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An investigation of personality traits as predictors for mobile phone dependency

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An Investigation of Personality Traits as Predictors for Mobile Phone Dependency

An Honors College Project Presented to
the Faculty of the Undergraduate
College of Health and Behavioral Studies
James Madison University

By Elijah D. Phillips

Accepted by the faculty of the Undergraduate College of Health and Behavioral Studies, James Madison University, in partial fulfillment of the requirements for the Honors College.

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PUBLIC PRESENTATION

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Table of Contents

Acknowledgement.....	3
Abstract.....	4
Introduction.....	5
Purpose.....	6
Terms & Definitions.....	6
Background.....	7
Rationale.....	11
Theoretical Approach.....	11
Methodology.....	11
Instrumentation.....	13
Results.....	14
Discussion.....	16
Conclusions.....	21
References.....	22
Appendix A.....	25
Appendix B.....	30
Appendix C.....	32

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Abstract

This study sought to determine if certain personality traits are correlates of mobile phone dependency, motivations for purchasing a mobile phone, and reasons for commonly using a cell phone. The impact of mobile phones on human day-to-day living and the interplay between cellular devices and human behavior have been topics of ongoing research. Through these investigatory efforts, numerous potential harms of mobile phone overuse and abuse have recently become increasingly apparent, but very little research has generated conclusive results about the interaction between human persona and mobile dependency. This was a cross-sectional study of a quasi-randomized sample of undergraduate students at James Madison University. Participants completed questionnaires to measure personality and level of addiction and inform the researcher of primary reasons for buying and using the devices. The majority of personality traits tested were shown to significantly predict mobile phone addiction. In addition, all traits significantly predicted a mix of reasons for purchasing and operating the phones. The study indicates how different personality traits can predispose an individual to addictive mobile behaviors, and how differently those behaviors can be manifested in the person's immediate environment, depending on his or her personality. The conclusions of this study intend to inform clinicians, counselors, and policy-makers of intangible human characteristics that may be important to consider when dealing with cell phone abuse and habits of obsessive use.

Introduction

Mobile phones have quickly become necessities in the everyday lives of almost everyone, notably young adults. In fact, their rise to fame has been so swift that most young adults are unaware of any level of cell phone dependence they have developed (Manolis, Roberts, & Yaya, 2014). In a study on mobile phone addiction among male and female college students, Manolis et al. (2014) found students spent approximately nine hours on their mobile devices every day. Such excessive use has shown to impact students' work, school, and social lives (Barkley, Karpinski, & Lepp, 2014; Kitamura, Takahashi, & Takao, 2009). Barkley et al. (2014) discovered frequency of mobile phone use was negatively associated with academic performance (GPA) among college students. Moreover, Kitamura et al. (2009) found problematic cell phone use negatively impacted students' job performances and interpersonal relationships with family, peers, and instructors. Although students have reported numerous benefits of their mobile phone use, including social networking and the ability to express one's personality through smartphone customization, students described many more potential detriments of their excessive use (Walsh, White, & Young, 2007). Debt accrued from purchasing or using certain applications, embarrassment from receiving alerts at inappropriate times (such as in class), addictive behavior, and safety risks from using while driving were among students' greatest concerns (Walsh et al., 2007). The National Safety Council estimated over one quarter (a minimum of 27%) of fatal, injury-inducing, and property damage-related vehicular crashes in 2013 involved drivers talking and texting on their cell phones (National Safety Council, 2015).

Purpose

The purpose of this study was to determine if personality traits are predictors for problematic mobile phone use. Excessive mobile phone attachment has been demonstrated as a potential harm to college students' work, school, and social lives, in addition to financial well-being and ability to avoid accidental injury (Barkley et al., 2014; Kitamura et al., 2009; Walsh et al., 2007; National Safety Council, 2015). Furthermore, similarities between mobile phone dependency and other types of addictive behavior, such as smoking, drug and alcohol abuse, internet addiction, and compulsive gambling, have been reported, and several personality factors have been established as strong-predictors for these alternative addictions (Motoharu, 2014; Kitamura et al., 2009). Therefore, it is likely mobile phone dependency can also be predicted by personality traits, since it illustrates similarities to other types of addictive behavior (Motoharu, 2014). However, relatively little research has been done to elucidate the relationships between personality factors and cell phone addiction, despite the rapidly emerging significance of mobile devices in individuals' everyday lives (Manolis et al., 2014).

Terms & Definitions

- *Personality traits* or *personality factors* refers to the “Big Five” components of personality (extraversion, neuroticism, openness, agreeableness, conscientiousness) outlined by the Five-Factor Model of Personality, a recurrent and comprehensive classification of personality (Costa & McCrae, 1987). They are enduring “dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions” (Costa & McCrae, 1990, p. 23).

- *Mobile phone dependence or addiction or problematic use* refer to inappropriate use or overuse that causes impairment or distress in the social or personal domains of a person's life (Roberts & Pirog, 2012).
- *Extraversion*: defined by outgoing and sociable behavior, while introversion is characterized by shyness (Bianchi & Phillips, 2005).
- *Neuroticism*: defined by moodiness and low emotional stability (Butt & Phillips, 2008).
- *Openness-to-experience*: defined by curiosity and open-mindedness (Motoharu, 2014).
- *Agreeableness*: defined by cooperative and considerate behavior (Butt & Phillips, 2008).
- *Conscientiousness*: defined by self-discipline and organization (Butt & Phillips, 2008).

Background

Extraversion. Extraversion is arguably the most extensively researched personality trait related to cell phone addiction. People who scored high on this trait tended to be gregarious, energetic, optimistic, loquacious, and affectionate; whereas those who scored low on this trait tended to be taciturn, aloof, and individualistic (Costa & Widiger, 2002, p. 6). However, introverts are not inherently negative or unfriendly, but they do not outwardly express the same enthusiasm as extraverts (Costa & Widiger, 2002, p. 6). Typically, people who were more outgoing and attention-seeking were more likely to overuse their mobile phones than those who were more introverted (Manolis, Pullig, & Roberts, 2015; Motoharu, 2014; Butt & Phillips, 2008; Bianchi & Phillips, 2005). Since mobile phones are often used for social communication and behavior, Manolis et al. (2015) suggested people who are shy and less socially inclined may not feel the need to use the devices as often as more extraverted individuals. Contrariwise, Motoharu (2014) argued extraverts may be inclined to use their mobile phones as social tools

more frequently, since they are naturally sociable individuals. Bianchi and Phillips (2005) determined extraverts may need to use their cell phones more frequently to maintain their typically extensive social networks, whereas Butt and Phillips (2008) contended contacts may feel more comfortable communicating with extraverts over the phone because of their generally positive and sociable personalities, which can be refreshing or reassuring to others. Regardless of one's gregarious nature, Barkley, Lepp, Li, and Salehi-Esfahani (2015) found low-mobile-phone-use extraverts exhibited less boredom, a greater desire for challenge, and were more aware of benefits and opportunities than high-use extraverts, who showed greater leisure distress.

Neuroticism. The association between neuroticism and cell phone addiction has also been studied with relatively high frequency. People who scored high on this trait were more prone to psychological distress – anxiety, hostility, depression, self-consciousness, impetuosity, and maladaptive coping reactions (Costa & Widiger, 2002, p. 6). Although these emotions are experienced by everyone at some time or another, the frequency and intensity at which they are felt differs among persons and determines whether an individual can justifiably be described as neurotic (Costa & McCrae, 1990, p. 46). Generally, people who were more temperamental and moody were more likely to overuse their mobile phones than those who were more emotionally stable (Manolis et al., 2015; Motoharu, 2014; Butt & Phillips, 2008). For neurotic individuals, Manolis, et al. (2015) suggested incessant mobile phone use may be perceived as “mood medicine” – less emotionally stable individuals might use the devices as distractions from the emotional troubles of their daily lives. Meanwhile, Motoharu (2014) argued less emotionally stable individuals may be more inclined toward mobile phone addiction because smartphones provide a stage for presenting oneself to the world, and neuroticism is associated with a strong desire to get approval from others by creating positive perceptions of self, while simultaneously

avoiding disapproval. Butt and Phillips (2008) found more neurotic individuals particularly preferred texting over calling. The researchers contended, because neurotic people have relatively high social anxiety, they may prefer text communication because it is more disinhibiting than visual or vocal communication (Butt & Phillips, 2008). In addition, neurotic individuals may be worried about their messages being misinterpreted, whereas text communication mitigates this anxiety by making conversations less spontaneous – users can take time to construct and refine their messages before sending them, increasing one’s sense of control over each conversation (Butt & Phillips, 2008). Madell and Muncer (2007) suggested “sense of control” was the most significant factor influencing young adults’ use of mobile devices for communication. After receiving a text message, college students preferred having time to think before responding or choosing not to respond (Madell & Muncer, 2007).

Openness. The remaining three Big Five personality traits – openness to experience, agreeableness, and conscientiousness – have been the subjects of significantly less research in relation to mobile phone addiction. People who scored high for openness generally showed intrigue for novel ideas and unconventional values (Costa & Widiger, 2002, p. 6). They tended to be more emotionally sensitive and actively pursue and appreciate diverse experiences for the chief purpose of personal growth (Costa & Widiger, 2002, p. 6). Contrariwise, closed individuals tended to have more conservative tastes and hold conventional beliefs, attitudes, and values; they also tended to be emotionally unresponsive (Costa & Widiger, 2002, p. 6). People who were more imaginative, curious, and open-minded were less likely to overuse their mobile phones than those who had a lower openness-to-experience (Motoharu, 2014). Motoharu (2014) suggested problematic cell phone use demonstrates an over-attachment to one’s mobile phone, and less

open-minded individuals may be reluctant to change their addictive behavior because mobile devices have become essential parts of their daily lives.

Agreeableness. As with extraversion, agreeableness is an interpersonal dimension; it represents a continuum of preferred interactions from sympathy to antagonism (Costa & Widiger, 2002, p. 6). People who scored high on this trait tended to be compassionate, trusting, empathic, unselfish, obliging, and merciful, generally believing that others also have good intentions (Costa & Widiger, 2002, p. 6). Those who scored low on this trait tended to be cynical, manipulative, rude, skeptical, unhelpful, and irascible (Costa & Widiger, 2002, p. 6). People who were more selfish, uncooperative, and inconsiderate were more likely to use their mobile phones excessively than those who were more agreeable (Butt & Phillips, 2008). Butt and Phillips (2008) argued a greater tendency towards mobile phone use among disagreeable individuals may be because they are generally not concerned with others' impressions of them. Therefore, disagreeable people may not use proper mobile phone etiquette and, instead, use their phones during inappropriate situations, such as face-to-face conversations or in places where mobile phone use is prohibited or strongly discouraged, including classrooms, business meetings, or movie theaters (Butt & Phillips, 2008).

Conscientiousness. Lastly, conscientiousness refers to the extent of coordination, perseverance, and motivation in an individual's goal-oriented behaviors (Costa & Widiger, 2002, p. 6). People who scored high on this trait tended to be organized, dependable, self-motivated, diligent, punctual, meticulous, ambitious, and persistent; whereas people who scored low on this trait tend to be goalless, irresponsible, negligent, unmotivated, and self-indulgent (Costa & Widiger, 2002, p. 6). Individuals with less self-discipline, organization, and a decreased work ethic were more likely to overuse their mobile phones than those who were more conscientious

(Butt & Phillips, 2008). Butt and Phillips (2008) argued people who are less inclined to work dutifully may use their mobile devices as procrastination tools at school or work.

Rationale

The present study aims to supplement current literature related to personality traits and the ability to predict addictive behavior, specifically mobile phone addiction. Excessive mobile phone use has been consistently identified as a potential harm for young adults' physical, cognitive, social, and financial well-beings (Barkley et al., 2014; Kitamura et al., 2009; Walsh et al., 2007; National Safety Council, 2015). Therefore, more research to confirm the relationships between personality traits and cell phone use is needed, Investigation will educate students about the potential risks of problematic use and inspire research for treating the emerging addiction.

Theoretical Approach

The Social Cognitive Theory (SCT) was employed as a set of guiding principles for the present study. The theory utilizes reciprocal determinism – the reciprocal interplay of behavior, personal factors, and environmental factors – to explain health behavior (Romas & Sharma, 2012). It contends environmental stimuli may trigger behavioral responses that are determined or influenced by an individual's personality (Romas & Sharma, 2012). In addition, a person's behavioral responses have the potential to augment his or her environment, resulting in the expression of different personality traits (Romas & Sharma, 2012).

Methodology

The present study was approved by the James Madison University Institutional Review Board (protocol number: 18-0088).

Participants. The sample consisted of 400 participants (267 females and 133 males) between the ages of 18 and 26 years (mean = 19.67), who were either freshmen (31.8%), sophomores (24.5%), juniors (15.5%) or seniors (28.2%). Participants were required to be at least 18 years old and own a mobile phone. Subjects were undergraduate students recruited from the James Madison University (JMU) campus in Harrisonburg, Virginia. The JMU student body was chosen as the sample source because it comprises a large young adult population with diverse personalities.

Sampling. Twelve locations on campus were randomly matched with times by drawing each out of its respective container. Locations include Rose and Carrier Libraries, Showker and Duke Halls, Forbes Theater, En/Geo, CHBS, Bioscience, SSC, Madison Union, Festival, and ISAT/CS. A total of thirty surveys were administered at each of the twelve locations on campus, across all time periods. For 1-2 hours at each period of the day, potential subjects were asked to voluntarily complete a multi-instrument questionnaire. Informed consent was obtained from volunteers via cover letter prior to filling out a survey. Randomizing both the location and time of survey distribution potentially maximized participant randomization.

Materials. The Big Five Inventory (BFI), Mobile Phone Addiction Index (MPAI), and a questionnaire regarding Patterns of Mobile Phone Use (PMPU) were instruments used in the study (Table 1). Demographic information regarding age, biological sex, and academic year was also collected from participants to describe the sample and help understand how patterns of cell phone use influence the lives of different demographic groups.

Instrumentation

Big Five Inventory (BFI). The BFI (John & Srivastava, 1999) is a self-report, descriptive instrument. It measured participants' Big Five personality dimensions to determine if they are more extraverted or introverted, agreeable or antagonistic, conscientious or lacking direction, neurotic or emotionally stable, and open or closed to novel experiences (Table A1; John & Srivastava, 1999). The survey consists of 5 subscales, one for each Big Five trait, and a total of 44 items on a 5-point Likert-type scale, 1 (*strongly disagree*) to 5 (*strongly agree*) (John & Srivastava, 1999). Items 2, 6, 8, 9, 12, 18, 21, 23, 24, 27, 31, 34, 35, 37, 41 and 43 were reverse scored and subscale scores were summed separately for analysis (John & Srivastava, 1999). In previous American and Canadian reports, alpha reliabilities of the BFI scales typically range from 0.75 to 0.90 and average above 0.80 (Chen, et al., 2016; John & Srivastava, 1999).

Mobile Phone Addiction Index (MPAI). The MPAI (Leung, 2008) is a self-report, descriptive assessment of participants' patterns of mobile phone use (Table A1). It is a 4 subscale, 17-item total instrument with a 5-point Likert-type scale, 1 (*not at all*) to 5 (*always*) (Leung, 2008). Subscale scores were summed separately for analysis (Leung, 2008). Cronbach's alpha reliability for the scale was 0.90 (Leung, 2008).

Patterns of Mobile Phone Use (PMPU). The PMPU questionnaire consisted of a series of dichotomous, multiple-choice, and Likert-type questions to help explain participants' reasons for buying mobile phones and common usage scenarios (Table A1). Answers to these questions help understand how personality traits are associated with and reflected in mobile phone behavior patterns.

Data Analysis. Personality traits were measured by the BFI (John & Srivastava, 1999). Subscale scores were summed separately to generate ratio/interval data. Cellphone addiction was

measured by the MPAI (Leung, 2008). Subscale scores were summed separately to generate ratio/interval data. The classification of subjects as dependent or non-dependent was accomplished by dichotomizing 8 of the 17 items and collected data ranged from 0 to 8 in numerical value (Leung, 2008). Participants who answered “yes” to 5 or more of the 8 questions for addictive mobile phone use were considered “addicted” to their cell phones (Leung, 2008). Additionally, patterns of cellphone use were measured by a series of dichotomous, ranking, multiple-choice, and Likert-type questions formulated by researcher. Answers were interpreted nominally. A Stepwise Multiple Regression was run to explain the relative contribution of each predictor to the total model variance. To determine if a relationship between the Big Five and mobile phone addiction exists, a Pearson’s Correlation coefficient was generated. Chi-Square tests were run to reveal if the Big Five statistically significantly predicted a participant’s reasons for acquiring a mobile phone and common cell phone usage scenarios. Assumptions for all tests were met.

Results

Descriptive Statistics. Frequency distributions were generated for the MPAI and Big Five subscales of the BFI; age, sex and academic year; and data regarding reasons for obtaining a mobile phone and common usage scenarios. Histograms were generated to estimate the normalcy of all distributions, and all variables were found to be normally distributed. The sample was 33.3% male and 66.8% female, and the proportions of freshmen, sophomores, juniors and seniors comprising the sample were 31.8%, 24.5%, 15.5% and 28.2%, respectively.

Mobile Phone Addiction. From the Stepwise Multiple Regression, openness ($p < 0.001$, $R^2 = 0.036$), agreeableness ($p < 0.001$, $R^2 = 0.041$), and conscientiousness ($p < 0.001$, $R^2 =$

0.104) significantly predicted mobile phone addiction, explaining a total of 18.1% of the variance (Table A2). A Pearson Correlation was run to determine the strength and direction of relationships between addiction and the three significant personality variables. Openness had a weak, positive correlation ($r = 0.104$), agreeableness had a weak, negative correlation ($r = -0.295$), and conscientiousness had a moderate, negative correlation ($r = -0.323$) with mobile phone addiction (Table A2).

PMPU: Reasons for Acquiring. Based on the results of a Chi-Square test, extraversion significantly predicted emergency use and personal safety ($p < 0.001$) and keeping in-touch with parents ($p = 0.001$) as primary motivators for acquiring a mobile phone (Table A3). Neuroticism significantly predicted keeping in touch with parents ($p < 0.001$) as the sole motivator for acquiring a mobile phone (Table A3). Openness significantly predicted social conformity ($p = 0.002$) and keeping in-touch with friends ($p = 0.023$) as primary motivators (Table A3). Agreeableness also significantly predicted social conformity ($p < 0.001$; Table A3). Lastly, conscientiousness significantly predicted emergency use and personal safety ($p < 0.001$) and business reasons ($p = 0.005$) as major motivators for acquiring a mobile phone (Table A3).

PMPU: Common Usage Scenarios - Extraversion. From a Chi-Square test, extraversion significantly predicted staying in touch with friends ($p < 0.001$), staying in-touch with family ($p < 0.001$), and using social networking sites ($p < 0.001$) as common cell phone usage scenarios (Table A4).

PMPU: Common Usage Scenarios – Neuroticism. From a Chi-Square test, neuroticism significantly predicted staying in-touch with friends ($p = 0.003$), banking and paying bills ($p < 0.001$), and shopping and mobile commerce ($p < 0.001$) as common cell phone usage scenarios (Table A5).

PMPU: Common Usage Scenarios – Openness. From a Chi-Square test, openness significantly predicted listening to music ($p < 0.001$), watching videos or livestreams ($p < 0.001$), and taking pictures ($p < 0.001$) as common cell phone usage scenarios (Table A6).

PMPU: Common Usage Scenarios – Agreeableness. From a Chi-Square test, agreeableness significantly predicted discussing schoolwork ($p < 0.001$), taking pictures ($p = 0.001$), and using health and fitness apps ($p = 0.035$) as common cell phone usage scenarios (Table A7).

PMPU: Common Usage Scenarios – Conscientiousness. From a Chi-Square test, conscientiousness significantly predicted job-related work ($p < 0.001$), playing games ($p < 0.001$), and using health and fitness apps ($p < 0.001$) as common cell phone usage scenarios (Table A8).

Discussion

Extraversion. Contrary to what was hypothesized, extraversion failed to significantly predict mobile phone addiction (Table A2). It was theorized extraverts view mobile phones as essential social tools, whereas introverts may not regard them as so useful (Motoharu, 2014). However, extraversion significantly predicted emergency use and personal safety ($p < 0.001$) and keeping in-touch with parents ($p = 0.001$) as primary motivators for acquiring a mobile phone (Table A3). The former reason was listed by almost 92% of extraverts and 99.5% of introverts, and the latter by 94.8% of extraverts and 100.0% of introverts (Table A3). Because extraverts tend to have more extensive social networks (Bianchi & Phillips, 2005), they may feel safer having a means of instant communication with their contacts, in the event of an emergency or difficult situation. In addition, the importance of parental contact is likely due to the generally

sociable nature of extraverts (Motoharu, 2014). On the other hand, introverts typically prefer to act independently (Costa & Widiger, 2002, p. 6), so they may be less likely to ask a stranger or even a friend for help in a bad situation; a cell phone would afford greater autonomy. Moreover, introverts may be the most comfortable communicating with their parents, explaining the 100.0% response in Table A3. As anticipated, extraversion significantly predicted staying in-touch with friends ($p < 0.001$), staying in-touch with family ($p < 0.001$), and using social networking sites ($p < 0.001$) as common cell phone usage scenarios (Table A4). Additionally, the frequency at which these uses were practiced were consistently higher for extraverts than for introverts (Table A4), likely due to the tendency for extraverts to be more outgoing and attention-seeking (Manolis, Pullig, & Roberts, 2015).

Neuroticism. Neuroticism was also unable to significantly predict mobile phone addiction (Table A2). Because neurotic individuals regularly experience emotional distress and are, therefore, more inclined to maladaptive coping behaviors (Costa & Widiger, 2002, p. 6), a relationship was expected. Neuroticism did, however, significantly predict keeping in-touch with parents ($p < 0.001$) as a chief motivator for acquiring a mobile phone (Table A3). Nearly 94% of more neurotic individuals and an entire 100.0% of more emotionally stable people listed this reason. More neurotic individuals may confide in or find respite talking to their parents, while more emotionally stable persons would likely desire to maintain healthy relationships with loved ones (Costa & Widiger, 2002, p. 6). Interestingly, neuroticism significantly predicted staying in-touch with friends ($p = 0.003$), banking and paying bills ($p < 0.001$), and shopping and mobile commerce ($p < 0.001$) as common cell phone usage scenarios (Table A5). The desire to contact friends can likely be explained with the same reasoning used for neuroticism and parental contact being a chief motivator of mobile phone ownership in Table A3. The frequency at which

neurotic individuals used their phones for banking and shopping was generally higher than that of emotionally stable persons, and research regarding shopping as a maladaptive behavior associated with neuroticism is ongoing (Andreassen et al., 2015).

Openness. Openness ($p < 0.001$, $R^2 = 0.036$, $r = 0.104$) significantly predicted mobile phone addiction, with a weak, positive relationship explaining 3.6% of the variance (Table A2). Therefore, people who were more open-minded were more likely to be addicts. Open-minded individuals might be more inclined to obsessively use cell phones because they tend to avoid generalizations (Costa & Widiger, 2002, p. 6), such as the one between cell phones and youth culture, and are, therefore, unashamed of the amount of time spent using a cell phone. In contrast, traditional, more closed-minded persons are more likely to associate with this generalization. Lastly, open-minded individuals tend to welcome new ideas and experiences (Costa & Widiger, 2002, p. 6) and, as a result, may be particularly attracted to the free flow of information afforded by a mobile phone, either by person-to-person communication or over the internet. Openness also significantly predicted social conformity ($p = 0.002$) and keeping in touch with friends ($p = 0.023$) as primary motivators for acquiring a mobile phone (Table A3). As anticipated, a smaller proportion of open-minded than closed individuals in Table A3 reported social conformity as a main reason for purchasing a mobile phone, since people who are more open are more likely to break from social norms or the status quo (Costa & Widiger, 2002, p. 6). Additionally, a greater percentage of open-minded persons than closed listed keeping in touch with friends as a primary motivator, possibly explained by an open individual's increased willingness to learn from others (Costa & Widiger, 2002, p. 6). Lastly, openness significantly predicted listening to music ($p < 0.001$), watching videos or livestreams ($p < 0.001$) and taking pictures ($p < 0.001$) as common cell phone usage scenarios (Table A6). Unsurprisingly, the

frequency at which these uses were practiced favored open-minded persons (Table A6), potentially because they are all creative experiences and, as such, appeal to the creative nature of open-minded individuals (Costa & Widiger, 2002, p. 6).

Agreeableness. As expected, agreeableness ($p < 0.001$, $R^2 = 0.041$, $r = -0.295$) significantly predicted mobile phone addiction, with a weak, negative relationship explaining 4.1% of the variance (Table A2). Therefore, people who were less agreeable were more likely to be addicts. Uncooperative individuals may tend to use their phones more obsessively because they are generally unconcerned with others' impressions of them or their livelihood, whereas people who are more agreeable might feel pressure to behave in a more socially acceptable manner with the use of their personal time (Butt & Phillips, 2008). Agreeableness also significantly predicted social conformity ($p < 0.001$) as a primary motivator for acquiring a mobile phone (Table A3). As anticipated, a much greater proportion of agreeable individuals in Table A3 reported social conformity as a main reason for buying a cell phone, compared to only 15.8% of disagreeable persons, since people who are more charming generally have a stronger desire to fit-in (Costa & Widiger, 2002, p. 6). Finally, agreeableness significantly predicted discussing schoolwork ($p < 0.001$), taking pictures ($p = 0.001$), and using health and fitness apps ($p = 0.035$) as common cell phone usage scenarios (Table A7). Because of the relatively few disagreeable subjects in Table A7, however, the importance of frequency comparisons between the two sub-groups is uncertain and, as a result, not discussed here. Nevertheless, it is worth noting the type of scenarios predicted, because each one can be used to present oneself in either a more appealing or less considerate way to others, depending on one's position on the agreeableness spectrum.

Conscientiousness. As anticipated, conscientiousness ($p < 0.001$, $R^2 = 0.104$, $r = -0.323$) significantly predicted mobile phone addiction, with a moderate, negative correlation explaining 10.4% of the variance (Table A2). Thus, people who were less conscientious were more likely to be addicts. People with less self-discipline, who are disorganized and have decreased work ethics, might be more inclined to use their mobile devices as procrastination tools, rather than working dutifully at school or work, for example (Butt & Phillips, 2008). Conscientiousness also significantly predicted emergency use and personal safety ($p < 0.001$) and business reasons ($p = 0.005$) as primary motivators for acquiring a mobile phone (Table A3). Over 97% of conscientious individuals in Table A3 reported emergency use and personal safety as a main reason for purchasing a cell phone, compared to 65.0% of unconscientious persons, possibly because people who are less organized are less likely to plan ahead for difficult situations and do not, therefore, consider how useful a cell phone could be at such a time (Costa & Widiger, 2002, p. 6). In addition, nearly 30% of conscientious individuals in Table A3 listed business reasons as a major motivator for buying a mobile phone, compared to 0.0% of unconscientious persons, possibly because people who are goal-oriented and diligent may want to more effectively manage their jobs or job resources (Costa & Widiger, 2002, p. 6). Lastly, conscientiousness significantly predicted job-related work ($p < 0.001$), playing games ($p < 0.001$), and using health and fitness apps ($p < 0.001$) as common cell phone usage scenarios (Table A8). As with agreeableness, however, there are relatively few unconscientious subjects in Table A8, so the importance of frequency comparisons between the two sub-groups is uncertain and, once again, not discussed here. Regardless, it is still worthwhile considering the type of scenarios predicted. All can be goal-oriented, while certain scenarios, such as gaming, could contribute to laziness, depending on one's location on the spectrum of conscientiousness.

Conclusions

Limitations & Delimitations. The study did not use true randomization for selecting a sample. Participant selection was a convenience sample. In addition, while the sample was large enough to establish sufficient statistical power and draw statistically significant conclusions, it consisted of less than 2% of the total JMU student population. Recall was also a potential source of bias. Lastly, a self-report questionnaire was used to determine a person's personality from the individual's approximation of his or her own behavior.

Future Directions. This study indicates openness, agreeableness, and conscientious can all predispose an individual to addictive mobile behaviors, and it characterizes the manifestation of those behaviors, based on the specific trait influencing their expression. Future paths of research should further explore the impacts of extraversion and neuroticism on mobile addiction, using a true-randomized sample. Moreover, multiple traits can characterize the same mobile behaviors, so strength-of-influence for different behaviors should be compared across traits to determine if one trait is more dominant. These conclusions intend to inform clinicians, counselors, future researchers, and policy-creators of the potential for openness, agreeableness, and conscientiousness to predict cell phone abuse and habits of obsessive use that have already become troublesome for many users.

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Appendix A**Table A1.** Research Instruments Used in the Study.

Instrument	Variable	Description
Big Five Inventory (BFI)	Personality Traits	Measures a person's Big Five personality dimensions
Mobile Phone Addiction Index (MPAI)	Cell Phone Addiction	Measures if someone is addicted to his or her cell phone
Patterns of Mobile Phone Use (PMPU)	Usage Patterns	Reveals reasons for buying a mobile phone, common cellphone uses, and patterns of silencing the device and using it while driving

Table A2. Percent Variance, Strength and Direction of Correlation for Statistically Significant Predictors from a Stepwise Multiple Regression and Pearson Correlation, Respectively. *

Stepwise Multiple Regression		
Predictor	R ²	p-value
Openness	0.036	p < 0.001
Agreeableness	0.041	p < 0.001
Conscientiousness	0.104	p < 0.001
Extraversion	0.003 (combined)	p = 0.248
Neuroticism		p = 0.604
Pearson Correlation		
Predictor	r-value	Summary
Openness	0.104	Weak, Positive
Agreeableness	-0.295	Weak, Negative
Conscientiousness	-0.323	Moderate, Negative

*Alpha was set at p = 0.05. Correlation coefficients for non-statistically significant variables omitted.

Table A3. “Yes” Responses (%) to Statistically Significant Reasons for Acquiring a Mobile Phone Predicted by Personality Trait. *

Chi-Square		
Reason	Predictor with p-value	“Yes” (%)
Emergency Use / Personal Safety	More Extraverted (p < 0.001)	91.9
	More Introverted	99.5
	More Conscientious (p < 0.001)	97.1
	More Disorganized	65.0
Keeping In-Touch with Parents	More Extraverted (p < 0.001)	94.8
	More Introverted	100.0
	More Neurotic (p < 0.001)	93.5
	More Emotionally Stable	100.0
Keeping In-Touch with Friends	More Open-Minded (p = 0.023)	86.6
	More Closed-Minded	77.7
Everyone Else Owned One (Social Conformity)	More Agreeable (p < 0.001)	57.7
	More Antagonistic	15.8
	More Open-Minded (p = 0.002)	50.2
	More Closed-Minded	66.2
Business Reasons	More Conscientious (p = 0.005)	28.9
	More Disorganized	0.0

*Alpha was set at p = 0.05.

Table A4. Frequency of Common Mobile Phone Usage Scenarios Predicted by Extraversion. *

Chi-Square						
Scenario (p-value)	Predictor	Responses				
Staying In-Touch with Friends (p < 0.001)	More Extraverted	Count	Frequently	Occasionally	Rarely	Never
		% of Total	205	5	0	0
	More Introverted	Count	144	39	7	0
		% of Total	75.8%	20.5%	3.7%	0.0%
Staying In-Touch with Family (p < 0.001)	More Extraverted	Count	188	11	11	0
		% of Total	89.5%	5.2%	5.2%	0.0%
	More Introverted	Count	125	47	18	0
		% of Total	65.8%	24.7%	9.5%	0.0%
Social Networking Sites (p < 0.001)	More Extraverted	Count	169	30	11	0
		% of Total	80.5%	14.3%	5.2%	0.0%
	More Introverted	Count	140	43	0	7
		% of Total	73.7%	22.6%	0.0%	3.7%

*Alpha was set at p = 0.05.

Table A5. Frequency of Common Mobile Phone Usage Scenarios Predicted by Neuroticism. *

Chi-Square						
Scenario (p-value)	Predictor	Responses				
Staying In-Touch with Friends (p = 0.003)	More Neurotic	Count	Frequently	Occasionally	Rarely	Never
		% of Total	139	22	7	0
	More Stable	Count	210	22	0	0
		% of Total	90.5%	9.5%	0.0%	0.0%
Banking/Paying Bills (p = 0.001)	More Neurotic	Count	40	76	42	10
		% of Total	23.8%	45.2%	25.0%	6.0%
	More Stable	Count	40	44	75	73
		% of Total	17.2%	19.0%	32.3%	31.5%
Shopping/Mobile Commerce (p = 0.035)	More Neurotic	Count	13	75	59	21
		% of Total	7.7%	44.6%	35.1%	12.5%
	More Stable	Count	20	30	80	102
		% of Total	8.6%	12.9%	34.5%	44.0%

*Alpha was set at p = 0.05.

Table A6. Frequency of Common Mobile Phone Usage Scenarios Predicted by Openness. *

Chi-Square						
Scenario (p-value)	Predictor	Responses				
Listening to Music (p < 0.001)	More Open	Count	213	31	11	6
		% of Total	81.6%	11.9%	4.2%	2.3%
	More Closed	Count	96	31	0	12
		% of Total	69.1%	22.3%	0.0%	8.6%
Watching Videos/ Livestreams (p < 0.001)	More Open	Count	97	122	32	10
		% of Total	37.2%	46.7%	12.3%	3.8%
	More Closed	Count	56	20	44	19
		% of Total	40.3%	14.4%	31.7%	13.7%
Taking Pictures (p < 0.001)	More Open	Count	128	50	72	11
		% of Total	49.0%	19.2%	27.6%	4.2%
	More Closed	Count	91	33	15	0
		% of Total	65.5%	23.7%	10.8%	0.0%

*Alpha was set at p = 0.05.

Table A7. Frequency of Common Mobile Phone Usage Scenarios Predicted by Agreeableness. *

Chi-Square						
Scenario (p-value)	Predictor	Responses				
Discussing Schoolwork (p < 0.001)	More Agreeable	Count	120	174	79	8
		% of Total	31.5%	45.7%	20.7%	2.1%
	More Antagonistic	Count	1	5	7	6
		% of Total	5.3%	26.3%	36.8%	31.6%
Taking Pictures (p = 0.001)	More Agreeable	Count	212	72	86	11
		% of Total	55.6%	18.9%	22.6%	2.9%
	More Antagonistic	Count	7	11	1	0
		% of Total	36.8%	57.9%	5.3%	0.0%
Health/Fitness Apps (p = 0.035)	More Agreeable	Count	47	129	132	73
		% of Total	12.3%	33.9%	34.6%	19.2%
	More Antagonistic	Count	0	9	10	0
		% of Total	0.0%	47.4%	52.6%	0.0%

*Alpha was set at p = 0.05.

Table A8. Frequency of Common Mobile Phone Usage Scenarios Predicted by Conscientiousness. *

Chi-Square						
Scenario (p-value)	Predictor	Responses				
			Frequently	Occasionally	Rarely	Never
Job-Related Work (p < 0.001)	More Conscientious	Count	77	143	127	33
		% of Total	20.3%	37.6%	33.4%	8.7%
	More Disorganized	Count	0	9	4	7
		% of Total	0.0%	45.0%	20.0%	35.0%
Playing Games (p = 0.001)	More Conscientious	Count	35	112	98	135
		% of Total	9.2%	29.5%	25.8%	35.5%
	More Disorganized	Count	9	11	0	0
		% of Total	45.0%	55.0%	0.0%	0.0%
Health/Fitness Apps (p = 0.035)	More Conscientious	Count	40	136	138	66
		% of Total	10.5%	35.8%	36.3%	17.4%
	More Disorganized	Count	7	2	4	7
		% of Total	35.0%	10.0%	20.0%	35.0%

*Alpha was set at p = 0.05.

Appendix B

Cover Letter

Identification of Investigators & Purpose of Study: You are being asked to participate in a research study by Elijah Phillips from James Madison University. The purpose of this study is to determine if patterns of mobile phone use relate to personality traits. This study will contribute to the researcher's Honors Capstone project.

Research Procedures: This study consists of surveys distributed on the James Madison University campus. You will be asked to complete a series of questions related to your mobile phone use and perceived personality.

Time Required: Participation in this study will take approximately 10 minutes of your time.

Risks: The researcher does not anticipate more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

Benefits: While you will not experience any direct benefits from participation, information collected in this study may benefit professional fields of study, such as psychology and behavioral health, by better understanding the dynamic interplay between personality and addictive behavior.

Confidentiality: While individual responses are obtained with demographic identifiers, this information will be kept in the strictest confidence, and aggregate data will be presented representing averages or generalizations about the total responses. No identifiable information will be collected from the participant and no identifiable responses will be presented in the final form of this study. All data will be stored in a secure location accessible only to the researcher. The researcher retains the right to use and publish non-identifiable data. At the study's conclusion, all individual records will be destroyed.

Participation & Withdrawal: Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind. However, once your responses have been submitted and anonymously recorded you will not be able to withdraw from the study.

Questions About the Study: If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Elijah Phillips
Student Researcher
James Madison University
phillied@dukes.jmu.edu

Dr. Stephanie Baller
College of Health and Behavioral Studies
James Madison University
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Questions About Your Rights as a Research Subject:

Dr. David Cockley
Chair, Institutional Review Board
James Madison University
(540) 568-2834
cocklede@jmu.edu

Giving of Consent

I have read this cover letter and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. By completing this survey, I certify that I am at least 18 years of age.

This study has been approved by the IRB, protocol # 18-0088

Appendix C

Questionnaire

For the following, please fill in and check the appropriate responses that best fit you.

1. **Age:** _____
2. **Sex (at birth):**
 - Male
 - Female
 - Other (please define): _____
 - Prefer not to respond
3. **Academic Year (by credits completed):**
 - Freshman
 - Sophomore
 - Junior
 - Senior

Please rate how true the following items are about you.

	Strongly Disagree	Disagree Somewhat	Neither Agree nor Disagree	Agree Somewhat	Strongly Agree
I am talkative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to find fault with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do a thorough job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am depressed, blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am original, come up with new ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am reserved.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am helpful and unselfish with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can be somewhat careless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am relaxed, handle stress well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am curious about many different things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am full of energy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I start quarrels with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a reliable worker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can be tense.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am ingenious, a deep thinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I generate a lot of enthusiasm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a forgiving nature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be disorganized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree Somewhat	Neither Agree nor Disagree	Agree Somewhat	Strongly Agree
I have an active imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be quiet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am generally trusting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be lazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am emotionally stable, not easily upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am inventive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have an assertive personality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can be cold and aloof.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I persevere until the task is finished.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can be moody.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I value artistic, aesthetic experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am sometimes shy, inhibited.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am considerate and kind to almost everyone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do things efficiently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I remain calm in tense situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer work that is routine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am outgoing, sociable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am sometimes rude to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make plans and follow through with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get nervous easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to reflect, play with ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have few artistic interests.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to cooperate with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am easily distracted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am sophisticated in art, music, or literature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please describe your mobile phone involvement.

	Not At All	Rarely	Occasionally	Often	Always
My friends and family complain about my mobile phone use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been told that I spend too much time on my mobile phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have tried to hide from others how much time I spend on my mobile phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have received mobile phone bills I could not afford to pay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find myself engaged on the phone for longer periods of time than intended.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have attempted to spend less time on my mobile phone but am unable to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can never spend enough time on my mobile phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When out of range for some time, I become preoccupied with the thought of missing a notification.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it difficult to switch off my mobile phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel anxious if I have not checked for messages or switched on my mobile phone for some time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel lost without my mobile phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I don't have a mobile phone, my friends would find it hard to get in touch with me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have used my mobile phone to talk to others when I was feeling isolated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have used my mobile phone to talk to others when I was feeling lonely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have used my mobile phone to make myself feel better when I was feeling down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find myself occupied on my mobile phone when I should be doing other things, and it causes a problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My productivity has decreased as a direct result of the time I spend on the phone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Why did you acquire or start using a mobile phone? Please mark all that apply.

<input type="radio"/>	Use in case of emergency or personal safety
<input type="radio"/>	Everyone I know had one
<input type="radio"/>	Keep in touch with friends and other social contacts
<input type="radio"/>	Keep in touch with parents
<input type="radio"/>	Business reasons
<input type="radio"/>	Information access
<input type="radio"/>	Leisure purposes (music, games, reading, etc.)

What are your common mobile phone usage scenarios? Please mark all that apply.

<input type="radio"/>	Staying in touch with friends
<input type="radio"/>	Staying in touch with family
<input type="radio"/>	Discussing schoolwork
<input type="radio"/>	Job-related work
<input type="radio"/>	Retrieving news and sports scores
<input type="radio"/>	Checking email
<input type="radio"/>	Web-browsing
<input type="radio"/>	Social networking sites
<input type="radio"/>	Dating apps
<input type="radio"/>	Listening to music
<input type="radio"/>	Watching videos or livestreams
<input type="radio"/>	Playing games
<input type="radio"/>	Taking pictures
<input type="radio"/>	Calendar/scheduling or keeping track of tasks
<input type="radio"/>	Arranging transport (GPS, directions, public transport, Lyft, Uber, etc.)
<input type="radio"/>	Health and fitness apps
<input type="radio"/>	Banking or paying bills
<input type="radio"/>	Shopping or mobile commerce

When out in public, how often, if ever, do you use your cellphone to do the following?

	Frequently	Occasionally	Rarely	Never
Catch up with family and friends?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Catch up on other tasks you need to accomplish?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No particular reason, just for something to do/pass time?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avoid interacting with others who are near you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordinate getting together with others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

At your most recent social gathering, did you use your cellphone to do any of the following?

	Yes	No
Make or receive a call.	<input type="radio"/>	<input type="radio"/>
Send a text or email.	<input type="radio"/>	<input type="radio"/>
Use an app.	<input type="radio"/>	<input type="radio"/>
Search or browse the web.	<input type="radio"/>	<input type="radio"/>
Take a photo or video.	<input type="radio"/>	<input type="radio"/>
Check to see if you have received any alerts.	<input type="radio"/>	<input type="radio"/>

Which, if any, of the following are reasons that you used your cellphone at the time?

	Yes	No
You were getting information that would be interesting to the group.	<input type="radio"/>	<input type="radio"/>
You were no longer interested in what the group was doing.	<input type="radio"/>	<input type="radio"/>
To avoid participating in what the group was discussing.	<input type="radio"/>	<input type="radio"/>
Connect with other people who were known by the group.	<input type="radio"/>	<input type="radio"/>
Connect with other people who were strangers to the group.	<input type="radio"/>	<input type="radio"/>
Share something that had occurred in the group by text, email, or social networking sites.	<input type="radio"/>	<input type="radio"/>
Post a picture or video you had taken of the gathering.	<input type="radio"/>	<input type="radio"/>

When is your mobile phone likely to be in mute or vibration mode? Please mark all that apply.

<input type="checkbox"/>	Never
<input type="checkbox"/>	In class
<input type="checkbox"/>	At work
<input type="checkbox"/>	In a meeting
<input type="checkbox"/>	On a date
<input type="checkbox"/>	At a religious service
<input type="checkbox"/>	At a movie or other places where others are usually quiet
<input type="checkbox"/>	While driving
<input type="checkbox"/>	While sleeping

Mobile phones and driving. Please respond to your typical usage scenario.

	Always	Sometimes	Never
Do you use your mobile phone while driving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you make and receive calls while driving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you send and receive texts while driving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you feel safe while driving and using a mobile phone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for completing this survey!