

SMARTPHONES, MULTITASKING AND EMPATHY:

A POLYMEDIA THEORY PERSPECTIVE

By

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Title of Study: SMARTPHONES, MULTITASKING AND EMPATHY: A  
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Abstract: The current study uses survey to gain a better understanding on how college student's use their smartphones, how they multitask and what affect these actions have on grade point averages and empathy. The current results, which were based on *t*-tests, one-way ANOVA's and linear regression analyses revealed college students GPA's and empathy means are effected by smartphone usage and multitasking. Responses indicate students are interacting with smartphones during idle time, waiting in line, waking up, going to sleep and being a passenger in a bus or other vehicle. This may suggest that a need for technological distraction is filling what was once idle time. College students with a high-level of multitasking fall into a lower GPA group, while the higher the college classification the less of a negative multitasking has on GPA.

In regards to empathy, while gender has no significance to empathy means, smartphone users with 10-plus hours of daily interaction significantly decrease in empathy means. These results suggest that the smartphone users mental state is occupied by their tasks, decreasing their ability to understand another's mental state. Implications of these findings in terms of the multitasking, smartphone user, indicate that as the popularity of smartphones increases, the ability to process and understand the intellectual/imaginative apprehension of another's mental state as well as excelling in the classroom is diminishing.

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## CHAPTER I

### INTRODUCTION

Smartphones—handheld personal computers—represent the most recent step in the evolution of portable information and communication technology (Oulasvirta, 2011). Smartphones—equipped with persistent network connectivity and supporting the installation of new applications—have the potential to produce new habits related to Internet use (Oulasvirta, 2011). Their exact impact on the formation of new habits is not well understood. In its first standalone measure of smartphone ownership, The Pew Research Center’s Internet and American Life Project found that two in five cellphone owners (42 %) owned a smartphone as of May 2011. Since 83% of Americans own some kind of mobile phone, this means that one-third (35%) of all American adults are smartphone owners (Aaron, 2011). People are increasingly using their phones to text, tweet, post to Facebook, surf the Web, take pictures and consume news, as well as using social networks to connect with each other, establishing a many-to-many communication structure. In fact, most people are spending less time actually making calls on their phones than they are conducting any of these other data-focused activities (George-Palilonis, Smith & Hanley, 2010). The Internet, which is a key factor in making phones smart, is a truly interactive medium



and has caused a “shift from top-down, one-way communication to a vastly more participatory medium” (Höffken & Haller, 2010, 494). The impact of portable computing devices is undergoing a heated debate in the popular media (Piliavin, 1988). It is evident that users’ practices are changing—they socialize in new ways; they do tasks in new ways, often interweaving and cross-pollinating between activities; they share and gather information in new ways. A concern expressed repeatedly centers on the notion of habit—that is, how new technologies, like mobile phones in the 1990s and laptops and smartphones in the 2000s, spur unforeseen consequences in the fabric of everyday life (Oulasvirta, 2011). While many appreciate the ubiquitous and continuous access to social networks, there are concerns about invasion into private domains (Lowery, 2005), and it has been observed that gains achieved in productivity do not automatically generate free time but complicate work—life balance (Marlatt, 1998). Indeed, sociologists have reported Westerners’ time-use becoming more irregular, fragmented, overlapped, and shifting to new places (Oulasvirta, 2011). These coinciding actions, or multitasking, have become a normal part of our daily lives. Human beings have always had a capacity to attend to several things at once. Mothers have done it since the hunter-gatherer era—picking berries while suckling an infant, stirring the pot with one eye on the toddler. Nor is electronic multitasking entirely new: people have been driving while listening to car radios since they became popular in the 1930s. But there is no doubt that the phenomenon has reached a kind of warp speed in the era of Web-enabled computers, when it has become routine to conduct six Instant Messaging conversations, watch “American Idol” on TV and use Google to find the names of last season’s finalists all at once. Although many aspects of the networked life remain scientifically uncharted, there’s substantial literature on how the brain handles multitasking—basically, it doesn’t (Wallis, 2006).

With technology as a remote control, smartphone users can tune in emotional stimulation they crave and tune out that which they find unpleasant or disturbing. The unintended

consequence of this power, however, may be passivity (Gorry, 2008). The result of this indifference can have a major, and long lasting impact on our capability to share and understand another's emotions and feelings. This could jeopardize one's ability to empathize with others. Empathy is the drive or ability to attribute mental states to another person/animal and entails an appropriate affective response in the observer to the other person's mental state. It allows us to tune into how someone else is feeling or might be thinking. Empathy allows us to understand the intentions of others, predict their behavior, and experience an emotion triggered by their emotion. In short, empathy allows us to interact effectively in the social world (Baron-Cohen & Wheelwright, 2004). No doubt empathy itself has this long an evolutionary history, but the word empathy was first used by Titchener as a translation of the German word "Einfühlung," itself a term from aesthetics meaning "to project yourself into what you observe" (Titchener, 1909). As the world grows smaller and more connected, the role of empathy grows larger and more important. Where no empathy exists, conflict breeds. However, as our technological connectedness has increased, there does not appear to be a proportionate increase in global empathy. Rather, this is a time of relatively decreasing empathy, compared to our connectedness to the greater world (Manney, 2008).

A number of theories exist exploring the effects of new technologies and their influence on the way communication is conducted with one another. Interpersonal communication is a process used for communicating ideas, thoughts and feelings. The ability to use interpersonal skills is learned and is constantly changing through environments, criticisms and interpretations. Polymedia Theory argues that the profound transformation in the usage of increasingly converged communication technologies has implications for the ways interpersonal communication is enacted and experienced. Polymedia emerged precisely out of such a need to describe, but also to understand, the emerging environment of proliferating communication opportunities and its consequences for interpersonal communications (Madianou & Miller, 2012). The first

justification for this study seeks to build on Polymedia theory and will examine if there exists a connection between individual smartphone usage and their level of empathy—which is the intellectual identification with or vicarious experiencing of the feelings, thoughts, or attitudes of another—and thus measuring one aspect of interpersonal communication.

The most vital idea in Madianou and Miller’s work is there are interpersonal communication consequences to the amount of use of technologies. The second justification for this study is to further develop an understanding on how using technologies can lead to multitasking (such as simultaneously using a smartphone while watching TV, playing sports or exercising, or doing homework). A third justification for this study will add to existing knowledge on smartphone users habits. This study will seek to find smartphone users consumption of different types of information such as text messaging, viewing content on social networks and playing video games across networks with multiple players.

The remaining chapters in the research will offer a literature review, a methodological framework used in this study, findings and discussion. Chapter two will discuss (a) the growing popularity of smartphones, and smartphone usage, (b) multitasking with technology, and the limited capacity model of motivated mediated message processing (c) empathy with connectivity, (d) Polymedia theory. Chapter three details the sampling methods, participant recruitment and survey instrument used in this study of smartphone usage. Chapter four details the study’s findings and discusses those results in detail. Chapter five discusses the conclusions and implications based in the study’s findings, and includes discussion of the limitations of the study

## CHAPTER II

### REVIEW OF LITERATURE

Polymedia Theory argues that the transformation of technologies has implications for the ways communication is enacted and experienced. Polymedia developed out of a need to define, as well as to understand the emerging environment of proliferating communication opportunities and its consequences for the way in which we communicate. This study seeks to build on Polymedia theory and will examine if there exists a connection between individual smartphone usage, multitasking, and their level of empathy—which is the intellectual identification with or vicarious experiencing of the feelings, thoughts, or attitudes of another—and thus measuring one aspect of interpersonal communication.

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Four primary areas of research will be examined in this section, including (a) the growing popularity of smartphones, and smartphone usage, (b) multitasking with technology, limited capacity model of motivated mediated message processing, (c) empathy with connectivity (d)

Polymedia theory. Within the discussion of smartphone usage and popularity, history, technological advancements and motives for using smartphones will be examined. Available research about multitasking in the world of technology and the effects on face-to-face communication will also be discussed. The effect on empathy while multitasking in technology will be reviewed. Finally, research that developed Polymedia Theory will examine how the choice of medium acquires communicative intent, navigating the environment of polymedia becomes inextricably linked to the ways in which interpersonal relationships are experienced and managed.

### *Growing Popularity of Smartphones*

The Nordic mobile telephone system (NMT) was the first multinational, standardized mobile telephone system in the world. It was initiated, designed, and constructed by the public telephone operators (PTTs) of Finland, Sweden, Norway, and Denmark in the years 1969–1982 (Lehenkari & Miettinen, 2002). This mobile telephone system became known as the first generation (1G) network and set a standard other countries followed. Many other analogue mobile telephone systems were developed simultaneously in Europe, United States and Japan, but none of them were as large as the NMT in the terms of subscribers, geography, and penetration rates at the beginning of the 1980s (Lehenkari & Miettinen, 2002). During the early and mid-1980s, analog cellular telephone systems experienced rapid growth in Europe, particularly in Scandinavia and the United Kingdom, as well as France, Germany and the United States (Scourias, 1996). The Federal Communications Commission (FCC) approved the Analog Mobile in the early 1980s Phone System (AMPS) as a uniform standard. This standard laid the foundation for network requirements and allowed for further technology improvements in the cellular industry. Since 1994, Europe and North America have taken divergent approaches to managing the spectrum for wireless voice and data services, the so-called 2G and 3G bands (Gandal, Salant & Waverman, 2004). As technology continued to improve, and 3G proved more

reliable, cellular phone manufacturers made a move to more web-based mobile phones. In 1999, Research In Motion (RIM) introduced the Blackberry, which started as a simple two-way pager but quickly became one of the most widespread mobile computing devices (Hall & Anderson, 2009), and the result was the birth of the smartphone.

Using smartphones, including calling and texting, is now an important part of our daily social interaction. Accordingly, communication partners through cell phones are likely to overlap those with whom people usually interact in person. Indeed, (smartphone) use tends to occur within close relationships such as families, romantic couples, and friends (Ishii, 2006) and mobile communication is likely to strengthen established social relationships rather than extend them. People maintain family bonds, facilitate friendships, and build mutual support through cellphone communication (Wei, 2006). Drawing on these findings, Boraie and Park (2010) found that people who enjoy interpersonal interaction would also enjoy mobile communication, and found that people who spend more time interacting with other people in person tend to spend more time using cell phones, particularly voice calls.

Studies on motives for using cellphones tend to rely on previous telephone research, which takes the uses and gratifications perspective. These perspectives are intrinsic and instrumental motives. Intrinsic or social motives refer to communicating with others through the (smartphone) for the purpose of companionship, while instrumental or task-oriented motives refer to the use of the telephone for utility, for example, information seeking or making appointments (Boraie and Park, 2010). As Maslow (1968) stated, belonging is one of the fundamental human needs, and every person needs to have social relations. Baumeister and Leary (1995) defined the need to belong as a desire to form interpersonal attachments, and argued that it is a fundamental motive with important consequences for social functioning. This basic desire may lead people to enact communicative behavior that makes it possible to initiate and maintain relationships. As such, if people need to interact with other people, what are they specifically obtaining by

communicating with others? According to Schutz (1966), there are three basic needs when people communicate with others: inclusion, control, and affection. Inclusion is the need to acknowledge each other and interact satisfactorily; control is the need to initiate or preserve power and influence over others; and affection is the need to achieve or maintain relationships based on love, mutual support, and devotion. In short, people communicate with others to feel included, important, and cared for (Borae and Park, 2010).

According to Ruben & Perse (1985), in addition to these basic needs, three other interpersonal communication motives exist: pleasure, escape and relaxation. Pleasure represents the pursuit of entertainment and excitement through interpersonal communication; escape involves avoiding other activities by engaging in interpersonal communication; and relaxation describes the need to rest and unwind through communication. These three motives are the ones derived from earlier mass communication research, while inclusion, control and affection are more interpersonally oriented motives. Although these six motives are more pertinent social motives, the control motive seems to involve an instrumental aspect of communication (Borae and Park, 2010).

### *Multitasking with Technology*

Most of the scholars, advertisers and marketing managers in the field of media research agree upon that media multitasking and simultaneous consumption of various media is crucial and thus to be examined and studied carefully. However, there has been a lack of common understanding or conceptualization of those two audience practices. Similar in all definitions, there are two actions and they are conducted simultaneously. In a broad term, two actions happening simultaneously brings up the term multitasking which is defined as the ability to accomplish multiple task goals in the same general time period by engaging in frequent switches between individual tasks or simply the absorption of multiple messages simultaneously (Konig,

2005). In the past, multitasking was a juggling act performed by busy adults, as they tried to manage jobs, chores, carpools and PTA meetings. But recently, teens have turned into the real experts at multitasking. Much of the multitasking young people do revolve around media use. The way young people use media is changing dramatically. Evidence suggests that “media multitasking,” or engaging in more than one media activity at a time, is a common occurrence (Foehr, 2006). New technologies, appear to foster obsessive multitasking, namely constantly switching between such activities as instant messaging (IM), email, ordering a book online and catching a quick headline. Handheld items make it easier to multitask, allowing a teen, for example, to play a videogame or text message a friend while watching TV (Foehr, 2006). A 2003 study of 13- to 24-year-olds, although lacking any information about media multitasking’s prevalence, reported that when most young people multitask, this multitasking is centered around online activities. It also concluded that media activities they are most likely to engage in while going online are listening to music and watching TV. As for multitasking devices, social scientists and educators are just beginning to assess their impact, but the researchers already have some strong opinions. The mental habit of dividing one’s attention into many small slices has significant implications for the way young people learn, reason, socialize, do creative work and understand the world (Wallis, 2006). Growing intimacy with these machines promises expansive and multifaceted lives, but how is the advance of information technology affecting our intimacy with people? Will the screen soon replace the face-to-face community as the primary setting for social interaction? If so, at what cost? While there is the ability to connect electronically with countless people in novel ways, this medium can lend to reaching most of them only at a vague, digitally prescribed distance. Yet many people now feel closer to others in cyberspace than to those who live next door (Gorry, 2008).

Media saturation and convergent technologies have made media multitasking increasingly prominent in recent years. A dramatic increase in media multitasking behavior is



frequently reported, especially among younger generations. A recent study by Carrier, Cheever, Rosen, Benitez, and Chang (2009) found that out of 66 possible combinations of media tasks, Baby Boomers (born between 1946 and 1964) had on average engaged in 23.2 combinations, which increased to 32.4 for Gen Xers (born between 1965 and 1978) and 37.5 for Net Geners (born after 1978). Consistent with this acceleration trend, Rideout, Foehr, and Roberts (2010) found that a majority of teenagers multitask “most” or “some” of the time listening to music (73% of respondents), while watching TV (68%), using a computer (66%), and reading (53%). The percentages increased substantially compared to those found in 2004 (Zheng & Tchernev, 2012). However, growing research evidence consistently confirms its adverse impacts on task performance and learning. For example, while reading a passage from a textbook, students who were simultaneously chatting via instant-messaging took roughly 21% more time compared to those who were not multitasking (Bowman, Levine, Waite, & Gendron, 2010). Watching television while doing academic work has been found to harm performance on both reading comprehension and memory tasks (Armstrong, Boiarsky, & Mares, 1991; Pool, Koolstra, & van der Voort, 2003). Also multitasking has been shown to impair the processing and verification of written information (Gilbert, Tafarodi, & Malone, 1993). Of even greater concern are findings, which suggest cognitive deterioration caused by chronic media multitasking. A recent study found that heavy media multitaskers are more distracted by irrelevant stimuli than light media multitaskers and, surprisingly, less efficient at switching tasks (Ophir, Nass, & Wagner, 2009). With the increasing popularity of instant access to multiple media outlets, multitaskers are finding it easier to fulfill individual needs. The quick diffusion of multitasking-facilitating media technology, such as smartphones, has provided people with unprecedented convenience and control over when, where, and how they consume media. Hence, a user-oriented theoretical approach is now especially important in understanding people’s media choice behavior (Zheng and Tchernev, 2012).

Smartphones are known to be detrimental to cognitive performance. Their use increases reaction time, reduces focus, and lowers performance of tasks needing mental concentration and decision-making (Gill, Kamath and Gill, 2012). In 2010, The U.S. National Safety Council estimated at least 23% of all traffic crashes per year – at least 1.3 million crashes per year – involve cellular phone use. Parker-Pope (2009) established that cellular phones impact attentiveness and cause unintentional blindness. Users become so engrossed in their cellular phone that, even though they may be looking at their surroundings, nothing actually registers. Shelton, 2009, asserted that individuals can only attend to a limited amount of information at any given moment, and that using the cellular phone reallocates attention resources. A user preoccupied by the cellular phone is distracted from the other, primary task that he or she is performing. Effects of divided attention on walking while using a smartphone found users walked more slowly, changed directions more frequently, and were less likely to acknowledge others, as compared to those listening to MP3 players, walking in pairs, or walking alone. They also realized that smartphone users were less likely to register any unusual activity along their path (Gill, Kamath & Gill, 2012). If these ideas and theories are accepted and smartphone usage is increasing, then what impact is there, if any, on the multitasking, smartphone users ability to use their limited number of cognitive resources to communicate with others face-to-face?

#### *Limited Capacity Model of Motivated Mediated Message Processing*

The limited capacity model of motivated mediated message processing (LC4MP) has five major assumptions—the first about the nature of cognition, the second about the nature of motivation, the third about the nature of media, the fourth about the nature of time, and the fifth about the nature of communication. First, people are assumed to be limited capacity information processors (Basil, 1994). They have only a limited number of cognitive resources to expend on the tasks of perceiving, encoding, understanding, and remembering the world they live in. When there are insufficient resources available, processing suffers. Second, people have two underlying

motivational systems, the appetitive (or approach) system and the aversive (or avoidance) system (Bradley, 1994). Third, media are made up of variably redundant streams of information presented through multiple sensory channels (eyes, ears, touch) and formats (words, text, still pictures, moving pictures, etc., Lang, 2006). Fourth, all human behavior occurs over time and is constantly changing from one second to the next. Human behavior, and therefore human cognition, is a dynamic process (Thelen & Smith, 1994). Fifth, communication is the overtime interaction between the human motivated information processing system and the communication message (Geiger & Reeves, 1993). This interaction is continuous and truly interactive. Aspects of the message influence the motivational and cognitive systems and aspects of those systems influence how the message is perceived, encoded, stored and eventually retrieved. In other words, communication is a continuous, interactive, dynamic, embodied process all of which must be taken into account when designing effective messages about anything (Lang, 2006).

Distraction is one of many things that affect how thoroughly a message is processed, and how much of that message is encoded, stored and retrievable by the recipient of the message. A major contributing factor is whether or not the recipient of the message has sufficient processing resources available to process the message (Lang, 2000). There are two main reasons why messages may not be thoroughly processed. First, the message recipient may choose to allocate fewer resources to the task than it requires. Second, the message may require more resources than the message recipient has available to allocate to the task (Lang, 2000), due to distraction. In either case, fewer resources are allocated to the task of processing a message than it requires, and the message, therefore, will not be thoroughly processed. As multitasking grows, requiring more and more processing resources from the smartphone user, what is the impact on the users ability to process and understand the intellectual/imaginative apprehension of another's mental state?

Furthermore, as the popularity of the multitasking, smartphone user increases, what effect does this have on student's grade point average? Facebook has nearly one billion users worldwide

actively engaged. In an early study, Kirschner and Karpinski (2010) reported that college students who used Facebook spent less time studying and had lower grade point averages than those who did not use Facebook. More recently,

Junco (2011) discovered that sharing links and checking up on friends on Facebook more often predicted higher college grades; making status updates more often predicted lower grades; and that overall GPA dropped .12 points for every 93 min above the average of 106 min per day spent on Facebook. Part of this study will seek to find if there is a relation between daily smartphone usage and overall GPA.

### *Empathy*

The need to feel included, important and cared about, both giving and receiving, falls under the definition of empathy. There're several definitions of empathy reflecting its multidimensional nature. Social psychologists have conceptualized empathy as having two main strands (1) cognitive empathy – “ the intellectual/imaginative apprehension of another’s mental state” and (2) emotional empathy or an emotional response to emotional responses of others (Lawrence, Shaw & Baker, 2004). Cognitive theories emphasize that empathy involves understanding the other’s feelings (Kohler, 1929). These theories also refer to cognitive processes such as role taking, switching attention to take another’s perspective, or decentering, responding non-egocentrically (Baron-Cohen & Wheelwright, 2004). In moral philosophy, Adam Smith described sympathy as the experience of “fellow-feeling” one has when they observe someone else’s powerful emotional state (Baron-Cohen & Wheelwright, 2004). Sympathy is therefore a clear instance of the affective component of empathy. Sympathy is said to occur when the observer’s emotional response to the distress of another leads the observer to feel a desire to take action to alleviate the other person’s suffering (Davis, 1994). The observer may not actually act on this desire, but at the very least the observer has the emotion of wanting to take appropriate

action to reduce the other's distress. Thus, sympathy is shown as a special subset of empathy. To give an example, if you walk past a homeless person in winter and you are "moved" or "touched" to want to help them, this would count as sympathy. You may do nothing more. For example, you may feel that your action would be futile given the many other homeless people in the same neighborhood and the near impossibility of helping them all. So you might walk past and do nothing. Your reaction would still count as sympathy because you felt the desire to alleviate another's suffering. This same term would also apply even if you did indeed take action and gave the homeless person your gloves. If, however, you experienced an appropriate emotion (e.g., pity) to the homeless person's emotion (e.g., hopelessness), but you did not experience any desire to take action to alleviate his or her suffering, then this would count as empathy (Baron-Cohen & Wheelwright, 2004).

Today, most smartphone owners live increasingly "on the screen," deeply engaged with the patterns of light and energy upon which so much of modern life depends. At work, one can turn their back to coworkers, immersing themselves in the flood of information engendered by countless computers—an engagement that continues well beyond the end of the workday. On the streets, computers tag along, many disguising themselves as cameras, phones or music players. Still others, embedded in video displays, wait at home or in the theater. They are all parts of an enormous electronic web woven on wires or more recently only air. There is reason to marvel at what can be accomplished with all this technology. Yet, there is less attention paid, however, to what the technology may be doing to us (Gorry, 2009). Our empathy has deep roots in our biology; without it, one could not anticipate the reactions of others to what one does and to use those reactions to tailor our behavior to various social situations (Davis 1996). Technologies of modern life have brought us many opportunities to regard the sufferings of others from afar. It would be easy to predict, therefore, an increase in understanding, tolerance and perhaps even empathy as technology makes more permeable the boundaries that presently divide communities

and nations. Such benefits would surely be a boon to our increasingly interdependent and conflicted world (Manney, 2008). A more ominous response, however, is that modern life is a diet of horrors causing corruption, which easily leads to becoming habituated. By numbing our emotions, our intimacy with machines may distance us from our fellow humans, attenuating our natural empathetic responses to the misfortunes and suffering of others. In our life on the screen, it is easy to know more and more about the lives of other people and care less and less about them (Gorry, 2009). Today digital technology is supplanting the written word with its own kind of literacy. A computer screen is our window on the world and a network, our magic portal to places and lives far and wide. Our brains are now adapting to new kinetics, where life rushes on us at a prodigious rate. The act is called multitasking. We shuttle from email to hyperlinks to phone calls, cobbling together ideas, suggestions and advice to keep our work and home life upright—while the pace of our act accelerates. Technology crowds our lives with the experiences of many others—painful, sorrowful, lonely, exuberant, ordinary—each claiming a bit of our attention and tugging on our empathetic faculty. Our intense curiosity about the lives of others makes us responsive to these claims, drawing us ever more deeply into technology’s version of Plato’s cave (Gorrey, 2005). How society develops and utilizes trans-human communications technologies has enormous implications in our empathetic future, whether it concerns scientists considering the ethical implications of their own technologies, the creation of friendly artificial intelligence or our ability to communicate empathetically via new media – or new bodies. As the rate of technological change accelerates, the issues surrounding empathy will only increase (Manney, 2008).

### *Polymedia Theory*

Polymedia argues that the profound transformation in the usage of increasingly converges communication technologies has implications for the ways interpersonal communication is enacted and experienced. Polymedia emerged precisely out of such a need to describe but to also

understand the emerging environment of proliferating communication opportunities and its consequences for interpersonal communication (Madianou & Miller, 2012). The term derives from the Greek word *poly*, meaning many or several and the term *media*, which is a common word and in this instance is used for the bundling of landlines, mobile phones, smartphones, Skype, Instant Messaging and a variety of social networking applications. In conditions of polymedia, the emphasis shifts from a focus on the qualities of each particular medium as a discrete technology, to an understanding of new media as an environment of affordances, or the quality of that environment. As a consequence the primary concern shifts from an emphasis on the constraints imposed by each medium to an emphasis upon the social and emotional consequences of choosing between those different media (Madianou & Miller, 2012). So the argument will be that polymedia is ultimately about a new set of social relations of technology, rather than merely a technological development of increased convergence, and as a result polymedia is ultimately about a new relationship between the social and the technological, rather than merely a shift in the technology itself (Madianou & Miller, 2012). Polymedia also suggests that what one may encounter is not just a new horizontal distribution of media whereby each particular medium shifts in its meaning and implications relative to other media; rather polymedia suggests that this extension in the relationship between media constitutes also a shift in the relationship between communicative media and society. In effect, it amounts to a re-socialization of communicative media.

The word polymedia is deemed more appropriate than alternative terms. Multimedia is now established as the term for media, which combine different content forms, such as text with audio and video, so it would be misleading to use this term to capture the essence of polymedia as a communicative environment. The term that comes closer to polymedia as a communicative environment is “media ecology,” and it is worth teasing out the differences—and similarities—between the two terms. Although the early work on media ecology emphasized the idea that

media and technological environments shape societies and human affairs (McLuhan, 1964), recent research (Ito, 2010; Slater & Tacchi, 2004) has moved away from such technological determinist positions to capture communication systems and their usage through a broad lens that also considers their connections to wider social systems such as transport, health and government. More recently, media ecology has been used ‘to emphasize the characteristics of an over- all technical, social, cultural and place-based system in which components are not decomposable or separable (Ito, 2010). However, the major difference is that polymedia treats this environment of communication opportunities as an integrated structure of affordances. Polymedia is not simply the environment; it is how users exploit these affordances in order to manage their emotions and their relationships. Crucially, there are concerns with the consequences—whether social, emotional, or moral—of users’ negotiation of polymedia and their implications for the wider understanding of technology and society. Thus although polymedia shares the same starting point as media ecologies and the ‘media manifold’ (Couldry, 2011) regarding the understanding of media technologies as an environment of practice, the argument is that polymedia advances the debate on the social uses of communication technologies by considering additional layers of meaning, functions, and consequences.

One of the fundamental, underlining arguments of Polymedia is technology affects relationships. This becomes clearer if the environment of Polymedia is compared to historical situations when users wishing to communicate at a distance only had access to a couple of media, such as letters and voice-recorded audio-cassettes sent through the post mail (Madianou & Miller, 2011). The time lag of letters and audio-tapes (since these were also sent through the post) would often cause frustration, and participants would acknowledge how letter writing would often conceal problems and suppress conflict, often leading to situations of deception (Madianou and Miller, 2012). Even in the early days of Internet-based communication, which were dominated by email, communication was shaped by particular medium qualities: for example, email has low



levels of social cues, which can often lead to misunderstandings. With Polymedia email is used seamlessly with, or alternatively to, other media such as Instant Messaging, social networking sites, webcam and texting. Users switch between these to achieve their purposes: webcam, or instant messaging, or a phone call can accomplish what cannot be achieved by email. Email is not simply email; it is defined relationally as also not a letter, not a text message and not a conversation via webcam; which, in turn, is not a phone call. This is very different from perspectives on media technologies that focus on each individual medium and its affordances (Hutchby, 2001). The current rising popularity of smartphones also contributes to the emergence of Polymedia, and this is due to now having all of the mentioned means of communicating available in people's pocket.

With the smartphone user capable of emailing, texting, Instant Messaging, tweeting, checking-in, Facebook posting, web surfing and talking, three outcomes, which can have direct effect on interpersonal relationships, can occur. The first is a term known as *Technostress* (Technology and Stress), and it was originated from the title of a book written by Crigs Brod (2012). *Technostress* is defined as a modern disease of adaptation caused by an inability to cope with the new technologies in a healthy manner. This may manifest itself in the struggle to accept technology, and by over identification with technology (Brod, 1984). Those who struggle to accept smart technology often feel pressured to accept and use smart devices. This pressure may cause headaches, nightmares, or resistance to learning about the new technology. Secondly, people who intensely and constantly spend long hours with the smart device begin to unwittingly internalize the characteristics of the smart device and are transformed into a machine like state. Symptoms of this state include a high degree of factual thinking, poor access to feelings, an insistence on efficiency and speed, and a lack of empathy for others. These people are known as techno centered; their desire to conquer the system becomes greater than the desire for human relationships and human pleasures (Lee, Jin & Choi, 2012). The third effect is the direct influence

in our daily lives using all the Polymedia platforms within the palm of our hands is having in our personal relationships. Smartphones have been a source of satisfaction to all social platform i.e. Twitter, Facebook communication requirements. However, the negative effects of these social networks come with serious repercussions to the user. Smartphones are addictive phones. Individuals that have subscribed to social networks are unable to do away with them despite the intensity of their assignments, i.e. at the work place or even homework from school. Users will find themselves distracted from their concentration to answer a chat message or an email from a social media “friend” In addition, there is a possibility that individuals who miss the distraction during their daily undertakings will be deprived of their sleep, as they will be looking to answer an inbox and catch up with a friend (Coke, 2012). A recent survey by Ofcom showed that two-thirds of British adults are "highly addicted" to their smartphone - and much of that addiction is probably due to near-constant checking of friends' feeds and Twitter streams (Jefferies, 2011) via the smartphone.

With the continued growth in popularity of smartphones, more users are engaged in a variety of Polymedia platforms for staying connected and communicating. As more users find more uses for their smartphones, these individuals begin to take on a machine like form, with a constant need to fulfill the anxiety of being connected through the smart device. As the individual constantly fills this need, the effects on interpersonal communications can suffer. The hypothesis, research questions and methodology of this study will seek to find if high, medium or low smartphone usage has an effect on the users ability to emphasize with others.

### Hypothesis and Research Questions

There has been academic work about the increasing usage of smartphones, multitasking through the smartphones and the impact on interpersonal communications. Wallis, 2006 found the

mental habit of dividing one's attention into many small slices has significant implications for the way young people learn, reason, socialize, do creative work and understand the world.

Furthermore, Foehr, 2006 found evidence suggesting that "media multitasking," or engaging in more than one media activity at a time, is a common occurrence. Thus, the following research question is posed:

Thus, the following research questions are posed:

RQ1: How do college students use their smartphones?

RQ2: How do college students multitask?

2a: As multitasking increases, what effect does this have on student's GPA?

2b: Does multitasking change with the amount of time in college?

2c: Does multitasking vary by gender?

RQ3: What levels of empathy do college students have?

3a: As empathy increases, what effect does this have on student's GPA?

3b: Does empathy change with the amount of time in college?

3c: Does empathy vary by gender?

According to Falaki, Mahajan and Kandula (2010), high smartphone usage can range from 5 to 8-plus hours per day. Low smartphone usage will range from 30 minutes to 3 hours per day. Medium smartphone usage is considered to fall between 3 and 5 hours per day. In an Arbitron and Edison Research study (January/February 2012), smartphone owners self-reported: (a) they spend more than three hours on the Internet per day, mostly on their smartphone, (b) smartphone owners were far more likely to use social networks than non-smartphone owners, (c) smartphone owners use, check and update social networks several times per day, and of those owners, one in three use exclusively their smartphone to make updates, (d) nearly eight in ten

smartphone owners with a Facebook profile access it through their phones, (f) the mean of smartphone owners in this study check their Facebook accounts five times per day, 40% more than non-smartphone owners. As multitasking grows, requiring more and more processing resources from the smartphone user, it is expected smartphone users ability to process and understand the intellectual/imaginative apprehension of another's mental state will be diverted. Thus, the following hypotheses are posed:

H1: College students with high self-reported smartphone usage will have lower empathy scores survey than those with low self-reported smartphone usage.

H2: College students with lower levels of self-reported multitasking will have higher empathy scores than those with low self-reported multitasking.

## CHAPTER III

### METHODOLOGY

The main goal of this study is to measure the level of the multitasking smartphone users ability to process and understand the intellectual/imaginative apprehension of another's mental state utilizing survey research. An additional goal of this research is to seek if a relationship exists between the smartphone users multitasking habits and GPA. Survey research is an established method of collecting data about participants' knowledge of any given subject. Viswanath, Thong and Xu used surveys in their study of consumer acceptance and use of information technology (2012). As did Lawrence, Shaw, Baker, Baron-Cohen and David in their study, "Measuring empathy: Reliability and validity of the empathy quotient" (2010). Survey was chosen because they are usually the best option for collecting large amounts of data from many people (Buddenbaum & Novak, p. 53). The majority of the survey will be answered with self-reported responses. The remainder of this section will discuss (a) selection and recruitment of subjects, (b) the consent form, (c) survey instrument and measures, (d) data analysis procedure, (e) reliability and validity.

#### *Subjects*

The sample of collegiate students for this study was drawn from an accredited

Midwestern university. The researcher contacted the academic faculty of the media and strategic communications school and received permission to survey classes. The specific classes were chosen at random. The researcher spoke to the classes about the research and presented each class with an opportunity to take the survey in class. Two hundred and thirty-two surveys were distributed with 220 being completed, equaling a response rate of 94.8%.

### *Consent Form*

The Institutional Review Board at the university at which the subjects will be surveyed approved the study and consent form for this research. The survey was distributed and collected in faculty classrooms. For all subjects, the survey was paper copies. A consent form was the first page at the beginning of the survey. The consent form will inform subjects about (a) the title of the research project, (b) the researchers name and contact information, (c) the nature and the purpose of the research, (d) the approximate time it will take to complete the survey, (e) a statement that the survey is completely voluntary, (f) a statement explaining that participating in the study will involve minimal risk, and (g) a description of steps taken to ensure subject confidentiality. There will be no identifying information gathered from those participating. All participants were treated in accordance with APA ethical guidelines, and the University Institutional Review Board approved these procedures.

### *Survey Instrument and Measures*

The survey consisted of several variables that were used to examine the relationship between smartphone usage, multitasking, and empathy. The following material examines these sections.

*Smartphone Brand and Usage.* First the researcher examined smartphone usage by gathering participants brand of smartphone, hours used per day, total number of phone apps, app

type, situational smartphone usage, smartphone usage while simultaneously doing other activities, use of smartphone while consuming other information, and use of smartphone for creating content.

*Smartphone Usage.* This was designed to find how often (excluding phone calls) participants use their smartphones in situations such as idle time at work/school, waiting in line or in bed before going to sleep; use their smartphone while simultaneously doing other activities such as listening to music, walking or watching movies; consuming different types of information on their smartphone; and how often the participant creates different types of content in their smartphone such as taking photos, editing photos and recording calendar events.

*Empathy.* This research seeks to find if empathy—what allows us to understand the intentions of others, predict their behavior, and experience others emotions—is effected by smartphone multitasking. Twenty questions exploring the cognitive and affective areas of empathy based on the basic empathy scale for young adults were used (Jolliffe & Farrington, 2006). Examples would include “my friends emotions don’t affect me much” and “after being with a friend who is sad, I usually feel sad.”

*Multitasking.* In order to further examine multitasking, participants were asked to rate on a five point scale their multitasking on a daily basis—such as multitasking while studying, doing homework or interacting with friends. These questions were based on Jeong & Fishbein’s (2007) categories for multitasking.

*Demographics.* Basic demographics were also collected about participants. These include: (a) gender, (b) age, (c) school status, (d) do you live on campus, (e) major, (f) current GPA, (g) greek affiliation, (h) ethnicity, (i) household income.

The survey consisted of 131 total items. Questions were asked in the following areas: (a) do you own a smartphone? (b) brand of smartphone, (c) hours used per day, (d) total number of

phone apps, (e) app type, (f) situational smartphone usage, (g) smartphone usage while simultaneously doing other activities, (h) using smartphone while consuming other information, (i) using smartphone for creating content, (j) empathy, (k) Facebook usage, (l) media multitasking, (m) demographics.

The first question, “Do you own a smartphone?” was asked to get a better idea of percentages of those who own/use smartphones and to get participants who do not own a smartphone to skip to part II of the survey which measures empathy. The second question “What brand of smartphone do you use?” was asked to get a measure of brand popularity. The third question “Please indicate the amount of time daily you interact with your phone” was asked to get a measure of daily time usage and allowed participants to answer one of the following: (a) 0-3 hours, (b) 3-5 hours, (c) 6-9 hours, (d) 10-12 hours, (e) 13-15 hours, (f) 16-19 hours and (g) 20 + hours. The fourth, fifth and sixth questions were asked to get the total number of phone apps, what type of apps, and what were the participant’s favorite apps. These questions were chosen so as to answer Research Question 1 “How do college students use their smartphones?”

Questions seven through 19 were designed to find how often-excluding phone calls- do participants use their smartphones in situations such as idle time at work/school, waiting in line or in bed before going to sleep. Participants could respond with: (5) regular use, (4) often use, (3) sometimes use, (2) rarely use, (1) never use. Questions 20 through 36 were designed to measure how often participants use their smartphone while simultaneously doing other activities such as listening to music, walking or watching movies. Participants could respond with: (5) regular use, (4) often use, (3) sometimes use, (2) rarely use, (1) never use. Questions 37 through 55 were designed to measure how often participants are consuming different types of information on their smartphone such as text messaging, reading e-mails, or viewing content on social networks. Participants could respond with; (5) regularly consume, (4) often consume, (3) sometimes consume, (2) rarely consume, (1) never consume. Questions 56 through 67 were designed to



measure how often the participant creates different types of content in their smartphone such as taking photos, editing photos and recording calendar events. Participants could respond with; (5) regularly create, (4) often create, (3) sometimes create, (2) rarely create, (1) never create. These survey questions were designed to gather data to answer RQ2 “How do college students multitask?” Furthermore, the responses to these questions will provide partial data needed to answer Research Question 2a “As multitasking increases, what effect does this have on students GPA?” As well as Research Question 2b “Does multitasking change with the amount of time in college?” and RQ2c “Does multitasking vary by gender?” The additional portion of the data needed to answer these questions will come from the demographics section of the survey.

Questions 68 through 87 were used to measure empathy and were adopted from Jolliffe & Farrington (2006) “Development and validation of the basic empathy scale”. Examples would include “my friends emotions don’t affect me much” and “after being with a friend who is sad, I usually feel sad.” Participants could respond with: (5) strongly agree, (4) agree, (3) neutral, (2) disagree, (1) strongly disagree. To better gauge participant’s empathy, the individual responses to these questions were grouped and calculated to find the individual empathy mean. The purpose of these questions is to gather data to answer Research Question 3, “What levels of empathy do college students have?” The responses to these questions will be half of the information needed to answer Research Question 3a, “As empathy increases, what effect does this have on student’s GPA?” with the other half coming from self-reported GPA’s in the demographics section of the survey. These responses will also provide a portion of the data needed to answer Research Question 3b, “Does empathy change with the amount of time in college?” and Research Question 3c, “Does empathy vary by gender?” with the other portion of data being collected in the demographics section of the survey. These responses will also give data to find if there is support to Hypothesis 1, which stated College students with high self-reported smartphone usage will have lower empathy scores than those with low self-reported smartphone usage. These responses

grouped with the responses from questions seven-67 will provided the data to find if there is support to Hypothesis 2, which states college students with lower levels of self-reported multitasking will have higher empathy scores than those with low self-reported multitasking.

Questions 88 through 105 were used to measure participant's social networking habits. Facebook was chosen because it is the most popular social networking forum currently. Examples participants were asked include "thought a lot about what has happened on Facebook" and "spent more time of Facebook than initially intended." Participants could respond with: (5) very often, (4) often, (3) sometimes, (2) rarely, (1) very rarely.

Questions 106 through 118 were asked to measure the participants multitasking while studying, doing homework or interacting with friends. Participants could respond with: (5) very often, (4) often, (3) sometimes, (2) rarely, (1) very rarely.

Questions 119 through 122 were asked to measure the participants sensation seeking habits. Examples of the question asked are "I would like to explore strange places" and "I prefer friends who are exciting and unpredictable." Participants could respond with: (5) strongly agree, (4) agree, (3) neutral, (2) disagree, (1) strongly disagree.

Questions 123 through 131 focused on demographics. Information gathered in this category include: (a) gender, (b) age, (c) school status, (d) do you live on campus, (e) major, (f) current GPA, (g) greek fraternity/sorority member, (h) ethnicity, (i) household income.

### *Procedures*

Before the surveys were distributed, the researcher gave each survey a unique subject number. After all the surveys were distributed and collected, the researcher created a Microsoft Excel document and codebook so as to enter the data. Once all the data was entered, the file was imported into SPSS version 20 to process and analyze the data. The researcher used independent

samples t-tests, One-Way ANOVA's, and simple linear regression to determine any statistical significance of the data. Alpha was set at the .05 level.

### *Data Analysis*

Missing variables accounted for well less than 5% of the data, so listwise deletion was used. The assumption of normality was assessed visually and using descriptive statistics. Histograms and Q-Q plots indicated only slight to moderate skew for most variables, and all variables fell within the acceptable  $\pm 1.0$  range for skewness and  $\pm 2.0$  range for kurtosis. Levene's test for equality of variances was performed to test the assumption of homogeneity of variance. The result was not significant. Thus, the assumptions for grouped statistical analysis have been met.

### *Reliability and Validity*

To support reliability and external validity, the researcher will use techniques and scales based of previously established research. Cronbach's alpha was run on the empathy scale and  $\alpha = .649$ , which is not acceptable if .70 is required. However, by removing "friends emotions don't affect me much," Cronbach's would yield .71, which would be acceptable (Bernard, 2000). As a result, the researcher will use the survey instrument established by Jolliffe & Farrington (2006). Internal validity will be supported by a direct relationship between the questions and the response items in the instrument and the independent and dependent variables being studied.

## CHAPTER IV

### RESULTS

Through survey research, the objectives of this study were to determine if the multitasking smartphone user changes in their ability to process and understand the intellectual/imaginative apprehension of another's mental state. An additional goal of this research was to seek if a relationship exists between the smartphone users multitasking habits and their individual GPA's. Surveys were distributed to determine how college students use their smartphones, how college students multitask, and what effect this has in empathy and GPA's

#### *Sample*

The researcher distributed 232 surveys to college students enrolled at a Midwestern university for participation in the study. The surveys were distributed in faculty classrooms. Data were screened for missing variables, outliers, and normality prior to being analyzed. The statistical software SPSS version 20 was used to screen the data for missing variables. Of the 232 surveys distributed, 220 were filled out and returned for a response rate of 94.8%. Of the 220 subjects, 210 (95.4%) owned smartphones. Of the 210-smartphone owners, the majority 78.4% ( $n = 174$ ) of participants in the study owned an iPhone, followed by 20.7% ( $n = 46$ ) owning an Android OS and 1% ( $n = 2$ ) owning something else. Additionally, 35.2% ( $n = 74$ ) were male, 60.9% ( $n = 128$ ) were female, and 3.8% ( $n = 8$ ) declined to answer. Furthermore, 4.7% ( $n = 10$ ) were freshman, 29.5% ( $n = 62$ ) were sophomores, 25.7% ( $n = 54$ ) were juniors, 38% ( $n = 80$ )

were seniors and 1% ( $n = 4$ ) were other. Of the 210 smartphone owners, 56.1% ( $n = 118$ ) were strategic communication majors, 1.4% ( $n = 3$ ) were advertising majors, 2.8% ( $n = 6$ ) were public relations majors, 18.5% ( $n = 39$ ) were multimedia journalism majors, 13.3% ( $n = 28$ ) were sports media majors, 3.3% ( $n = 7$ ) were broadcasting majors, less than 1% were media production major, elementary education major, broadcasting majors, physical science major, animal science major, and 2.3% ( $n = 5$ ) declined to answer.

### *College Students and Smartphone Usage*

Research Question 1 sought to determine how college students use their smartphones? For the participants in this survey, 12.8%, ( $n = 27$ ) used their smartphone 0-3 hours per day, 26.1% ( $n = 55$ ) used their smartphone 3-5 hours per day, 23.3% ( $n = 49$ ) use their smartphone 6-9 hours per day, 16.6% ( $n = 35$ ) use their smartphone 10-12 hours per day, 12.3% ( $n = 26$ ) use their smartphone 13-15 hours per day, 4.2% ( $n = 9$ ) use their smartphone 16-19 hours per day, 4.2% ( $n = 9$ ) use their smartphone 20-plus hours per day. Also, the use of apps seemed to be prevalent in the participants' lives. Less than 5% ( $n = 10$ ) had less than 5 apps on their smartphones, 25.7% ( $n = 57$ ) had 5-10 apps, 24.8% ( $n = 55$ ) had 11-15 apps, 26.1% ( $n = 58$ ) had 16-25 apps, and 18.9% ( $n = 42$ ) had more than 25 apps. When asked about the type of apps they used, more than half 57.5% ( $n = 127$ ) of the participants indicated that they used apps for social media, 22.2% ( $n = 11$ ) used apps for games for entertainment, 11.3% ( $n = 25$ ) used apps for music, 5.0% ( $n = 11$ ) used apps for video, and 1.8% ( $n = 4$ ) used apps for weather. Instant messaging, contact management, and maps were each less than (1%). When asked to give their favorite apps, 36.5% ( $n = 81$ ) indicated Twitter, 28.4% ( $n = 63$ ) indicated Facebook, 9.0% ( $n = 20$ ) indicated Instagram was their favorite app, 3.2% ( $n = 81$ ) indicated a weather app, 3.2% ( $n = 7$ ) indicated ESPN, 2.7% ( $n = 6$ ) indicates Pandora, and the Bible, Pinterest and Fitness each

received 1.4% ( $n = 3$ ). Other apps were listed, but only received less than one percent in the final tally. Additionally, when asked how often participants used their favorite app, 86.9% ( $n = 193$ ) indicated multiple times per day. When asked about their second favorite app, only 65.3% used it multiple times per day, and the third favorite app was only used multiple times per day by (45.1%) of participants. See table 4.1 for complete breakdown of the top 20 college students.

Table 4.1 Top 4 & 5 Favorite Smartphone Applications

App Name	Favorite App 1 Valid %	Use Frequency $\mu$ Used	<i>SD</i>	Favorite App 2 Valid %	Use Frequency $\mu$ Used	<i>SD</i>	Favorite App 3 Valid %	Use Frequency $\mu$ Used	<i>SD</i>
Twitter	36.50	4.96	.190	25.00	4.71	.670	6.50	4.71	.825
Facebook	28.40	4.86	.535	21.80	4.63	.570	17.70	4.26	.921
Instagram	9.00	5.00	.001	16.80	4.89	.390	14.40	4.71	.643
ESPN	3.20	4.43	.535	2.30	4.60	.550	4.20	3.78	.441
“Weather”	3.20	3.86	1.070	4.50	3.80	1.140	10.20	4.27	.703
Pandora	2.70	4.83	.410	3.20	4.43	.540	5.60	3.67	.651
“Fitness”	-	-	-	-	-	-	2.30	4.00	.707
“Bible”	-	-	-	-	-	-	-	-	-
Pinterest	-	-	-	2.70	4.50	.590	7.00	4.27	.884
“Games”	-	-	-	4.10	3.89	.780	-	-	-
“Music”	-	-	-	2.30	3.80	1.300	-	-	-
Snapchat	-	-	-	-	-	-	4.20	3.89	.928
Google	-	-	-	-	-	-	-	-	-
“Email”	-	-	-	-	-	-	-	-	-
Netflix	-	-	-	1.40	4.00	.001	1.40	3.67	.577
“GPS”	-	-	-	-	-	-	2.30	3.80	.837
GroupMe	-	-	-	-	-	-	-	-	-
“Tools”	-	-	-	-	-	-	-	-	-
IMDB	-	-	-	-	-	-	-	-	-
Shazaam	-	-	-	-	-	-	-	-	-

Table 4.1 Top 4 & 5 Favorite Smartphone Applications

App Name	Favorite App 4 Valid %	Use Frequency $\mu$ Used	<i>SD</i>	Favorite App 5 Valid %	Use Frequency $\mu$ Used	<i>SD</i>
Twitter	5.10	4.40	0.843	-	-	-
Facebook	6.60	3.46	1.198	3.00	3.60	1.673
Instagram	7.70	4.53	0.640	2.40	4.25	0.957
ESPN	4.10	4.00	1.195	2.40	4.25	0.957
“Weather”	11.70	4.00	0.739	7.30	4.08	0.669
Pandora	7.10	4.36	0.497	-	4.31	0.946
“Fitness”	2.00	3.50	1.291	-	-	-
“Bible”	2.00	3.25	0.500	2.40	4.00	1.414
Pinterest	7.10	3.86	0.949	5.50	4.00	0.866
“Games”	3.10	4.33	0.816	-	-	-
“Music”	1.50	3.33	1.155	-	-	-
Snapchat	9.70	4.11	0.937	4.30	4.00	1.000
Google	3.10	4.00	0.632	2.40	4.25	0.957
“Email”	3.10	4.83	0.408	4.90	4.88	0.354
Netflix	1	3.50	0.707	1.20	4.00	0.001
“GPS”	-	-	-	5.50	3.67	1.000
GroupMe	-	-	-	3.70	4.33	0.816
“Tools”	-	-	-	2.40	4.25	0.500
IMDB	3.1	4.00	0.632	-	-	-
Shazaam	-	-	-	2.40	3.75	0.500



Additionally, when students were asked how they used and interacted with their smartphone, 73.0% ( $n = 162$ ) said they regularly use their smartphone in their idle time, 62.0% ( $n = 137$ ) regularly use their phone while riding the bus, 50.7% ( $n = 112$ ) regularly used their smartphone while waiting in line, 55.7% ( $n = 123$ ) regularly use their smartphone when waking up, 60.4% ( $n = 134$ ) regularly use their smartphone when going to sleep, 32.6% ( $n = 72$ ) regularly use their phone for school tasks, 28.6% ( $n = 63$ ) regularly use their phone for work tasks, 25.7% ( $n = 57$ ) regularly use their phone while in the bathroom, 37.6% ( $n = 83$ ) regularly use their smartphone when exercising, 21.6% ( $n = 48$ ) regularly use their phone while they are driving (but not moving), 9.0% ( $n = 20$ ) indicated they regularly use their phone while driving, and 22.6% ( $n = 50$ ) indicated they regularly use their smartphone while walking.

#### *College Students and Multitasking*

Research Question 2 asked “How do college students multitask?” Data indicated multitasking scores ranged from 1.46 to 5.00 with a mean of 3.80, on a five-point Likert scale. See table 4.2 and table 4.3 for how smartphones are being used in certain situations.

#### *Multitasking and GPA*

Research Question 2a asked, “As multitasking increases, what effect does this have on student’s GPA?” In order to understand the relationship between self-reported GPA’s and multitasking means, an independent samples  $t$ -test was run. Self-reported GPA scores were split into two groups, zero-2.99 GPA into group 1 (low) and 3.00-plus into group 2 (high). Results indicated statistically significant differences between the mean multitasking scores of students with high and low GPAs ( $t(201) = 3.253$ ,  $p < .001$ ),  $\eta = .207$  and  $\eta^2 = .043$ . See Table 4.5 for results. According to the effect size table using Cohen’s criteria,  $\eta$  has a small effect while approaching a medium effect. Those with lower GPAs had higher levels of multitasking ( $\mu = 4.17$ ,  $sd = .641$ ) than those who had higher GPAs ( $\mu = 3.72$ ,  $sd = .685$ ). Thus, answering Research

Question 2a, indicating those with a higher GPA had lower levels of multitasking. Research Question 2b asked if “College students’ multitasking level varied by college classification?” Multitasking means of college students who were freshmen, sophomores, juniors, seniors and other were compared using a One-Way ANOVA. Results indicated students from different classes differ significantly in mean scores ( $F(4,208) = 2.955, p > .021$ ), with  $\eta = .234$  and  $\eta^2 = .055$ . According to the effect size table using Cohen’s criteria,  $\eta$  has a small effect. Freshman had a multitasking mean of  $\mu = 4.11$  ( $sd = .49$ ). Sophomores had a mean score of ( $\mu = 3.99, sd = .61$ ). Juniors had a multitasking mean  $\mu = 3.75$  ( $sd = .73$ ). Seniors had a mean of  $\mu = 3.66$  ( $sd = .71$ ). A Tukey Post-Hoc test shows significance from sophomore to senior with ( $\mu = 4.17, p = .05$ ). Tukey was chosen because of the tests ability to compare the means of every treatment to the means of every other treatment. To see how often participants are using smartphones while simultaneously doing other activities see tables 4.2, 4.3 and 4.4. For multitasking means compared to college classification see table 4.5.

### *Empathy and Smartphone Usage*

Next, the researcher explored empathy. Hypothesis 1 stated College students with high self-reported smartphone usage will have lower empathy scores survey than those with low self-reported smartphone usage. Data indicated empathy scores ranged from 1.80 to 4.30 with a mean of 3.03 on a five-point Likert type scale, and responses ranging from (5) strongly agree, (4) agree, (3) neutral, (2) disagree, (1) strongly disagree. In order to understand the relationship between smartphone usage and empathy, students were asked to report how many hours in a day do they interact with their smartphone. Empathy means and self-reported daily smartphone usage were compared using a One-Way ANOVA. No significant difference was found ( $F(6,203) = 1.89, p > .083$ ). Smartphone usage and empathy means did not differ significantly. Students who reported 0-3 hours ( $\mu = 3.16, sd = .34$ ), followed by 3-5 hours ( $\mu = 3.04, sd = .27$ ). followed by 6-9 hours ( $\mu = 3.05, sd = .32$ ). Students who reported 10-12 hours of daily smartphone usage had ( $\mu = 3.00$

$sd = .29$ ). followed by 13-15 hours ( $\mu = 2.90, sd = .32$ ). followed by 16-19 hours ( $\mu = 2.99, sd = .19$ ). Students who reported 20 plus hours of daily smartphone usage had ( $\mu = 2.91, sd = .53$ ). This indicates that those with higher daily smartphone usage do not have a different level of empathy than those with lower usage. However, since significance approached the .10 significant level, an independent-samples  $t$ -test was conducted on self-reported daily smartphone usage after a high-low split grouping students into 0-9 hours of self reported daily smartphone usage (low) and 10-plus hours of daily smartphone usage (high). The  $t$ -test comparing means of the two groups was found to be significantly different ( $t(208) = 2.516, p < .013$ ). The mean for group 1 was higher ( $\mu = 3.07, sd = .29$ ) than group 2 ( $\mu = 2.97, sd = .32$ ), with  $\eta = .172$  and  $\eta^2 = .030$ . See table 4.5 for summary. Thus, partially supporting Hypothesis 1.

In order to examine the relationship between multitasking and empathy scores, a simple linear regression was run. Data indicated multitasking was a significant predictor of empathy ( $F(1,199) = 14.606, p < .001, R^2 = .261$ ) where  $b = 3.471$ . See tables 4.6 and 4.7 for summaries of regression for multitasking and empathy. Next, multitasking means was compared to empathy means. Results indicated that students who had lower levels of multitasking had significantly higher levels of empathy ( $\mu = 3.09, sd = .30$ ) than those who had higher levels ( $\mu = 2.96, sd = .32$ ) of multitasking ( $t(199) = 2.962, p < .003$ ). Thus, Hypothesis 2, which stated college students with lower levels of self-reported multitasking, will have higher empathy scores than those with low self-reported multitasking is supported.

Lastly, a one-way ANOVA was conducted to compare empathy means and college classification. No significance difference was found ( $F(4,204) = 1.858, p > .119$ ). Freshman had a empathy mean of  $\mu = 2.985 (sd = .46)$ , sophomores has an empathy mean of  $\mu = 2.995 (sd = .27)$ , juniors had an empathy mean of  $\mu = 2.965 (sd = .33)$ , seniors had an empathy mean of  $\mu = 3.099 (sd = .30)$ . See Table 4.5 for summary.

Table 4.2 Using Smartphone in these situations

Activity	$\mu$	<i>SD</i>
Idle Time	4.66	.631
Riding the Bus	4.42	.914
Waiting in Line	4.19	.994
Waking Up	4.15	1.148
Going to Sleep	4.30	1.039
Doing School Tasks	3.80	1.057
Doing Work Tasks	3.48	1.287
Going to the Bathroom	3.29	1.369
Exercising	3.51	1.488
Driving- Not Moving	3.19	1.316
Driving- While Moving	2.44	1.207
While Walking	3.55	1.088
Other	3.61	1.420

Table 4.3 Using Smartphones while doing these activities

Activity	$\mu$	<i>SD</i>
Doing homework while listening to audio media	3.662	1.396
Traveling while listening to audio media	4.673	.704
Interacting acting with friends while listening to audio	3.700	1.205
Do your personal grooming while listening to audio media	3.936	1.281
Exercising while listening to audio media	4.437	1.034
Eating while listening to audio media	3.284	1.260
Eating while watching TV	3.911	1.086
Interacting with friends while watching TV	3.869	1.097
Doing homework while watching TV	3.160	1.347
Exercising while watching TV	3.099	1.449
Using the Internet while doing homework	4.238	.937
Using the Internet while interacting with friends	3.827	1.123
Using the Internet while eating	3.631	1.120

*Table 4.4 Using Smartphone while Simultaneously doing these activities.*

<i>Activity</i>	$\mu$	<i>SD</i>
Listening to Music	3.37	1.111
Walking	3.71	1.094
Watching TV	3.74	1.047
Watching Movies	3.28	1.268
Using the Internet	3.51	1.156
Reading a Book	2.23	1.163
Reading Newspaper	2.55	1.216
Shopping	3.39	1.123
Using the Bathroom	3.10	1.434
Playing Computer Games	2.30	1.335
Playing Sports	2.86	1.483
While talking on the Phone	2.80	1.389
While Working	2.98	1.274
During Class	3.38	1.117
While Doing Homework	3.73	1.050
Eating	3.68	1.052
Other	3.61	1.540

Table 4.5 Summary of One-Way ANOVA for Multitasking Means and College Classification

Source	SS	DF	MS	F	$\eta$	$\eta^2$
Between Groups	941.936	4	235.484	2.955*	.234	.055
Within Groups	16258.676	204	79.699			
Total	17200.612	208				

\*  $p < .05$  \*\*  $p < .01$

Summary of One-Way ANOVA for Empathy Means and Smartphone Usage

Source	SS	DF	MS	F	$\eta$	$\eta^2$
Between Groups	1.043	6	.174	1.894	.230	.053
Within Groups	18.627	203	.092			
Total	19.670	209				

\*  $p < .05$  \*\*  $p < .01$

Summary of One-Way ANOVA for Empathy Means and College Classification

Source	SS	DF	MS	F	$\eta$	$\eta^2$
Between Groups	.705	4	.176	1.858	.188	.035
Within Groups	19.164	202	.095			
Total	19.869	206				

\*  $p < .05$  \*\*  $p < .01$

Table 4.5 Continued Independent t-test for GPA's and Multitasking Means

GPA	<i>n</i>	Mean	<i>sd</i>	<i>df</i>	<i>p</i>
2.00	29	54.207	8.34	201	.001**
3.00	174	48.447	8.90	39.42	.002*
Total	203				

\*  $p < .05$  \*\*  $p < .01$

Independent t-test for Empathy Means and Smartphone Usage

Phone time	<i>n</i>	Mean	<i>sd</i>	<i>df</i>	<i>p</i>
1.00	131	3.069	.289	208	.013*
2.00	79	2.96	.325	149.94	.016*
Total	210				

\*  $p < .05$  \*\*  $p < .01$

Table 4.6 Summary of Linear Regression for Multitasking and Empathy

Variables	<i>b</i>	$\beta$	$sr^2$	R	$R^2$	Adjusted $R^2$
Multitasking	3.471**	-.261	.068	.261**	.068	.064
Intercept = 3.417						

\*  $p < .05$  \*\*  $p < .01$

## CHAPTER V

### DISCUSSION

The goal of this study was to measure the level of the multitasking smartphone users ability to process and understand the intellectual/imaginative apprehension of another's mental state. Additionally, this study measured multitasking affects on GPA's. With the growing popularity of smartphones, it is evident that users' practices are changing—smartphone owners socialize in new ways; they do tasks in new ways, often interweaving and cross- pollinating between activities. As the review of literature stated, the human brain has a very limited ability to segment tasks simultaneously and fully comprehend all of them. Yet the multitasking smartphone user is constantly fragmenting their mental capacity with consequences that are not yet fully understood. The significance of these findings supports several key elements of Polymedia Theory, which argues there is ultimately a new set of social relations with technologies. Findings in this research support this by establishing smartphone users regularly interact with friends while listening to audio media, while doing homework, and while watching TV. Polymedia further argues that the profound transformation of increased usage of technologies has implications for the way communication is experienced. The researcher found support to this point by the participants interacting with their smartphone, during class, waiting in line, and watching movies. As this research shows, smartphone interaction has infiltrated into these acts and is ultimately



having effects on communication experiences. The results support that smartphone users have intrinsic and social motives to communicating with others. As Maslow (1968) stated, belonging is one of the fundamental human needs, and every person needs to have social relations. As the popularity of communication through the smartphone continues to rise, it is apparent smartphone users need to belong as a desire to form personal attachments, and communicate with others to feel included, and will easily adapt to new technologies in order to do so.

### *Discussion*

Survey responses indicated that 95.4% of participants in this study own and use a smartphone and do so on a regular basis. Responses indicate students are interacting with smartphones during idle time, reading a book, waking up, going to sleep and being a passenger in a bus or other vehicle. Additionally, the research shows that college students actively engage with their phone on a daily basis and have a few “go-to” apps that are used for communication in day-to-day life—specifically, social media. Further research should examine the exact amount of time that smartphone users use social media to gauge the level of information transfer occurring. However, as another argument of polymedia posits, this profound amount of involvement in digital and instant communication (specifically social media) could potentially lead to conflict and issues normally suppressed by time. Technostress may play a role in how college students communicated due to the demands of instantaneous communication.

Results also show college students are heavy multitaskers—something that they are trained to do by having the constant demand of life and digital technology on hand. However, the data shows those with a higher GPA had lower levels of multitasking. Part of the contributor of this result is that distraction is one of the many things that affect how a message is processed, encoded, stored and retrievable by the recipient. This indicates those who are less distracted by smartphone interaction will perform better in the classroom, and further supporting that the use of

smartphones reallocates attention resources. Results further indicate students from different classes differ in mean scores. This may imply that as students progress in college classification, multitasking becomes less of an influence on GPA.

Next, empathy, or the ability to process and understand the intellectual and imaginative apprehension of another's mental state, was explored. The results show those with higher GPA's had higher empathy levels. Furthermore, empathy levels and smartphone usage was studied. While no significance was found between GPA's, smartphone usage and empathy when compared to gender or college classification, significance was found when comparing empathy levels and smartphone usage. These results suggest that the smartphone users mental state is occupied by their tasks, decreasing their ability to understand another's mental state. It further indicates that the smartphone user's ability to learn/retain/memorize classroom material to improve GPA's is diminished in relation to the number of hours spent interacting with a smartphone. H2 predicted college students with lower levels of self-reported multitasking would have higher empathy scores than those with high self-reported multitasking. Results indicated that students who had lower levels of multitasking had significantly higher levels of empathy, thus indicating that as multitasking through smartphones increases, the users ability to empathize as well as maintain or improve GPA's may diminish.

### *Implications*

This research found that 21% of the participants interact with their smartphone more than 12 hours per day. It is not possible to generalize the findings of this study because of the type of sample that was utilized. These findings suggest that majors within the school of media and strategic communications engage in multitasking smartphone usage. The study further implies high daily usage—10 or more hours per day—may contribute to lower GPA's and empathy means. Infrastructure for better performance, and advances in technology suggest handheld smart devices

will improve. The challenge in the future will require the individual user to become aware of the affects high daily smartphone usage is having on their means of communication. Additionally, educators are going to have to integrate the handheld smart device into their teaching methods. It would be difficult to predict what advances in technology are going to take place in the next 20 years, however it would be equally difficult to imaging a reduction in smartphone usages in future generation. Therefor the true implications are not as much for today's generation, but for the communication values of tomorrows generation.

### *Limitations*

As with any study, several limitations exist. First, the level of social media interaction was not measured. Future research should utilize an existing scale—such as the Facebook intensity scale—to see if the amount of social media usage plays a role in multitasking and empathy. Although the response rate was acceptable and the survey method should not have introduced frame errors, the population of the study was limited the school of strategic communications at one midwestern university. These demographics could have lead to a higher than normal smartphone usage and houshold income. Furthermore, since only one university was surveyed for empathy means among smartphone users, this prevents this study from being generalized to a larger population. While the demographics of the participants of this study reflect the population of the university, they do not repercent the overall population and may not be indicative to a larger sample. Another possible limitation of this study is that all of the participants were between the ages of 18-25, and it is unknown how older groups would have scored.

### *Directions for Future Research*

Building on the multitasking, smartphone users ability to empathize, qualitative research could employ interviews, group discussions, observations and non-participant observation to gather data and establish themes. Future research could expand the age range of the participants in order to get a better perspective of multitasking habits and smartphone usage as age increases. Finally, a wider range of demographics – ethnicity, household incomes, level of education – would gain a more accurate reflection of the populations smartphone usage.

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## APPENDIX A

### Test Instrument

#### Part I

Do you use or own a smartphone as your primary mobile phone?

- a.) Yes
- b.) No (If no, please go to Part III)

What brand of smartphone do you use? (select your primary mobile phone if you have more than one)

- a) iPhone
- b) RIM/Blackberry
- c) Android OS
- d) Windows OS
- e) Palm
- f) Other \_\_\_\_\_

Please indicate the amount of time daily you interact with your phone.

- a.) 0-3 Hours
- b.) 3-5 Hours
- c.) 6-9 Hours
- d.) 10-12 Hours
- e.) 13-15 Hours
- f.) 16-19 Hours
- g.) 20+ Hours

Please indicate how many apps you have on your phone.

- a) Less than 5 apps
- b) 5-10 apps
- c) 11-15 apps
- d) 16-25 apps
- e) More than 25 apps
- f) I do not own a smart phone

Please indicate what type of apps you download most frequently.

- a) Video
- b) Games for Entertainment
- c) Music
- d) Instant Messaging
- e) Contact Management
- f) Weather
- g) Social Media
- h) Maps

Multiple Times Per Day <b>4</b>	Often Watch <b>3</b>	Sometimes Watch <b>2</b>	Rarely Watch <b>1</b>	Never Watch <b>0</b>		
_____		4	3	2	1	0
_____		4	3	2	1	0
_____		4	3	2	1	0
_____		4	3	2	1	0
_____		4	3	2	1	0

EXCLUDING VOICE CALLS, how often do you use your smartphone in these situations?

Regularly Use <b>5</b>	Often Use <b>4</b>	Sometimes Use <b>3</b>	Rarely Use <b>2</b>	Never Use <b>1</b>	
Idle time at work or school (during breaks, lunch, boring meetings/classes, etc.)	5	4	3	2	1
Riding the bus, train, or in car as passenger (commute)	5	4	3	2	1
Waiting in line (examples: coffee shop, grocery store, for movie to start, picking up kids, etc.)	5	4	3	2	1
In bed when you wake up (weekend leisure time, before you get out of bed for work, etc.)	5	4	3	2	1
In bed before you go to sleep	5	4	3	2	1
For school related tasks	5	4	3	2	1
For work related tasks	5	4	3	2	1
In the bathroom	5	4	3	2	1
While exercising (running, cycling, skiing, at the gym...)	5	4	3	2	1
While you are driving, waiting for light to turn green (not moving)	5	4	3	2	1
While you are driving (wheels moving)	5	4	3	2	1
While walking	5	4	3	2	1
Other _____	5	4	3	2	1

Multitasking: EXCLUDING VOICE CALLS, how often do you use your smartphone while simultaneously doing these activities?

Regularly Use <b>5</b>	Often Use <b>4</b>	Sometimes Use <b>3</b>	Rarely Use <b>2</b>	Never Use <b>1</b>	
Listening to music	5	4	3	2	1
Walking	5	4	3	2	1
Watching TV	5	4	3	2	1
Watching Movies	5	4	3	2	1
Using the internet on another device	5	4	3	2	1
Reading a book	5	4	3	2	1
Reading newspapers or magazines	5	4	3	2	1
Shopping	5	4	3	2	1
Using the toilet	5	4	3	2	1
Playing computer games	5	4	3	2	1
Playing sports, exercising	5	4	3	2	1
While talking on the phone (i.e., using apps, advanced features)	5	4	3	2	1
While working	5	4	3	2	1
During class	5	4	3	2	1
While doing homework	5	4	3	2	1
Eating	5	4	3	2	1
Other _____	5	4	3	2	1

How often are you consuming different types of information on your smartphone?

Regularly consume <b>5</b>	Often consume <b>4</b>	Sometimes consume <b>3</b>	Rarely consume <b>2</b>	Never consume <b>1</b>	
Text messaging (SMS)	5	4	3	2	1
Reading e-mail	5	4	3	2	1
Searching for specific information	5	4	3	2	1
Talking on the phone	5	4	3	2	1
Viewing content on social networks	5	4	3	2	1
Communicating with friends on social networks	5	4	3	2	1
Weather forecasts	5	4	3	2	1
Bill Pay	5	4	3	2	1
Face Time/Skype	5	4	3	2	1
Maps, GPS	5	4	3	2	1
News	5	4	3	2	1
Listening to music	5	4	3	2	1
Solo video games	5	4	3	2	1
Chatting (AIM, GoogleTalk, Skype Chat, etc.)	5	4	3	2	1
Watching video (ex. video podcasts, Youtube, etc.)	5	4	3	2	1
Listening to audio podcasts	5	4	3	2	1
Video games across networks with multiple players	5	4	3	2	1
Reading books (ex. Kindle Reader app; B&N Reader app, etc.)	5	4	3	2	1
Other _____	5	4	3	2	1

How often do you create different types of content on your smartphone?

Regularly Create <b>5</b>	Often Create <b>4</b>	Sometimes Create <b>3</b>	Rarely Create <b>2</b>	Never Create <b>1</b>	
Text messaging (SMS)	5	4	3	2	1
Writing or responding to e-mail	5	4	3	2	1
Taking photos	5	4	3	2	1
Editing photos	5	4	3	2	1
Maps/GPS	5	4	3	2	1
Recording calendar events	5	4	3	2	1
Updating Facebook status	5	4	3	2	1
Taking video	5	4	3	2	1
Tweeting	5	4	3	2	1
Making Notes	5	4	3	2	1
Audio recording, creating podcasts	5	4	3	2	1
Other _____	5	4	3	2	1

## Part II

Please read each of the following statements very carefully and rate how strongly you agree or disagree with them by circling the number that corresponds to your answer. There are no right or wrong answers, or trick questions.

**Empathy** - We would like to know a little more about you. In the section below, please circle the number that best corresponds with the statement.

Strongly Agree <b>5</b>	Agree <b>4</b>	Neutral <b>3</b>	Disagree <b>2</b>	Strongly Disagree <b>1</b>	
My friends' emotions don't affect me much.	5	4	3	2	1
After being with a friend who is sad, I usually feel sad.	5	4	3	2	1
I can understand a friend's happiness when he or she does well at something.	5	4	3	2	1
I get frightened when I watch characters in a really scary movie.	5	4	3	2	1
I get caught up in other people's feelings easily.	5	4	3	2	1
I find it hard to know when my friends are frightened.	5	4	3	2	1
I don't become sad with I see other people crying.	5	4	3	2	1
Other people's feelings don't bother me at all.	5	4	3	2	1
When someone is feeling "down," I can usually understand how they feel.	5	4	3	2	1
I can usually figure out when my friends are scared.	5	4	3	2	1
I often become sad when watching sad things on TV or in films.	5	4	3	2	1
I can often understand how people are feeling even before they tell me.	5	4	3	2	1
Seeing a person who has been angered has no effect on my feelings.	5	4	3	2	1
I can usually figure out when people are cheerful.	5	4	3	2	1
I tend to feel scared when I am with friends who are afraid.	5	4	3	2	1
I can usually realize quickly when a friend is angry.	5	4	3	2	1
I often get swept up in my friends' feelings.	5	4	3	2	1
My friend's unhappiness doesn't make me feel anything.	5	4	3	2	1
I am usually not aware of my friend's feelings.	5	4	3	2	1
I have trouble figuring out if my friends are happy.	5	4	3	2	1

**FACEBOOK** - We would like to know a little more about your media habits. In the section below, please circle the number that best corresponds with the statement.

Very Often <b>5</b>	Often <b>4</b>	Sometimes <b>3</b>	Rarely <b>2</b>	Very Rarely <b>1</b>
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**How often during the last year have you....**

Spent a lot of time thinking about Facebook or planned use of Facebook?	5	4	3	2	1
Thought about how you could free more time to spend on Facebook?	5	4	3	2	1
Thought a lot about what has happened on Facebook recently?	5	4	3	2	1
Spent more time on Facebook than initially intended?	5	4	3	2	1
Felt on an urge to use Facebook more and more?	5	4	3	2	1
Felt that you had to use FB more & more in order to get the same pleasure from it?	5	4	3	2	1
Used Facebook in order to forget about personal problems?	5	4	3	2	1
Used FB to reduce feelings of guilt, anxiety, helplessness, & depression?	5	4	3	2	1
Used Facebook in order to reduce restlessness?	5	4	3	2	1
Experience that others have told you to reduce your use of Facebook but not listened to them?	5	4	3	2	1
Tried to cut down on the use of Facebook without success?	5	4	3	2	1
Decide to use Facebook less frequently, but not managed to so?	5	4	3	2	1
Become restless or trouble if you have been prohibited from using FB?	5	4	3	2	1
Become irritable if you have been prohibited from using Facebook?	5	4	3	2	1
Felt bad if you, for some reasons, could not log on to FB for some time?	5	4	3	2	1
Used FB so much that it has had a negative impact on your job/studies?	5	4	3	2	1
Given less priority to hobbies, leisure activities, and exercise because of FB?	5	4	3	2	1
Ignore your partner, family members, or friends because of Facebook?	5	4	3	2	1

**Sensation seeking**

I would like to explore strange places.

Strongly Agree    Agree    Neutral    Disagree    Strongly Disagree

I like to do frightening things.

Strongly Agree    Agree    Neutral    Disagree    Strongly Disagree

I like new and exciting experiences even if I have to break the rules.

Strongly Agree    Agree    Neutral    Disagree    Strongly Disagree

I prefer friends who are exciting and unpredictable.

Strongly Agree    Agree    Neutral    Disagree    Strongly Disagree

**Part III**

**DEMOGRAPHICS**

**Please answer the following questions about yourself. This is for classification purposes; you will not be identified.**

Please indicate your gender:  Male  Female

**What is your age group?**

- a) 18-21
- b) 22-25
- c) 26-30
- d) 31-39
- e) 40-49
- f) 50-59
- g) 60-69
- h) 70+

Please indicate your school status:

- a) Freshman
- b) Sophomore
- c) Junior
- d) Senior
- e) Graduate Student
- f) Not in school
- g) Other \_\_\_\_\_

Do you live on Campus?  Yes  No

What is your major? \_\_\_\_\_

What is your current GPA? \_\_\_\_\_

Are you in a Greek fraternity/sorority? Yes  No

What is your ethnicity? (Please select the one answer that best represents you)

- African-American / Black
- American Indian or Alaskan Native
- Asian or Asian American
- Caucasian/White
- Hispanic/Latino
- Pacific Islander
- Multi-racial
- Other (please specify): \_\_\_\_\_
- Decline to Answer

What is your current household income?

- |                            |                                 |
|----------------------------|---------------------------------|
| 1 ___ less than \$15,000   | 5 ___ \$75,001 to \$100,000     |
| 2 ___ \$15,001 to \$30,000 | 6 ___ \$100,001 to \$250,000    |
| 3 ___ \$30,001 to \$50,000 | 7 ___ more than \$250,001       |
| 4 ___ \$50,001 to \$75,000 | 8 ___ unknown/decline to answer |



## VITA

Teddy Burch

Candidate for the Degree of

Master of Science

Thesis: SMARTPHONES, MULTITASKING AND EMAPTHY: A POLYMEDIA  
THEORY PERSPECTIVE

Major Field: Mass Communication

Biographical:

Education:

Completed the requirements for the Master of Science in Mass Communication at Oklahoma State University, Stillwater, Oklahoma in May 2013.

Completed the requirements for the Bachelor of Arts in Photojournalism at University of Central Oklahoma, Edmond, Oklahoma, 2007.

Experience:

Instructor/Director

University of Central Oklahoma July 2009-Present

- Teach 40-plus students per semester Media Writing, which covers basic AP style, web writing and broadcast style writing
- Teach 12-15 students per semester Newspaper Participation which includes advance reporting, editing, newspaper layout, photography, advertising, web reporting, basic video shooting and editing, HTML coding, WordPress CMS and creative suite 6.
- Director of Student Publications, responsible for hiring and maintaining 20-plus student employee staff, oversee each deadline, maintain annual budgets, supervise other university staff employees

Managing Editor/Photographer/Writer

Edmond Outlook Magazine April 2007-December 2008

- Created all story ideas for monthly publication
- Conducted hundreds of interviews for my over 200 published articles
- Maintained relations and directed two-dozen writers, photographers, copy editors and printing/production staff to meet 100% of each monthly deadline.
- Directed and shot hundreds of photo assignments for commercial, feature publication and web use.