

DANGER IN YOUR POCKET: A CASE STUDY ANALYSIS OF EVOLVING ISSUES RELATED TO SOCIAL MEDIA USE AND ABUSE THROUGH SMARTPHONES

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ABSTRACT

The Smartphone has become a useful tool for society. It combines most of the elements from previously distinct devices: cell phones, cameras, personal computers, calculators, social media, etc. While the smartphone is useful, it often comes with negative consequences. Social media applications and platforms are programmed with attention and addiction software that reinforces continual engagement. The software manipulates emotional and cognitive awareness and response, resulting in altered interpersonal communication, small group communication, and mass communication. These communications and interactions may increase the severity and prevalence of user addiction, emotional distress, and relationship issues. This paper investigates the results of several studies that highlight these, and other, adverse effects of social media engagement through smartphones, and briefly examines Snapchat with regards to these factors.

Keywords: Smartphone, Social Media, Addiction, Phubbing, Depression, Snapchat

INTRODUCTION

In 2007, the smartphone was introduced by Apple in the form of the iPhone. Apple co-founder, Steve Jobs, introduced it as “a wide-screen iPod with touch controls, a phone and an internet communicator” (Merchant, 2017, p. 162). Downloadable smartphone applications (apps) for public consumption did not exist. The Apple App Store did not even exist until a year later despite Steve Jobs’ objections. The iPhone did, however, include factory-installed applications. The smartphone was a novelty that few owned.

Today, nearly every person owns a smartphone and most parts of the world are becoming, if not already, interconnected. Users can download apps for thousands of actions and activities, send friend requests and pictures to the international Facebook community, read Tweets from the thousands of whom they are following on Twitter, instant message (which may make e-mail virtually obsolete in future generations), surf the Internet, etc. The world of the smartphone touches all parts of the globe, seemingly connecting everyone. Yet, instead of enabling worldwide users to focus on personal tasks and goals more efficiently, its existence has created a portal to exponential virtual worlds (not unlike previous simulated, pre-programmed games) where people emotionally live and solely communicate.

Users have become so enamored with their digital universes that they frequently ignore the real universe around them (Chotpitayasunondh & Douglas, 2016, p. 10). More than ten years ago, social interactions were more personal. People talked, met friends, shopped in malls, and were somewhat aware of their surroundings. Yet today, it seems as though personal interaction has become subservient to the digital interaction. Why are people so interactive and involved with their smartphones and not with the person sitting across the table from them, and how does this differ from anxiety and depression that exist without or beyond the use of smart phones? Why are rates of anxiety and depression on the rise in smartphone users? What is the psychological draw, and why is it there? This paper will examine smartphone use and abuse and their adverse effects and what might be done to address or diminish the effects of its abuse.

RESEARCH METHODOLOGY

This research effort is a continuation of research projects focusing on Internet and social media groups, use, and effects—from hacktivism, cyberterrorism, cybershaming, and cybercultures. (Pendergrass, 2013) Over a period of eight years, information on various aspects of the cyber interactions were collected and categorized. The substantial extensive amount of secondary data and data thread correlations collected would require a thorough meta analysis. Therefore, a case study methodology was selected to complete a manageable and useful, data analysis. Yin (2009) proposed that “case studies are the preferred method [of analysis] when (a) “how” or “why” questions are being posed, (b) the investigator has little control over events, and (c) the focus is on a contemporary phenomenon within a real-life context” (Yin, 2009, p. 2).

Yin (2009) defined three principles of data collection: 1) use multiple, different sources of evidence, 2) create a database of collected material, and 3) maintain a chain of evidence (pp. 114 - 124). Multiple sources of evidence were collected in the form of news articles, Twitter posts, Facebook posts, research documents, books, and other types of secondary data. An expansive database of material, including timelines of events and sources, served as the chain of support. The data were then separated into categories or bins. In his book, *Case Study Research: Design and Methods*, Yin (2009, p. 131) discusses a 1929 study which benefited from using descriptive bins to sort through a substantial amount of collected data. In their landmark book, *Middletown: A Study in Modern American Culture*, Lynd and Lynd (1929) also defined a number of descriptive bins so that an abundant amount of seemingly unrelated data, taken from numerous sources in a small Midwestern city, could be anonymized to create an idea of an “average” American city. Much in the same way, a timeline of events related to Internet searches was created to show trends of relation to Internet use and issues which relate to that use.

THE SMARTPHONE

“The smartphone first arrived [in 2007] in the form of the iPhone” (Morris, 2017, p.1). By 2011, approximately 50% of the population owned or used a cell phone, and between 2011 and 2012, “it suddenly became very easy to predict what people would be doing in public places: Most would be looking down at their phones” (Twenge, 2017a/b, p. 1).

When Apple's smartphone went on sale on June 29, 2007, the world was dominated by flip phones and Blackberrys with tiny keyboards. People carried iPods for music, Palm Pilots for calendars, and compact cameras for photography. Putting all those things into a rectangle that fit in your pocket seemed crazy. Doing it without a keyboard was even crazier. (Kelly & Regan, 2017, p. 1)

The smartphone eventually surpassed all other versions of electronic communication. It became ubiquitous in modern life, so much so that it is now considered odd not to own and use a smartphone, i.e., using a flip-phone or Blackberry. The smartphone has changed the way we interact and communicate.

This is the new normal: Instead of calling someone, you text them. Instead of getting together for dinner with friends to tell them about your recent vacation, you post the pictures to Facebook. It's convenient, but it cuts out some of the face-to-face interactions that, as social animals, we crave. (Twenge, 2017a, p. 1)

Most people use their smartphones with little or no difficulties affecting their personal or professional life. However, the smartphone, more specifically social media apps on smart phones do not come without risk to all. Definitive and life-changing effects are exacerbated in some users who cannot resist the psychological draw of a smart phone device and the apps it carries.

PROBLEMS

This paper focuses on and the adverse effects of smartphone use and abuse. For some, the problems associated with devices and the apps they access are minimal. For others, the adverse effects are life altering, and in some cases,

deadly. The following problem areas: addiction to the device, emotional distress and relationship problems with its use are examined below.

Addiction

People check their smartphones an average of 150 times a day (Stern, 2013, p.1). A person's smartphone is hard to put down and ignore. There is always something to check—a friend request to agree to, a Tweet that needs to be delivered to their followers, or a Snapchat Streak to maintain. Smartphones seem to demand attention 24 hours a day, 365 days a year. It would seem to be easy to put down the device, walk away, and stay away; yet for many users, that is asking too much. Why do so many find it challenging to put their phones away?

The smartphone is the instrument for many apps. Social media apps are often first in line. They employ numerous means to capture attention and keep it. Much like operating a slot machine, there is an action (checking your smart phone constantly) and a reward (receiving Facebook "Likes," LinkedIn recommendations, Snapchat Streaks or Instagram hearts). That slot machine is operating to provide the player with an intermittent variable reward. Social Media also tricks your brain into continued and sometimes continuous interaction, losing track of time, reality and others around you. (Vevre, 2015, p. 125).

Is social media use through smartphones enjoyment or addiction? Perhaps both (Morgans, 2017, p. 1). "As an experience evolves, it becomes an irresistible weaponized version of the experience it once was. In 2004, Facebook was fun; in 2016, it's addictive" (Alter, 2017, p. 5). A 2013, study found that those "who spent more time on Facebook had higher levels of activity in the nucleus accumbens – the brain's reward center" (Mariani, 2016, p. 88).

Human behavior is driven in part by a succession of reflexive cost-benefit calculations that determine whether an act will be performed once, twice, a hundred times, or not at all. When the benefits overwhelm the costs, it's hard not to perform the act over and over again, particularly when it strikes just the right neurological notes. (Alter, 2017, p. 5)

A video game designer created a software design/model, the Hook Model, to hook the users into continued interaction (Eyal, 2014, p. 6). The Hook Model involves four steps: 1) Trigger, 2) Action, 3) Variable Reward, and 4) Investment (Eyal, 2014, p. 6). The *Trigger* starts internal or external processes. "Habit-forming products start by alerting users with external triggers like an email, a Web site link, or the app icon on a phone" (Eyal, 2014, p. 7). The *Action* is the behavior in anticipation of a reward. "Companies leverage two basic pulleys of human behavior to increase the likelihood of an action occurring: the ease of performing and action and the psychological motivation to do it" (Eyal, 2014, p. 8). The *Variable Reward* creates intrigue. "Introducing variability [to an action] multiplies the effect, creating a focused state, which suppresses the areas of the brain associated with judgment and reason while activating the parts associated with wanting and desire" (Eyal, 2014, pp. 8-9). Finally "the *Investment* implies an action that improves the serviced for the next go-around" (Eyal, 2014, p. 10). Actions may include liking a Facebook page, approving a friend request, starting a Snapchat Streak.

One study asked frequent smartphone users to put their smartphones face down on a table and walk away from them. The participants noted they grew more anxious over time (Chever, Rosen, Carrier & Chavez, 2014, p. 290). Turkle (2011) explains this phenomenon as "a constant connection (that) comes (with) new anxieties of disconnection, a kind of panic" (Turkle, p. 16).

Another explanation for the draw of smartphone social media apps is the Fear of Missing Out, or FOMO. FOMO is "a pervasive apprehension that others might be having rewarding experiences from which one is absent" and "a desire to stay continually connected with what others are doing" (Przybylski, Murayama, DeHaan, & Gladwell, 2013, p.1841). However, that continual connection has its price. In a study of adolescents, higher use of social media triggered different emotions; in boys—feelings of anxiety, in girls—depression (Oberst, Wegmann, Stodt, Brand, & Chamarro, 2016, p. 50).

Our neurochemical response to every ping and ring tone seems to be the one elicited by the "seeking" drive, a deep motivation of the human psyche. Connectivity becomes a craving; when we receive a text or an e-mail, our nervous system responds by giving us a shot of dopamine. We

are stimulated by connectivity itself. We learn to require it, even as it depletes us. (Turkle, 2011, p. 227)

While the brain derives pleasure from the continual reward of electronic communications, external factors and intentional actions enhance the draw to these devices. Websites and apps are setup to create demand. They are designed to facilitate the almost constant interaction that draws the complete attention of the user. Why? There is money to be made in what has been coined the *attention economy*.

"The attention economy" is a relatively new term. It describes the supply and demand of a person's attention, which is the commodity traded on the internet. The business model is simple: The more attention a platform can pull, the more effective its advertising space becomes, allowing it to charge advertisers more. (Morgans, 2017, p. 1)

This draw of the user's attention is engineered into the software and into the app. These are deliberate actions that not only demand attention but also deliver it.

You know when you open Instagram or Twitter and it takes a few moments to load updates? That's no accident. Again, the expectation is part of what makes intermittent variable rewards so addictive. This is because, without that three-second delay, Instagram wouldn't feel variable. There's no sense of will I win? because (sic) you'd know instantly. So the delay isn't the app loading. It's [like] the cogs spinning on the slot machine. (Morgans, 2017, p. 1)

Rewards engineered into the software of apps create a powerful draw on a person's attention; thus, increasing the amount of time spent on a device boosts the value of the app to advertisers and increases profits to the app makers. People are addicted to their smartphones because their brain tells them what they are doing is important, so important that the rest of the world around them just fades away (Verve, 2015, p. 137). The potentially irresistible appeal for attention, interaction, anticipation, stimulation, and validation are well known to app developers and human-computer interaction scientists; tasks and actions enabling these responses are often developed carefully and intentionally.

Emotional Distress

Addiction gets us to return to the smartphone and its apps again and again, but what happens to us as we continue that cycle or even speed it up? The interconnected world that smartphones have propelled us into, does not make us feel better, it makes us feel worse (Primack, Shensa, Sidani, Whaite, Lin, Rosen, Colditz, Radovic & Miller, 2017, p. 7; Angeluci & Huang, 2015, p. 173). A recent review (Mercado, Holland, Leemis, Stone & Wang, 2017, p. 1931) of trends from the National Electronic Injury Surveillance System – All Injury Program (NEISS-AIP) found that while trends for self-harm among boys showed no significant increase from 2001 to 2015, trends for females increased 8.4% yearly from 2009 to 2015 (Mercado, et al., 2017, p. 1931). While there may be no direct correlation between self-harming trends in adolescent girls from that time period and smartphone use, it coincides with the rise in smartphone use, from its introduction by Apple in 2007 to its increased use by over half of the American public around 2011-2012 (Pendergrass, 2017, p. 2). Other studies (Twenge, Joiner, Rogers & Martin (2018); Mojtabai, Olfson, & Han (2016)) made similar correlations between the tipping point of majority smartphone use around 2011-2012 and increased rates of depression and suicide among adolescents.

A study of college students asked them to rate their moods five times each day. It found that the more the students used Facebook, the less happy they reported they were. "However, feeling unhappy didn't lead to more Facebook use, which suggests that Facebook was causing unhappiness, not vice versa" (Twenge, 2017a, p. 1). Another study found that "people who visited Social Media platforms most frequently, 58 visits per week or more, had more than three times the odds of perceived social isolation than those who visited fewer than nine times per week" (Hobson, 2017, p. 1).

Psychologically, however, [those who grew up in a world where there was always an iPhone, or the iGeneration or "iGen"] are more vulnerable than Millennials were: Rates of teen depression and suicide have skyrocketed since 2011. It's not an exaggeration to describe iGen as being on the

brink of the worst mental-health crisis in decades. Much of this deterioration can be traced to their phones. (Twenge, 2017b, p. 1)

Social media use can have varying adverse effects depending on how they are used. “Social snacking” refers to when someone browses through other people’s accounts and comments without making any comment. “Social snacking may feel like social engagement, and while you’re doing it you might temporarily forget your own feelings of loneliness. But just as junk food makes you feel both bloated and empty afterward, social snacking only leaves you with much time wasted and more loneliness than before” (Ludden, 2018, p. 1). Self-comparison can also make users feel lonely. By viewing others’ profiles and posts instead of their reality, one’s own life can seem less important, especially a person with a propensity toward loneliness. (Ludden, 2018, p. 1).

Social Media app use has notable effects on younger users who have never experienced a time without access to the Internet. Younger users may not have had sufficient time to learn the coping and life skills of older generations who did not have Internet access and are therefore more vulnerable.

Relationships

A recent study on the impact of smartphones on relationships found that people, whose partners were more frequently distracted by their phones, were less satisfied with their relationships, and thus were more likely to feel depressed about it (Roberts & David, 2016, p. 1).

The word phubbing “a portmanteau of two words: Phone and snubbing” was created in 2013 to help sell printed Dictionaries in Australia (Brockington, 2013, p. 1; Roberts, 2016, p. 50; Roberts & David, 2016, p. 1). While the word most likely did not help Australian Dictionary sales, the term actually took hold and flourished, more than likely because of the growing ubiquity of smartphone use, and abuse and the phenomenon that people immediately recognized. Eventually, the term expanded to include other aspects of the snubbing. “In January [2014], the Journal Computers in Human Behavior published an article on ‘partner phubbing,’ or ‘p-phubbing’ for short. And in May, Oxford Dictionaries announced that an entry for phubbing would be included in their latest online update” (Zimmer, 2016).

P-phubbing merely indicates a close relationship between the Phubber and the phubbee. “Partner phubbing...can be best understood as the extent to which an individual uses or is distracted by his or her cell phone while in the company of his or her relationship partner” (Roberts, 2016, p. 63).

The abuse of smart phones has placed people at the risk of impaired social interactions. When it comes to smartphones, tablets and other mobile delights, many of the adults have the unfortunate tendency to behave like children: prodding and poling their shiny toys to the exclusion of anyone and anything else. People would rather communicate via text instead of talking face-to-face. (Ugar & Koc, 2015, p. 1023)

A recent study found that Internet addiction was positively related to phubbing activity (Karadag, Tosuntas, Erzen, Duru, Bostan, Sahin, Culha, & Babadag, 2015, p. 1). “It is therefore reasonable to suggest that problematic Internet use would be associated with problematic smartphone use, which in turn may predict phubbing behavior” (Chotpitayasunondh & Douglas, 2016, p. 10). The Displacement Hypothesis has been used to explain another draw of the smartphone’s universe (Valkenburg & Peter, 2007, p. 1169). “The ‘Displacement Hypothesis’ suggests that time spent on smartphones displaces (or reduces) more meaningful interactions with your lover, weakening the relationship” (Roberts, 2016b, p.1). Negative consequences of heavy use of social networking sites include a decrease in real-life social participations and academic achievement as well as relationship problems (Kuss & Griffiths, 2011, p. 3528)

Phubbing and p-phubbing are often seemingly unnoticed by the person with the smartphone in their hand, totally oblivious to the world around them, intent on accessing every app, every text, every Facebook post and Instagram communication. While for the other person, without a smartphone, without the electronic distraction just inches away from their face, the snub is real and the emotions it continually brings are hurtful (Chotpitayasunondh & Douglas, 2016, p. 10). Feeling rejected and ignored in favor of a bit of electronic Tweet or text creates and maintains real negativity and pain (Oberst, Wegmann, Stodt, Brand & Chamarro, 2016, p. 51). It would be seemingly easy to

acknowledge and reverse this. However, it may not be that easy to just put the smartphone down and leave it down. There are forces both internal and external which make it harder and harder to “just stop.” Both inside the mind and manufactured into the devices are powerful draws to the smartphone users’ attentions.

SNAPCHAT

Snapchat, one of the most popular websites for young adults, has become so ubiquitous in adolescent’s lives that even the minutest disruption in the familiarity of the app could cause meltdowns in users’ lives. “If you’re fourteen, Snapchat’s user interface is intuitive; if you’re twenty-two, it’s intriguing; if you’re over thirty-five, it’s impenetrable. This encourages old people to self-deport” (Marantz, A., 2018, p. 1). When fewer people from older generations lose (or never gain) interest, teens are apt to become more interested and spend more time on the device, knowing that their parents are not watching and their friends are. For example, most Snapchat users consider Facebook an app for “old people” and favor Snapchat for its appearance of exclusiveness (Sweney, 2018, p. 1).

So Snapchat’s the most popular messaging service for teenagers. And they invented this feature called ‘streaks,’ which shows the number of days in a row that you’ve sent a message back and forth with someone. So, now you could say, ‘Well, what’s the big deal here?’ Well, the problem is that kids feel like, ‘Well, now I don’t want to lose my streak.’ But it turns out that kids actually—when they go on vacation—are so stressed about their streak that they actually give their password to, like, five other kids to keep their streaks going on their behalf. And so you could ask when these features are being designed, are they designed to most help people live their life? Or are they being designed because they’re best at hooking people into using the product? (Cooper, 2017, p. 1; Michael, 2017, p. 1)

When Snapchat significantly updated their software for the first time since its introduction in 2011 “[t]he company split the app into two sections, consolidating friend content on the left side, media content on the right, and installing a slew of other design changes” (Lorenz, 2018, p. 1). Thousands of Snapchat Streaks were lost which exacerbated an uproar from millions of Snapchat users, the majority being teens and adolescents. Most Snapchat users had never lived through a major redesign of their most-favored app. Most will not have remembered the 2008 Facebook redesign which angered so many of its users (Beaumont, 2008, p. 1). Snapchat altered their app yet again in April of this year which further frustrated users and actually resulted in a drop in their stock price (La Monica, 2018, p. 1).

Snapchat encapsulates many of the themes derived above: addictive propensity wired into the use of streaks, obsession with continuing the use of the app, severe emotional reaction to changes to the app environment and the draw of adolescents to the app. By hard-wiring addiction propensity into the device, the apps and the gimmicks in those apps reward return behavior, the smartphone knows just what buttons to push to get us to come back again and again and to reward us when we do.

SUMMARY

Social media applications, used on smartphones, connect the world with instantaneous communication opportunities. Further, designers, developers, advertisers, marketers, etc. often intentionally design programs for continuous appeal, anticipation, response, and thrill. These very factors are often associated with adverse effects, including relationship issues, addiction, and emotional distress. Awareness of a users’ own response to application designers’ intended responses can minimize the adverse effects of social media application use. While the applications, alone do not cause all adverse effects, they can exacerbate adverse responses and results. Human-computer interaction scientists are making breakthroughs in the study of cause-effect, correlation, and relationships through social media applications on smartphones. These studies can lead to programs that not only perpetuate the existing adverse effects, but also can control for and mitigate adverse effects while continuing to achieve company goals.

Will smartphone and app use cause problems for everyone? Not necessarily. But the studies and research has shown that the more vulnerable of us can be lured into a world which views the attention as a commodity and thus the user as well. Better awareness of this draw can help those who do not recognize it, do so, and those who see it

from the outside, inform others of the perceived increased draw and distance from those around them. Smartphones are tools of modern life and should be viewed as such, not as a personal companion, but a device which connects a human being to fellow human beings, albeit electronically.

FURTHER RESEARCH

Smartphones, and the apps they give access to, are not going away. Their use, and as has been shown abuse, is an ubiquitous part of modern life. If anything, the use of the smartphone and apps will continue to rise as more and more people gain access to them and as more technically advanced smartphones are introduced to the market. Therefore, the study of their affects on society and personal relationships, both good and bad, are areas which will demand continued study and awareness. Fields such as psychology, sociology, commerce, and addictive response, all touch on aspects of the smartphones' use and abuse and how it affects society and the individual. Increased awareness of the phenomena which arise from this technological aspect of personal existence will only better inform society at the least. Additionally, it might even help predict changes in the phenomena based upon that past research.

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