is an internally driven system that typically gets activated during times of distress and perceived danger, triggering behaviors that promote proximity or contact with the caregiver. Ainsworth (1985) described four functions served by the attachment bond: maintaining proximity with the caregiver; utilizing the caregiver as a secure base for exploratory behavior; viewing the caregiver as providing a haven of safety; and experiencing separation anxiety when removed from the caregiver.

When caregivers are not reliably available, children develop secondary attachment strategies to gain the caretaking they need (Cassidy & Kobak, 1988). Hyperactivating strategies are characterized by intense efforts to gain proximity to the caregiver and reassurance of the caregiver's availability, while deactivating strategies involve inhibition of needs or wishes for care, and a conviction to be self-reliant (Shaver & Mikulincer, 2007). These strategies map onto the dimensions of commonly used scales measuring attachment in adults (e.g., Experiences of Close Relationships scale, ECR; Brennan, Clark, & Shaver, 1998): attachment anxiety measures the degree to which one worries that a partner will not be available or adequately responsive in times of need; and attachment avoidance measures the degree to which one distrusts in a partner's willingness or capacity to offer care and strives to maintain emotional distance and independence (Bartholomew & Horowitz, 1991).

Attachment researchers have noted that when children fail to develop secure attachment to the parent, they seek other attachment figures, such as siblings, teachers, therapists, and even God to fulfill these attachment needs (Ainsworth, 1985; Kirkpatrick, 2004). Inanimate objects can similarly be used as a secure base (Keefer et al., 2012). In children, it is commonplace to develop attachments to objects (e.g,. blankets) that come to represent the parent in the parent's absence (Winnicott, 1971). In the small body of research on attachment to objects in adults, emotional over-