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THE EFFECTS OF MOBILE DEVICE USE ON SOCIAL INTERACTIONS AMONG COLLEGE STUDENTS

Ian Jones
Southeastern University - Lakeland

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Ian Jones

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Abstract

This paper evaluates the impact that increased cellphone use causes on face-to-face interactions. An introduction to the literature will show the dramatic increase of cell phone ownership across the United States (Anderson, 2015). This dramatic increase can have numerous effects on all persons who own a cellular device. A brief look at the research conducted by different researchers (Hakuno, Omori, Yamamoto, & Minigawa, 2017; Gottman, Gonso, & Rasmussen, 1975; Hay, n.d.; Shneidman & Woodward, 2016), reveals that cell phones can have a negative impact on the users, if used in excessive amounts. The current study uses true experimental design to measure the impact that cell phones have on our face-to-face interactions. 37 students from a Central Florida university participated in the experiment. Each participant came in to the study and interacted with a confederate, either with or without their phone. In the end, the research showed no statistically significant evidence that cell phones caused a decrease in the number of interactions, as well as, the length of time each interaction occurred.

KEYWORDS: cell phones, face-to-face interactions, social interactions, relationships, mobile devices

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The Effects of Mobile Device Use on Social Interactions among College Students

Chapter I: Introduction

Currently in the 21st century, technology has exploded at an alarming rate. In a national survey done in the United States from 2000-2015, cellphone ownership in younger adults exploded from 65% of the population reporting ownership in 2004 to 92% of the population reporting ownership in 2015 (Anderson, 2015). Cellphone ownership is not the only rapid expansion of technology: smartphones are also rising at an alarming rate. Smartphones are a relatively new device within the last 20 years. The first iPhone was not released until 2007, however, the Simon Personal Communicator, which was released in 1992, is credited as the first official smartphone (Martin, 2014). Since then, thousands of new phones have been released and are widely used in our nation. The Pew Research Center's 2015 study on smartphone ownership was recorded at 68%, and this is almost double the recorded smartphone ownership in 2011, which was 35% (Anderson, 2015). In just four short years, smartphone ownership doubled. Our current study will focus on the impact of technology on the personal face to face interactions and perceived closeness.

With the increase in technology use, the growth of social media relationships has also risen. The Pew Research Center is also in charge of a survey on Teen Social Media use in 2015. They found that almost 92% of teens in the United States are going online at least one time per day (Lenhart, 2015). According to Lenhart (2015), "much of this frenzy of access is facilitated by mobile devices" (p. 1). This is an interesting statement; Lenhart's (2015) data does suggest an increase in smartphone ownership and a direct correlation between social media usage in teens. With such an increase in the cellphone

ownership, including other technology ownership, face-to-face interactions seem to be declining.

It is crucial to note this decline in face-to-face interactions. This decline is a severe issue because of the impact that social interactions play on humans' lives. Social interactions can cause a number of changes in our day to day lives. They can cause our day to be extremely happy or be horrible. Social interactions play a major role on the overall experiences people have in their lifetime (Verga & Kotz, 2017). Social interactions begin their foundational importance at an early age, research suggest at 6 months infants begin to be impacted by social interactions. Social interactions can occur as an infant in the form of parents making faces to an infant, parents using different tones to convey attitude, or using different facial expressions to convey attitude/meaning (Hakuno, Omori, Yamamoto, & Minagawa, 2017). Currently in today's society, children are being exposed to technology at increasingly earlier years, this exposure can have numerous harmful effects on the child. According to research done by Dale Hay (2017), children who are less knowledgeable on how to make friends are more likely to have less friends. This may seem like a no brainer statement, obviously children that are more knowledgeable on how to make friends will have more friends. However, the presence of technology too early in a child's life can prevent them from learning the important skills necessary to make friends later in their lives.

Social interactions are also increasingly beneficial for adults. Research has proven that adults attempting to learn a second language are more likely to learn new words, remember, and associate objects to words; if they learn the language from another person (Verga & Kotz, 2017). Adults use social interactions every single day, as an

adult, or adolescent, you might interact with a professor, parent, co-worker, boss, significant other, and several other friends each day or week. These interactions are beneficial and allow us to broaden our vocabulary, learn new material, and interact with other humans (Verga & Kotz). Technology has the capability to do all of these things as well, however, technology lacks the intimacy and importance that social interactions possess. Social interactions do not carry the same weight as online interactions. Research suggests that people are more likely to recall material learned through physical social interactions with a teacher, compared to the same material learned through a video.

It is our hypothesis that increased cell-phone use causes a reduction in quality of face-to-face interactions, compared to people who do not use their phone while engaging in a face-to-face interaction. Our independent variable is the use of cellphones in face-to-face interactions. We hope that manipulating the independent variable will show an impact on the frequency and duration of face-to-face interactions that will occur during the experiment.

This study is significant because of the rapid expansion and growth of technology in our lives. Technology is used on a daily basis and plays a vital role in our lives. This study is designed to deepen the knowledge of the overall impact that technology usage has on relationships. While significant research does already exist, the growth in technology usage requires more knowledge on the topic. A 2011 study found direct correlations to internet usage and perceived communication problems (Ozcinar, 2011). This is important to have more knowledge on because technology usage has increased, and we must deepen our understanding on the negative consequences of increased usage.

The purpose of our study is to increase the knowledge of how technology use impacts college student's frequency and duration of face-to-face interactions. Our study participants will be college students, older than 18. Due to the population of our study, one potential issue in the validity in our current study is the possibility of participants already knowing one another before arriving at the study, which could cause a potential increase in frequency and duration of face-to-face interactions.

Definition of Terms

Technology device: any phone, mp3 player, tablet, computer, gps, video game console, or television.

Frequency: The amount of face-to-face interactions that occur between any amounts of people.

Duration: The amount of time that each face-to-face interaction lasts

Face-to-face interaction: verbal communication that exists from person to person both presently with each other.

Relationship: a person-to-person friendship that exists physically between two or more people that can communicate in person.

Cellphones: any mobile communication device.

Social interaction: any communication that occurs between two or more people

Chapter II: Review of Literature

Cell-Phone use has been seen and noted as booming throughout the United States and all around the world. It was previously noted in the introduction that in the last 11 years (2004-2015) smartphone ownership rose from 65% of the population reporting ownership to 92% reporting ownership (Anderson, 2015). With the rise in technological advances and continual rise in interest, large amounts of research have been done on the overall impact that technology has had. We have previously stated that the goal of our study is to determine the overall impact that cellphones cause on face-to-face interactions. It is important to grasp the research being done on technology as a whole. There are currently mass amounts of research on the impact that cellphones have, but it seems that there is limited information on how cellphones impact face-to-face interactions. However, before analyzing the research on the effects that technology has on social interactions, it is important to understand the effects that social interactions have on people.

There have been mass amounts of research in the last decade on the importance of social interactions (Hakuno, Omori, Yamamoto, & Minigawa, 2017; Gottman, Gonso, & Rasmussen, 1975; Hay, n.d.; Shneidman & Woodward, 2016). Research has been conducted on people of all different ages, races, or socioeconomic statuses. When analyzing the research, the overall ideation is that social interactions have constructive impacts on our lives. Social interactions are meant to be supportive to us and meant to increase our language, education, and other aspects of life. Research has been done on infants as young as 5 months old, to adults in their mid-life. Research on infants suggests that social interactions are critical when learning object-word associations (Hakuno,

Omori, Yamamoto, & Minigawa, 2017). Hakuno, Omori, Yamamoto, and Minigawa conducted research on infants age 5-6 months and 9-10 months. In their research, they had two groups, the experimental group, and the control group. In one group, infants were shown a puppet, and then audibly heard a corresponding nonsense word. In the other group, infants watched a video of the puppet and audibly heard the same corresponding word. The findings of Hakuno, Omori, Yamamoto, & Minigawa (2017) conclude that children ages 5-6 months and 9-10 months, "were able to segment a word from continuous speech and acquire a word-object relation through naturalistic observation" (p. 71). These results are important for understanding the impact of social interactions because it shows that children who learned from a real life person compared to children who learned from watching a video, were more likely to learn the word-object association. These results are also important because it shows how important social interactions are at an extremely young age (5 months old).

Social interactions do not only impact the amount of friends we have, they also correlate with our overall psychological well-being. "In a survey of research on suicide and attempted suicide, Stengel (1971) concluded that 'social isolation' is the common denominator of a number of factors correlated with a high suicide rate" (Gottman, Gonso, & Rasmussen, 1975, p. 709). This quote is interesting, as it suggests that social isolation has been found to correlate with a high suicide rate. Research on children around the age of four has found supporting evidence to this claim. Dale Hay (n.d.) discusses children that have trouble being accepted by their fellow peers. The article goes further to suggest that children who have trouble fitting in or being accepted by peers, even at the preschool age, are more likely to have difficulty in later years. The article backs up the research

mentioned previously, that infants, as young as the age of 6 months old, can begin developing peer relationships. Infants can make noises to another infant, smile, giggle, laugh at, or physically engage with other infants (Hay, n.d.). The article goes further by implying that infants who are exposed to other infants can develop the skills necessary for peer relationships quicker than infants who are not exposed to other infants. According to Hay (n.d.), children can use a wide range of skills to interact with one another, and any deficiencies in these skills can cause poor social interactions to occur. The skills that children use include: managing joint attention, regulating emotions, imitating other's actions, etc. According to the author, peer acceptance is widely determined by how the child behaves (Hay, n.d.). "In previous studies toddlers who are able to engage in complex play with peers were more competent in dealing with other children in the preschool years and in middle school" (Hay, n.d., p. 3). This article shows the effects that peer relations and social interactions can have on toddlers, and the impact that occurs later in the toddler's life. The article highlights a key aspect that social interactions and peer relations can cause on a toddler (Hay, n.d.). The article shows that research suggests that, children that are able to relate with their peers from an early age are proven later in life to be less likely to have psychological issues caused by poor social interactions or low peer support (Hay, n.d.). Similar research has been proven by Shneidman and Woodward. They found that children who learn from naturalistic observation, learning words, semantics, etc. positively correlates to the child's vocabulary later in life (Shneidman & Woodward, 2016). Their research concludes that overall, children have been shown to learn much faster and better from social contexts than online contexts (Shneidman & Woodward, 2016).

Lastly, it is equally as important to look at the effects of social interactions on adults. The study conducted by Verga and Kotz (2017), sought to determine a similar hypothesis to the study mentioned previously, about the effects of social interactions on infants. Verga and Kotz's (2017) study tested word learning in adults learning a second language. Participants in their student were tasked with learning words from a previously unknown language (Italian), whilst playing a language learning game with a partner. One of the groups played with a partner and the other group played alone. The study showed that "during the learning phase, social interaction significantly influenced the participants' behavior: Response times were faster, standard deviations of response times smaller, and temporal correlations higher when participants were learning socially compared to non-socially" (Verga & Kotz, 2017, p. 85). They also found that the adults were able to remember the word when presented by the partner in variable sentence contexts (Verga & Kotz, 2017). This study further expands the knowledge about social interactions by showing that adults that learn a new language with a social partner, learned faster and recognized more words than those without the partner (Verga & Kotz, 2017). This research shows that even as an adult, we can use social interactions to learn new words and recall those words more frequently, than without social interactions. The research by Verga & Kotz shows that online tools, such as Rosetta Stone, may be beneficial to use. However, learning a language from or with another person is going to be the best way to learn.

Several other experiments have been conducted to determine the effects of social interactions on people. Research has been done on children in the third and fourth grade. The researchers looked at several different classes of third and fourth graders and the

impact that social interactions played on them (Gottman, Gonso, & Rasmussen, 1975). Gottman, Gonso, and Rasmussen (1975) researched the differences in popular and unpopular children. They found that children were more likely to be popular if they were knowledgeable on how to make friends. The children they observed that knew how to make friends were considered much more popular than the children who did not know how to make friends (Gottman, Gonso, & Rasmussen, 1975). They also tested the children by pairing them with their best-friends and giving the students word association tasks (Gottman, Gonso, & Rasmussen, 1975). Their research is important because it shows a direct positive correlation between a child's ability to learn new words and the quality of their friendships/ the presence of a friend or person (Gottman, Gonso, & Rasmussen, 1975). Their research also suggests that children who are knowledgeable on how to make friends are more likely to be popular, and thusly, have more friends. These children with more advanced social skills are also more likely to continue having more friends into late elementary school and even in middle school (Gottman, Gonso, & Rasmussen, 1975).

It should be noted that there is research on both positive implications and negative implications that technology has on our daily lives. Technology can play a major positive act on people with social anxiety. According to a study conducted by Magsamen-Conrad et al. (2014), they found that technology addictions had overall negative effects on a person's life, however, the addiction could have positive correlations to increased social interactions. They found that specific members of society with self-concealment issues and social anxiety issues used technology, while having addictive tendencies and issues, generally had higher life satisfaction on a whole. This is

one of the main positive implications that technology can have on our lives. The study by Magsamen-Conrad et al. (2014) shows that technology can have negative effects, but for some people it is extremely beneficial in social interactions and settings. This is not the only supporting research for this notion. Other research has been done into the positive implications that technology plays in our lives. In a separate study done on young adults, researchers were seeking to determine the overall effects that technology played in the young adolescents lives (Kalogeraki & Papadaki, 2010). Overall, they found that the cellphone had huge benefits for the students and they found that the device provided a "back-door" (p. 129) for the teens to express themselves outside of their parents. Kalogeraki & Papadaki (2010) conducted a study that found that the majority of teens were able to grow a wealth of social interactions online, and the student's expressed that they were able to gain independence from their parents. For these teens, the cellphones allowed them to reach out into the world and to interact with it online (Kalogeraki & Papadaki, 2010). Other people and teenagers do not have this same positive impact from technology.

The negative implications are also a major part of technology and the impact that it has in all of our lives. While research on the impact of cellphones on face-to-face interactions has been done, it is not extensive. In one study that we found, researchers compared the amount of internet usage and compared it to the new technologies being developed (Schiffrin, Edelman, Falkenstern, & Stewart, 2010). In the end of their study they found that the majority of participants consistently rated that the internet was less beneficial for communication and that face-to-face communications were far superior for maintaining relationships (Schiffrin, Edelman, Falkenstern, & Stewart, 2010). Other

research has concluded similar results, but to go a step further, research has shown that extreme mobile phone use can cause much severe impacts on people with ADHD and their abilities to interact in social settings (Mihye, Jung-Hyun, & David, 2015). Mihye et al. (2015) continue in their research by stating that "unhealthy dependence on mobile phone was one of the main reasons for multicommunicating during a face-to-face conversation" (p. 676). Their research suggests that while cellphones can provide connectivity, it can also cause destruction to relationships in face-to-face interactions (Mihye, Jung-Hyun, & David, 2015).

Mihye et al. (2015) were also able to find differences between mobile phone uses across gender. Research has been done into the gender differences in technological use, in a 2015 study, researchers were able to find that males were much more likely to become addicted to internet use than females were (Dhir, Chen, & Nieminen, 2015). Dhir, Chen, & Nieminen continued to conclude in their research that age and socioeconomic status had a weak to no correlation to internet addiction (2015). Technology has many different spectrums, and the research on cellphones is not as extensive as technology as a whole, another main negative implication of technology is addiction. Internet addiction can play a major role into cellphone usage and social interactions. Ozcinar's 2011 study on adolescents in North Cyprus found that, "There is a strong correlation between interpersonal communication problems and Internet addiction. As internet addiction increases, young individuals' problems in interpersonal communication skills increase" (p. 27). They continued by inferring that overall satisfaction in communication was rated lower over the internet than it was with face-to-face communication (Ozcinar, 2011).

Other research suggests similar findings that on a whole people prefer face-to-face interactions rather than having interactions over any online form of communication (Goodman-Dean et al., 2016). Goodman-Dean et al. compare the different technologies that their participants used and asked each of them how they felt about them and whether they liked the different technologies or not (2016). They found that the greatest results came from face-to-face communication, and that technology had a slight impact in preference, the participants overall have more satisfaction with relationships when they are face-to-face (Goodman-Dean et al., 2016). In another study, done by Wright et al. (2013) showed that people consistently prefer face-to-face communication over Facebook interaction, when it came to their life satisfaction, and that when it came to depression, people who were on Facebook more, and had less face-to-face interactions, had higher levels of depression. The author states, "It is interesting to note that the number of hours that students spent using Facebook was positively correlated with depression in the present study" (p. 52). It is not surprising that with lower life satisfaction would come higher levels of depression. Schiffrin, Edelman, Falkenstern, & Stewart's 2010 study found that their participants consistently rated face-to-face communication as more beneficial than using the internet, when it came to maintaining relationships, and that increasing the amount of internet use seemed to decrease the person's overall well-being. In all of the data that we found, there seems to be a common theme; that Internet use generally comes at the expense of higher satisfaction in life.

Relationships, in specific, can be hurt by the overuse of cell-phones and the internet as a whole. Luo conducted a study in 2014, and discovered that texting is harmful to relationships, especially romantic ones, because it causes distractions and less

focus on the relationship. He concluded that texting is a main problem when it is used as a replacement for face-to-face interaction, instead of complimenting it. This idea of distracting was also found in a study by Wang in 2013, where he had a class use Facebook as it's means of communication. He found that the student's grades, as a whole, suffered because of the distracting nature of Facebook and games that accompany it. Social skills may have a role to play in Internet use, and its effects among individuals. Yang, Wang, & Lu (2016), found that those with a higher social self-efficacy caused people to have less of the negative repercussions that came along with greater use of technology. They also found that those with a weaker social self-efficacy were more likely to develop an internet addiction, and have the accompanying issues. They found this with older adults as well. Ihm & Hsieh conducted a study of senior citizens in 2015, and found that those who use the internet for their social activities, have a lot less face-to-face interaction with others, but for those who only used the internet for information, and not for social uses, had more interactions with others in real life. This lack of social interaction, we can see, is accompanied with a higher chance of becoming addicted to cell phones. Darcin et al. (2016) found just that; their research concluded that, social phobia and anxiety also leads to an increase chance of addiction. They also found that feelings of loneliness were accompanied by smartphone use, and this may be because using the Internet to socialize makes us feel closer to people, even if we aren't really. Age may have a factor in this as well. Buckner, Castille, & Sheets found, in their 2012 study that age was negatively correlated to problematic use of technology. Therefore, younger people are using it more problematically than older adults. This has consequences, because young adulthood is when people are most likely to be social, and if we are

replacing it with phone use, we have seen some implications of that. Patterson et al. did a study in 1998, and found that high internet use was associated with higher levels of depression and feelings of loneliness, along with decreased social involvement. This is a major finding, because this study was done before smartphones came along, and now we have the Internet with us wherever we go. Mihye, Jung-Hyun, & David showed, in 2015, that cell phone use can cause problems in face-to-face interactions, because we have a social need as human beings to be connected to each other, and that cell phones and the internet have tried to replace regular social interaction, and that we are seeing the problems with that.

In summary, as we can see through the research, cell phone and Internet use can be problematic when used excessively. There is little evidence to suggest that it has positive effects, but primarily we see how it negatively effects our life satisfaction, our relationships, and that it is correlated with higher levels of depression and loneliness. When looking at this, it is not shocking that teenagers have the highest depression rates, and that face-to-face interactions have diminished in light of Social Networking and texting. With the ever-growing population of cell phone users, we can see that this has become a big issue today, and that it doesn't appear to be slowing down in the near future.

CHAPTER III: Methodology

Recruitment

Participants were recruited at Southeastern University during various classes. Two of the researchers went into each class and briefed the students of a fake study that wanted to find the difference between IQ test scores in regards to various grade classifications and majors. Students were briefed about the raffle for a 20-dollar gift card, and some professors included extra credit. Afterwards, the researchers handed out a sign-up sheet with various times on it and only one slot per person in each 20-minute interval. The researchers included that the study should take no longer than twenty minutes and stressed the small amount of time to entice students to come. The only limit for a participant to come was that they had to be at least 18 years of age.

Inducement

The inducement was three $20 gift cards provided by the three researchers. Upon showing up for the study, participants received 1 entry. Upon completing the study, participants received another entry, making a total of two entries per person. A week after the research was completed, the drawing took place and 3 students were selected. The students that won the raffle were emailed and informed that they won. The students were given a week to respond with what kind of gift card they wanted, and then were given the gift card.

Participants

The researchers recruited students from a private university in Central Florida, and had an age range of 18 to 27 year olds. Thirty-seven participants showed up to the study (25 females and 12 males) out of the 74 that originally signed up. Only one

participant was excluded from our study because the individual was 17 years old and therefore could not sign the informed consent. In regards to grade classification, the overwhelming majority of students who participated were juniors (55.6% of participants), with the second highest being sophomores (19% of participants). The majority were Caucasian (47% of participants), with some Hispanics (28% of participants) and African Americans (8% of participants). We had 20 different majors represented between our participants, with psychology and multidisciplinary majors being the highest representative population.

Setting and Procedure

The setting of the study was at the universities' Research modular classroom. Temperatures inside of the module were kept the same throughout the entire week and all of the lights were turned on each time, as to maintain consistency. Participants would come up a metal ramp and see a note stating that participants should knock before entering. When the participant knocked, our confederate, and third researcher, would sneak out the back door. The confederate would then enter the research mod as if he was a real participant. Upon arrival into the room, both the confederate and participant were greeted and sat in the waiting room to be given the informed consent. Participants received a copy of the informed consent and signed on a separate sheet for the researcher's records. In all informed consents, participants were told that they would be filmed during the test for records and to prevent cheating, because they believed they were taking an intelligence quotient test. The control group was told about the film and nothing was said about use of phones. In the experimental group, participants were also told to turn in their cell phone so that the participants would not be able to cheat.

Participants then sat in a large cubicle with two chairs sitting right next to each other, with their backs away from the camera. Upon sitting down, the camera was turned on, and one researcher made an excuse to leave the room. The excuse was that one researcher did not have the test questions and had to go grab them, and, towards the end of the day, the excuse became that they had to leave because we ran out. In order to not create suspicion, the other experimenter just sat in another room without any excuse at all.

Upon leaving, participants were filmed to test how their phones affected the amount and length of interactions that occurred with the confederate. The confederate was given specific rules that they could not start the any interaction or be on their phone and would sit in a neutrally inviting position. Upon the participant interacting with the confederate, he would try to continue a back and forth conversation without trying to force the conversation to continue. For every time the participant would make a verbal interaction, it was noted as data. No interactions from the confederate were counted. Upon five minutes after the experimenter left the room, the experimenter came back and said thank you for participating. The experimenters debriefed the participant in that there was no IQ test and explained the real experiment. They were asked to fill out a small demographic sheet and asked if there were any issues with being deceived. The participants were then allowed to leave and the experimenters got prepared for the next participant.

Measure

As previously mentioned in the procedure section, participants were filmed during the study. Rather than using a subjective scale to rate the face-to-face interactions that

were secretly being measured, we chose to quantitatively measure them. The researchers decided that the best way to assess the quality of the face-to-face interactions and determine whether cell phones impact that quality, the researchers decided to individually count each interaction that occurred in the span of 5 minutes. As previously stated, the researcher left the participant alone with the confederate researcher. The researchers decided to count each interaction that the participant started as one interaction. The confederate was told to always reply to any interaction but to never engage. Thusly any following interaction that occurred after the confederate's reply was counted as a second interaction and so forth. It was decided to time the overall length of interactions that occurred for each participant, as well as to count the number of interactions that occurred. The length of time and amount of interactions will be used to show whether or not cell phones impact face-to-face interactions. The researchers will compare the length of time of the interaction from the minute the participant begins talking until they stop talking. The time will stop each time the participant takes a pause. The amount of interactions will not affect the length of time that the person talks, and to keep some form of consistency and manageable time, the length of time will be measured in seconds, as to be easily reproducible. Upon analyzing the data, the researchers will compare the length of time and number of interactions that the two different groups had: those who got to keep their cell phone (control group) versus those whose phones were collected (experimental group).

Chapter IV: Analysis of Data

Results

The results showed a slight positive skew that was not statistically significant. In addition, results were slightly platykurtic, however, this too was not statistically significant. There was a general normal distribution of data. There was no missing data, and there was only one participant that was excluded due to them being under the age of 18, because the study did not involve minors.

Analysis

Figure 1 shows the mean scores of interactions between the control group (M= 10.87) and experimental group (M= 9.57). A slight difference can be seen between the two groups, however, after running the independent samples *t test*, it is known that this difference is not statistically significant.

Figure 2 shows the mean scores of the length of interactions of the control group (M= 135.47 seconds) versus the experimental group (M= 116.29). Again, a difference is noted and the participants who did not have the phone did interact more on average with the confederate. However, the length of those interactions was not significantly different from the experimental group)

Counter to our original prediction, results from an independent samples *t* test indicated that the interactions of the controlled group (M = 1.295, SD = 3.810) was not significantly higher than the average interactions of the experimental group, t (34) = 0.340, p = .736, two tailed. See Table 1.

Furthermore, results from the independent samples *t* test indicated that the length of time that the interactions occurred inside the control group (M = 19.181, SD = 44.230)

was not significantly higher than the average interactions of the experimental group, $t(34) = 0.434$, $p = .667$, two tailed. See Table 1.

Two one-way ANOVAs were conducted to assess differences between the control and experimental group on number of interactions as well as length of interactions in seconds. Results indicated that there were no significant differences in either analysis (see Table 2).

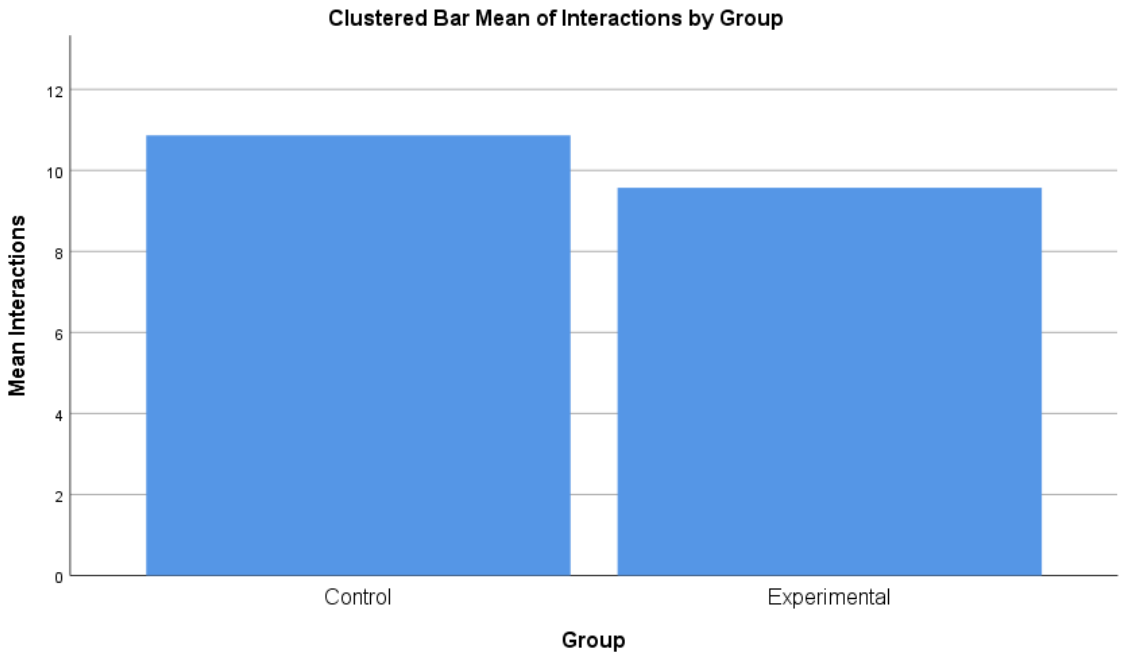

Figure 1. Mean scores of interactions between the control group (M= 10.87) and experimental group (M= 9.57).

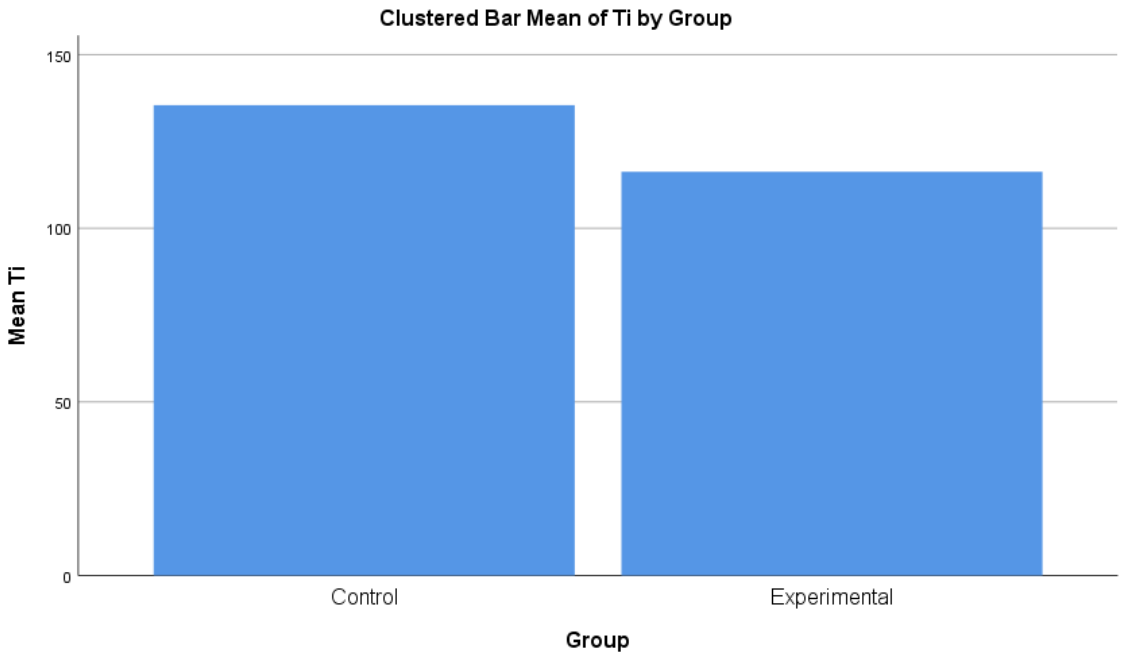

Figure 2. mean scores of the length of interactions of the control group (M= 135.47 seconds) versus the experimental group (M= 116.29)

note Ti= lengh of time of interactions

Table 1

Interactions Table

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean
Number of Verbal Interactions	Control	15	10.87	12.42	3.21
	Experimental	21	9.57	10.39	2.27
Length of Verbal Interaction (secs)	Control	15	135.47	139.04	35.90
	Experimental	21	116.29	124.78	27.23

Table 2

ANOVA Source Table

Dependent Variable	Source	Sums of Squares	DF	MS	F
Number of Verbal Interactions	Group	14.68	1	14.68	0.12
	Error	4318.88	34	127.03	
	Total	4333.56	35		
Length of Verbal Interactions (secs)	Group	3219.20	1	3219.20	0.19
	Error	582004.02	34	17117.77	
	Total	585223.22	35		

Chapter V: Conclusion

Implications

Upon a proper analysis of our data, we found no significant correlation to cell-phone use and its effects on face-to-face interactions. From our data, we learned that the participants that were allowed to keep their phone did not interact shorter or less frequently than participants whose phones were taken up. From our small convenience sample, we can conclude that contrary to our hypothesis, cell-phones played no role on the impact of face-to-face interactions. This was extremely surprising to find and cannot be clearly stated why we saw these results. There are a number of different issues that could have caused this finding.

Limitations/Weaknesses

The most important issue we faced was a lack of participants. Out of the 75 participants that originally signed up for our study, 36 of them actually showed up. There was a slight imbalance between the group sizes as well. We feel that because of this lack of size our data is not thorough enough to properly conclude or to show the opposite of our original hypothesis. Also, during our experiment process we forgot to label the demographics with the subject number, as to know whether race, gender, or age played a role in the effects of cell-phone use. Another issue in our study was the representativeness of our sample. The sample was predominantly women and they were all similar in age. The timing of our study was also at an inopportune time for college students. The study took place the week before spring break, and started on a day where school was closed. Some students did show up, but we feel that more students would have showed up if we had picked a week that was not mid-term week, the week before

spring break, and the day after a 3 day weekend. The last limitation that we recognized was the fact that students came in expecting to take an IQ test. After debriefing the students, we talked with them and many were very zoned out and mentally prepared to take an exam, not socialize with the person next to them.

Future Research

In the future, we want to have a more representative sample and a larger sample size. Another thing would be to have a female confederate, as well as a male confederate, due to the unknown effects that gender differences/attraction might play on socialization. We also feel that a different cover story might be more beneficial, because as previously stated, certain participants came in the mindset of taking an IQ, not to socialize with each other, which could have played a role on the data. Another thing we would like to do is add a personality inventory, such as the Big 5, which would show us openness, agreeableness, introversion, and extroversion. These characteristics play a large role on why people socialize with each other and why they do not. We also would like to have a self-reported scale that the participants could fill out that would show how likely they are to pursue a friendship with the confederate.

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