I WANT IT NOW: DO NEW MEDIA AFFECT

ABILITY TO DELAY GRATIFICATION?

by

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ABSTRACT

This dissertation explored the effects of the mediated culture of instant gratification on users' ability to delay gratification throughout adolescent development. Focusing on the variables of self-control, impulsiveness, time orientation, and ability to delay gratification, 271 participants in grades 6, 9, 12, and college juniors completed an online survey testing their media usage. Two groups were formed: participants with high access to instant gratification media, and participants with low access. These groups were tested for differences in the previously mentioned variables, and models were formed to depict the relationships between each variable in each group. Group differences were found for academic delay of gratification ($p = .02$). The participants in the high access group were more likely to put their grade in danger for a good time whereas the low access group would not. However, this disappeared when controlling for grade level. Three models determined that demographic variables led to self-control, impulsiveness, and time orientation.

LIST OF ABBREVIATIONS AND SYMBOLS

a   Cronbach's index of internal consistency

df   Degrees of freedom: number of values free to vary after certain restrictions have

           been placed on the data

F   Fisher's *F* ratio: A ration of two variances

M   Mean: the sum of a set of measurements divided by the number of measurements

           in the set

SD   Standard deviation

p   Probability associated with the occurrence under the null hypothesis of a value as

           extreme as or more extreme than the observed value

r   Pearson product-moment correlation

t   Computed value of *t* test

β   Beta weight

<   Less than

=   Equal to

n   Total number

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CHAPTER ONE

Introduction

Invariably throughout history, certain inventions have changed the way the world works. From the wheel to the printing press and beyond, society, the world, and day-to-day lives change forever with the advent of new technology. These world changing inventions not only affect what we can do as a people, but they also affect how we view the world, the dynamics with which we interact, and the world in which we develop. There is no doubt that the world of communication, and the world in itself, is at the precipice of a changing order. The world we know today may not be the world we know in ten years.

The child of the 1920s grew up in a world of radio, newspapers, magazines, and books. The child of the 1950s, only thirty years later, grew up in a different world; a more visual world. These children never knew a world without television. The children of the 1980s entered a world of cable television, MTV, and Nintendo. All of these generations grew up in different worlds. The technology of the late 20th century and early 21st century has been a steady stream of innovation. Indeed, the massive technological differences once seen every thirty years are now being seen every ten years. The children of the 1980s grew up in a massively different world than the children of the 1990s, and these children had a different life than those of the 2000s (Rodman, 2010).

These changes have occurred due to the progress and growth of the technological world, in particular, the development of all things Internet and digital. Since the dawn of the network,

we have strived to make it faster, easier, and more accessible. Our determination has paid off.

Today we see the Internet rapidly evolving, becoming faster and more accessible everyday. We

can access the Internet from our phones, a coffee shop, and from anywhere within our house;

anywhere that we want it.

The development of the Internet follows a trend of human behavior. We, as humans,

strive for instantaneous gratification. American culture, in particular, is especially susceptible to

the drive for instant gratification. We live in a world of fast food and diet pills, and ask "what

have you done for me lately?" We want faster transportation. We get personally offended if

someone takes too long to answer a text message. And we expect our Internet to be fast and

accessible. Our society values instant gratification with seemingly no end in sight. Therefore,

our children now, and for the foreseeable future, will be growing up in a world of instant

gratification through fast and accessible technology (Barnes, Marateo, & Ferris, 2007; Prensky,

2001).

Small and Vorgan (2008) noted marked differences between those individuals that grew

up with the Internet as compared to those that did not in ability to multi-task, and also found

some neurological adaptations in these "digital natives" (p. 20). They also found that the digital

natives had a tendency to give partial attention to many different things; however they did not

focus specifically on any one. MacRae (2010) reported that a noted British neuroscientist

believed that the Internet has both advantageous and deleterious effects. Further, social

networking and the Internet may serve as a distraction that encourages us to think shallowly

rather than deeply, in order to quickly move on to the next topic (MacRae, 2010). All of this in

concert reflects the trend toward instant gratification.

These examples inspire a question of what a human is to become. We know that the Internet is not going away, and neither is the trend toward instant gratification. This dissertation will take into account the technological world of today and focus on how our use of technology affects how we grow and develop. Specifically, this research will focus on the effects of a technological world focused on immediate gratification. How does growing up with these media affect our ability to delay gratification?

First generation to grow up with access

Though the Internet began in the mid 20th century, it would not become commonplace in American homes until the mid 1990s-early 2000s. It was this period that saw rapid growth in Internet technology, including faster speeds and greater availability of access. Internet access was very limited until this time. Few households were plugged in, and there was no such offering of wireless Internet available to consumers. However, the Internet and mediated world began to change drastically at the turn of the new millennium. It was during this period that Internet access became ordinary; most households had access and many businesses began offering wireless hot spots, where customers could bring a laptop and borrow their Internet while they were eating or reading (Rodman, 2010).

Mediated communication became more popular. Americans were signing up for e-mail addresses and instant messenger user names. The Internet became a part of the every day life of Americans. As speeds became faster, Internet availability became wider. The Internet was becoming available and accessible in different areas, businesses, and even devices. Soon, the Internet could be found almost anywhere; many restaurants and businesses offered hot spots, and many new devices, including cellular telephones, offered the user Internet access.

The mediated world was becoming more and more reliant on the Internet. The mass population had to learn how to integrate the Internet into their lives; making daily survival at work nearly impossible without Internet skills and capabilities. However, as the mass populace began to embrace the Internet, the newest generation was born into this world of mediation through the Internet. This generation knows no world without the Internet, and likely will be greatly affected by it throughout their lives. However, little research to this point has been done on the first generation to grow up with such access. This dissertation will study how different stages in lifespan development in this generation may be affected by our mediated world. It is important to know and understand how growing up in such an environment can affect us, or not affect us, in order to be prepared for the future and accept our technological society.

How can a culture of instant gratification affect our society?

Growing up surrounded by instant gratification, or obtaining satisfactory results in the shortest time possible (Tobin, & Graziano, 2010), may have a profound influence on an individual. Numerous research and theories have suggested that environment plays a large role in behavior and learning. Specifically, Bandura's (1986) Social Cognitive Theory suggested that we learn from many influences, including the environment in which we live. Therefore, it may be plausible to claim that an environment heavily centered on instant gratification may create an individual seeking instant gratification. Specifically, we may come to expect instant gratification and may become frustrated when we do not receive instant gratification (Shepherd, & Mullane, 2010). Do media directly influence this frustration? Can media affect our ability to delay gratification?

Not only is our behavior a function of our environment, but it is a function of our biology as well (Bandura, 1986). As we become familiar with a stimulus, we begin to habituate. Over

time, we begin to expect that we can instantaneously gratify our desires with media (Arnett, 1992; Atkin, 1985; Beachum, & McCray, 2004; Oliver, 2003). Media has always given us what we want, when we want it, so why should it not this time? We come to expect these gratifications from media, and when we do not get them, we become frustrated. Growing up in this world of instant gratification may lead to an expectation of instant gratification, especially from media.

If we expect instant gratification, how frustrated may we become when we must wait for gratification? Is it possible that a culture of instant gratification may affect our ability to delay gratification? This dissertation seeks to answer this question. Delay of gratification is in reference to the ability to defer until later a greater reward rather than receive a lesser, more immediate reward (Tobin & Graziano, 2010). An inability to delay gratification would suggest that a person would choose the most immediate reward, even though it is of lesser value. This person is more interested in getting what they want today, rather than having to wait for it. In today's mediated society, we have become used to being able to find any information that we want immediately. It takes little digging, and little thought. We have become used to being entertained whenever we want entertainment. We can watch a television show on our phones one moment, and then text message friends the next. However, this is not the world that we grew up in; this is a world that we have adapted to. The youngest generation of today is growing up with unlimited access. This is the only world they know. How does a culture of instant gratification affect their development?

What is associated with an inability to delay gratification?

The inability to delay gratification has many deleterious effects (Anokhin, Golosheykin, Grant, & Heath, 2011). Among which include problems in the classroom (i.e. Bembenutty,

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1999) and problems with substance abuse, gambling, and self-control behaviors (Anokhin et al., 2011). Similarly, many variables may contribute to ability to delay gratification, including self-control, time orientation, and impulsiveness.

Contributors. Multiple demographic variables have been related to self-control and impulsiveness. In particular, Chapple, Vaske, and Hope (2010) noted that biological sex often predicts self-control. Further, Esteban and Tabernero (2011) found that both age and biological sex can affect impulsiveness. Gottfredson and Hirschi (1990) theorized that parental involvement will affect the child's ability to self-control. Therefore, this dissertation will take into account many demographic variables, including age, biological sex, race, grades earned in school, and parental variables such as parent's education, income/job, and hours spent with the children on a daily basis.

Self-control and impulsiveness are two factors that may influence delay of gratification. Self-control is a complicated concept that is in reference to a person's overall ability to contain themselves across various situations (Mischel, 2011). Impulsiveness is similar, but it is a more specific form of self-control. Impulsiveness is in reference to a person's desire to make a choice without thought (Robbins & Crockett, 2009). An impulsive person may make hasty decisions, while a person that lacks self-control may suffer from any number of social maladies. Delay of gratification is essentially different from these concepts. Delay of gratification requires a long term goal to be present. Impulsiveness suggests that a person is making a hasty decision, but their decision does not necessarily include another more rewarding long term gratification.

A possible moderating factor is an individual's time perspective, or time orientation. A time orientation is in reference to a person's outlook on life; should they live in the past, live for the present, or look to the future (D'Alessio, Guarino, De Pascalis, & Zimbardo, 2003). An

individual with a present time orientation is more likely to live for the present, and therefore more likely to discount a delayed reward. However, an individual with a future time orientation is more likely to believe that the future reward is of more value and therefore delay gratification.

Effects. The effects of an inability to delay gratification can be highly dangerous. The worst of these effects may include addiction behaviors and substance abuse. In fact, a common symptom of addicts is an inability to delay gratification (Miller, 2010). Poor academics may also be an effect of an inability to delay gratification (Bembenutty, 1999). An individual may not see the use in a long term educational goal, and may therefore drop out of school or be generally disinterested in learning.

How are these variables related?

This research is not only interested in how media affect these variables, but is also interested in determining the relationships between these variables. Therefore, a model of media in delay of gratification will be tested. In particular, the contributors to delay of gratification will precede while the effects will follow. This research will not only test this model, but it will also add the variable of media usage. Therefore, this dissertation will also focus on how the media may affect this process.

Specifically, it is likely that many demographic variables will precede self-control, impulsiveness, and time orientation. Further, self-control will precede impulsiveness. Self-control is a more encompassing concept than is impulsiveness. Impulsiveness, according to Forzano, Michels, Carapella, Conway, and Chelonis (2011), is due to a lack of self-control. However, self-control can be in reference to many behaviors, including anti-social behavior (Laird, Marks, & Marrero, 2011) and anger (Gal & Liu, 2011), and is not limited to impulsiveness.

Impulsiveness likely precedes ability to delay gratification (Anokhin et al., 2011). Forzano et al. (2011) characterized impulsiveness as having multiple dimensions, including an ability to delay reward. Therefore, it is likely that impulsiveness precedes ability to delay gratification. Bembenutty (1999) and Anokhin et al. (2011) noted that inability to delay gratification led to multiple deleterious effects. Time orientation is likely to moderate the relationship between impulsiveness and ability to delay gratification. Therefore, it is likely that self-control precedes impulsiveness, impulsiveness precedes delay of gratification ability, and ability to delay gratification precedes the effects. The question that still remains is the placement of media usage in this model. This dissertation will seek to answer this question.

What is the purpose of this dissertation?

The purpose of this study is to determine how growing up with instant gratification affects us behaviorally and cognitively. It is necessary to determine how the ubiquity of media today will affect our future and possibly determine who we become. As stated earlier, media will only continue to become more accessible, and there is an ever-growing need to determine how this will change us as humans. Media is becoming an essential and necessary component to social survival, and there is no end in sight.

This dissertation will focus on the media's effect on the ability to delay gratification. It is possible that a society focused on immediate gratification, a mediated culture striving for immediate gratification, and a developmental world where instant gratification is a given may affect an individual's tolerance for reward delay. Inability to delay gratification also has deleterious effects. This research will not only take into account the variables that contribute to ability to delay gratification, but it will also look to map the relationship in model form.

CHAPTER TWO

This chapter focuses on defining and understanding the concepts of instant gratification and delay of gratification. This literature review focuses on delay of gratification throughout development and the environmental role of media in the ability to delay gratification. First, a review of the definitions and determinants of delay of gratification is introduced. Then, research testing the differences between individuals for delay of gratification is described. Finally, a possible model of media's role in delay of gratification is discussed.

Literature Review

What media offer instant gratification and why?

Green and Brock's (1998) theory of ersatz social engagement suggested that individuals may seek out mediated relationships due to their ease/availability, lack of accountability, and immediate gratifications. Specifically, Green and Brock identified computer-mediated communication, which includes e-mails, chat rooms, and instant messaging. Interestingly, Green and Brock (2008) found that though mediated communication may not be the most desired communication, it is still frequently sought and chosen as a communication technique due to its ease, availability, and immediate gratifications. Therefore, it may be stated that in social situations, individuals may seek out media for their immediate gratifications, rather than wait to see the individual with which they will be interacting. This finding suggests that instant gratification is a factor that media users seek, and may be a driving force behind the creation of

new media technology. Therefore, this research will be focused on the effects of offering such immediate gratifications.

Instant gratification suggests that a media user gets what they want, when they want it. Over time, our mediated culture has been consistently striving toward the goal of offering immediate gratification (Green et al., 2005). Certain devices, such as smart phones, laptops, etc., are inching society toward that reality. The focus of this research will be on the availability of Internet media (smart phones, Internet access in bedrooms, etc.) to adolescents. Specifically, this research will examine the relationship of availability of instant gratification offering devices and the adolescent's ability to delay gratification. But why consider these media to offer instant gratification?

The availability of the Internet to an adolescent is of great importance to this research. An adolescent with access to the Internet has access to any information or entertainment need they so choose, at any time they desire. Because Internet speeds are becoming faster, and access more readily available, it is safe to say that the Internet is becoming a medium of instant gratification. Similarly, the Internet can now be found in many other devices.

Smart phones are cellular telephones that offer both traditional telephone services as well as non-traditional services such as Internet access. A popular example of a smart phone is the iPhone. Smart phones offer users the capability to reach the Internet, and therefore, any information they desire, at any time they choose. Because this information is available at any time, it may be considered a medium that offers instant gratification. Therefore, adolescent's access to smart phones will be a focal point of this study.

As access to the Internet becomes more readily available, so too do the instant gratifications offered by the Internet. Therefore, not only will this study be focused on the

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availability of devices with access to the Internet, but also on Internet availability in the home. Specifically, if the Internet is readily available to the adolescent, for example in their own bedroom, they may be able to access any information they'd like at any time, no matter the parameters put on them by their parents. Consequently, this research will also be focused on the availability of the Internet to the adolescent within their own house. Namely, this will focus on the parent's parameters and rules surrounding Internet usage (can use for an hour a day, only for homework, no rules, etc.) and the availability of computers with Internet access within their house (a computer in the living room, computers in the adolescent's bedroom, etc.).

In summation, this research will take into account Internet access both in the home and from multiple devices. Because the Internet offers the user instant access to any information they may desire, it can be considered an instant gratification medium. The Internet is becoming both faster and more readily available. Therefore, access to this medium will be the focal point to this research.

How does instant gratification affect ability to delay gratification?

Interestingly, Konrath, O'Brien, and Hsing (2011) found that over the past thirty years, college students have scored lower on an empathy scale, with a marked drop off in those students enrolled after 2000. In the same study, it was noted that individuals high in empathy are also likely high in ability to delay gratification; therefore, it is likely that a marked drop off in ability to delay gratification occurred after 2000 as well. This is a generational difference, and likely due to that alone, however, it is important to note that the lateral prefrontal cortex controls higher order thinking, which includes empathy and patience (O'Malley, Davies, & Cline, 2010). Immediate gratification is controlled by the striatum, the reward center of the brain. The prefrontal cortex is in control of higher order executive functions, which are also some of the

latest to develop. Specifically, Spencer-Smith and Anderson (2009) reported that maturation of these various functions occurred between the ages of 10-15. It is around this time that most children begin to learn to let their higher order functions control their behavior, rather than their reward center. However, if an adolescent is allowed to seek immediate gratification in their media devices, how does this affect their development?

Anokhin et al. (2011) found that delay discounting, or believing a reward is of less worth solely due to the fact that you must wait for it, may have both genetic and environmental contributors. Specifically, these authors tested twins for delay discounting, finding that there may be a genetic influence on delay discounting. However, these authors also noted a difference between socioeconomic status and delay discounting. This suggests that not only is there a genetic contribution for ability to delay gratification, but also an environmental contribution as well. The striatum has been associated with delay discounting, or the ability to defer gratification for a larger reward rather than a smaller immediate reward (Hariri et al., 2006). Similarly, the striatum has been associated with decreased self-control, which can lead to problematic behaviors in humans, including gambling, smoking, substance abuse, etc. Is it possible that growing up with the ability to demand immediate gratification from media affects our long term abilities for self-control? Continuous reinforcement of immediate gratification tendencies could possibly affect self-control. This research will test the relationship between instant gratification and ability to delay gratification and self-control.

What is delay of gratification?

Delay of gratification is a concept that has been in the vernacular for quite some time. Introduced long ago in antiquity, delay of gratification has seen many years of philosophical examination (Tobin & Graziano, 2010). However, it wasn't until Freud (1960), that delay of

gratification was truly introduced into psychology. Freud's (1960) conceptualization of delay of gratification played a key role in his concepts of the id, ego, and superego. Freud's theory of personality first articulated delay of gratification as impulse control, or one's ability to control oneself. In Freud's theory, the id was the portion of personality that consistently sought pleasure, and was to be controlled by the ego, which, as Freud termed, was governed by the reality principle. The reality principle is a rule system that becomes stronger as we mature and relies on our assessment of what is realistic (Freud, 1960).

Freud's logic suggested that as we grow and age, we become more adept at delaying gratification. We learn to control our impulses and delay pleasure; our lives are not defined by how much pleasure we may immediately receive. Though Freud's views were more philosophical than psychological, serious psychological research on delay of gratification has been prevalent throughout psychology's history, and has found similar results. Freud's analysis and ideas were of importance and inspiration to a line of gratification research by Mischel and colleagues (i.e. Mischel, 1958; Mischel, 1961a; Mischel, 1961b; Mischel, 1966; Mischel & Ebbesen, 1970; Mischel, Ebbesen, & Zeiss, 1972; Mischel & Gilligan, 1964; Mischel & Metzner, 1962; Mischel & Staub, 1965).

Famously, Mischel et al. (1972) studied children's ability to delay gratification when a pleasurable outcome is immediately attainable. What came to be termed as the Stanford Marshmallow Experiment tested young children's ability to defer gratification by asking them to wait for fifteen minutes. The researchers had placed a marshmallow in a room where the child would be observed. The children were told that they may eat the marshmallow now, but they would get more if they could wait for the researcher to return. The researcher left the room for

fifteen minutes to observe the child's behavior. It was found that approximately 30% of the children could not defer gratification and ate the marshmallow before the researcher returned.

This study was one of many early studies on delay of gratification. However, this study would stand out; not for its original findings, but for research that occurred many years later. In multiple follow-ups (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990), the researchers found those children that took part in the original study and asked them a few questions about their life. By this time, the children were nearly graduated from high school. The researchers asked about behavioral issues, SAT scores, etc. Of the original children that took part in this research, the children that could delay gratification were seen to be more successful than those that could not delay gratification. This study, along with many similar and subsequent research articles (i.e. Bembenutty, 1999; Bembenutty & Karabenick, 2004; Mehrabian, 2000), found a direct link between a person's ability to delay gratification and their success in later life.

Further, Mischel and Moore (1973) noted that attention to or presence of the goal or reward leads to a decreased ability to delay gratification. Simply put, if the reward object is right in front of you, you don't want to wait for it. This is of particular interest to this study because the reward is the information seeking behaviors that are available with the Internet. Here, the Internet and the information it brings serves as the reward. The Internet is often available to many individuals at their whim, particularly on their smart phones. At any time, an individual has the ability to call up a friend, seek out information, or entertain themselves with their most immediately available immediate gratification device. When individuals are away from home, they carry smart phones; when they are at home, they likely have the Internet access in many rooms. How does this availability affect delayed gratification?

The study of delay of gratification, from a psychological perspective, has often followed this path. Some recent research of delay of gratification has focused on implementation intentions (Gawrilow, Gollwitzer, & Oettingen, 2011), academic achievement (i.e. Bembenutty, 2011a; Bembenutty, 2011b; Zhang, Karabenick, Maruno, & Lauermann, 2011), and neurology (Christakou, Brammer, & Rubia, 2011; Claus, Kiehl, & Hutchison, 2011).

Delay of gratification, as characterized by Tobin and Graziano (2010), is "a set of motivational and cognitive processes related to choice of a later or more distant goal at the expense of an immediate goal" (p. 48). Delay of gratification can be viewed as synonymous with or similar to deferred gratification and delay discounting, among others.

Delay of gratification has most often been studied in the realm of psychology and behavior. Similarly, delay of gratification has been studied in relation to consumer behavior (i.e. Baumeister, 2002; Rook, 1987), problem behaviors (Dixon, Jacobs, & Sanders, 2006; Saville, Gisbert, Kopp, & Telesco, 2010), and even ADHD (Campbell & von Stauffenberg, 2009). This research will explore delay of gratification in the realm of media. This is a field that is not often studied in relation to delay of gratification. Delay of gratification research, when studied from the media/mass communication lens, is usually tested from a gratification alone perspective (i.e. Oliver & Bartsch, 2010). This research will begin a new line of study for delay of gratification in mass communication, marrying it with psychological research.

Delay of gratification throughout the life cycle

Multiple studies have claimed that the frontal cortex of the human brain does not reach full maturity until an individual is in their twenties (Casey, Getz, & Galvan, 2008; Romer, Duckworth, Sznitman, & Park, 2010; Steinberg, 2008). However, Spencer-Smith and Anderson (2009) noted that most maturation and control over behavior occurs between the ages of 10-15,

or around junior high school. Therefore, delay of gratification abilities also mature around this age. Casey et al. (2008) stated that though this maturation occurs, adolescents often show an increase in risky behaviors and impulsiveness. This is due to a maturity of the nucleus accumbens, a reward center located within the striatum. The incongruity of maturity between the striatum (the rewards center) and the prefrontal cortex (executive function) suggests that an adolescent is more prone to sensation seeking, or looking for stimulating material and behavior. Therefore, sensation seeking may be an indicator of prefrontal development. A teenager should show a higher level of sensation seeking than others, however, this should decrease with age, especially into the twenties.

This dissertation will take into account the development of the striatum and prefrontal cortex by testing individuals throughout development of these structures. Adolescents at age 12, 15, 18, and 21 will be tested. Hammond, Potenza, and Mayes (2011) reported that drastic changes in delay discounting occur around the age of 16, with the older group having a stronger ability to delay. Therefore, this study will be able to test the differences between these ages and determine if there is an effect of media as these individuals age. This will determine the effects that instant gratification media have throughout the development of these structures. This will not only allow a measurement over development, but also allow a comparison across normal development.

Variables associated with delay of gratification

Multiple variables have shown a relationship with ability to delay gratification. The inability to delay gratification can have many deleterious effects, and it may affect an individual's life in several significant ways. Impulsiveness and self-control are both directly related to an inability to delay gratification. Time orientation can also be viewed as an indicator

of inability to delay gratification. Finally, an inability to delay gratification has been associated

with multiple problem behaviors including substance abuse and academic learning issues.

Demographic variables. Demographics been related to ability to delay gratification in

many instances (i.e. Bembenutty, 2001; Scales, Benson, Leffert, & Blyth, 2000). Further,

demographics have affected the proposed predictor variables of self-control, impulsiveness, and

time orientation. These relationships have been evident in biological sex (Chapple et al., 2010;

Esteban, & Tabernero, 2010), race (Pratt, Turner, & Piquero, 2004), age (Esteban, & Tabernero,

2011), education/intelligence (Olson, Hooper, Collina, & Luciana, 2007; Spinella, 2004;

Spinella, & Miley, 2003), and parental variables (Gottfredson, & Hirschi, 1990; Pratt et al.,

2004; Scale et al., 2000) including parent's education, income, and time spent with children.

Impulsiveness and self-control. Impulsiveness is conceptually different from delay of

gratification. Specifically, impulsiveness may precede ability to delay gratification (Anokhin et

al., 2011). Robbins and Crockett (2009) defined impulsiveness as "the tendency to respond

prematurely without adequate foresight" (p. 416). This definition may exclude a long-term

reward, whereas delay of gratification suggests that a long-term reward is present. Overall,

impulsiveness is in line with decision making abilities. Berkowitz (2011) noted that

impulsiveness is likely related to an inability to restrain action and little thought. These

descriptions, in concert, suggest that impulsiveness requires not only self-control, but also some

basic thought processes.

Forzano et al., (2011) noted that impulsiveness is made up of three subcategories:

response initiation, response inhibition, and consequence sensitivity or reward delay. This

dissertation will be focused solely on reward delay. Anokhin et al. (2011) suggested that though

impulsiveness may precede delay of gratification, other factors may be involved that influence

delay of gratification. Because impulsiveness may directly influence ability to delay gratification, impulsiveness will be tested as a covariate with delay of gratification.

Self-control precedes both impulsiveness and delay of gratification, as impulsiveness may be due to a lack of self-control (Forzano et al., 2011). Self-control is much harder to define specifically, and it carries with it many possible avenues of research (Mischel, 2011). Self-control develops over time in the prefrontal cortex, the area associated with higher executive functioning (O'Malley et al, 2010). Therefore, the relationship of self-control to delay of gratification is somewhat complicated, as delay of gratification is in ways controlled by both the striatum and the prefrontal cortex. Self-control is the higher order function that controls ability to delay gratification, whereas inability to delay gratification is due to a focus on the immediate rewards. A highly developed sense of self-control leads to a stronger ability to delay gratification and hinder impulsiveness.

Self-control is of utmost importance to many behaviors, leading Tangney, Baumeister, and Boone (2004) to comment that self-control may be highly influential in not only many psychological disorders, but also in the ability to live a comfortable life. These authors explain that self-control is directly related to being comfortable in your environment, and from that end, it plays a large role in our overall behavior. However, it is also known that there are marked differences in the ability to control from person to person. Baumeister, Heatherton, and Tice (1994) identified four domains of self-control, including controlling thoughts, emotions, performance, and finally, impulses.

Because both of these variables are seen to precede delay of gratification, both will be employed as covariates in this research.

Time orientation. Time orientation is in reference to an individual's outlook on life and time. For example, an individual may be caught up in the here and now, looking for any gratification and pleasure they can find on the spot. Or, an individual may be solely focused on the future, delaying rewards today for the good of rewards tomorrow. Time orientation is in relation to the perspective one takes on life. Specifically, time orientations can take many shapes, including a past orientation, a present orientation, and a future orientation. Past orientations describe individuals that use their past experiences to fully guide them in their present life. Past oriented people tend to be conservative, and have a focus on their previous experiences. Present orientations are in stark contrast to past orientations. Present orientations are usually very practical. A present orientation can take one of two forms: hedonistic (these individuals are pleasure-minded and consistently seek the most pleasurable outcome available) and fatalistic (these individuals believe that they are not in control of their own lives, that outside forces are what control their outcomes, and they tend to take the blame for undesired outcomes). Finally, a future oriented individual is very goal-minded. These people are highly focused on the long-term outcome and their goals. Most individuals fall somewhere between each of these extremes (D'Alessio et al., 2003).

The time orientation one has can play a great role in their desire to delay gratification. In fact, a hedonistic present time orientation is in direct contrast to a future orientation in this regard. Time orientation and delay of gratification has been studied in concert multiple times, including studies of health (Daugherty & Brase, 2010) and cross-cultural research (Spears, Xiaohua, & Mowen, 2001). Delay of gratification plays a key role in time orientation. Therefore, it is necessary to include time orientation as a covariate as well. However, it is not

fully understood if time orientation precedes ability to delay gratification or if delay of gratification ability precedes time orientation, or if they are interrelated.

These three variables may have a direct effect on ability to delay gratification. However, delay of gratification in itself has been seen to be related to multiple deleterious behaviors, including substance abuse and low academic motivation.

Substance Abuse. Inability to delay gratification has been linked to multiple deleterious effects including alcohol abuse, drug use, problem gambling, and an addictive personality (Anokhin et al., 2011). Anokhin et al. (2011) noted that the directional causality of the link between addiction and ability to delay gratification is not fully clear; however there are many risk factors of adolescents to addiction including immature neural systems. An adolescent's susceptibility to these behaviors is of great importance to society, especially if media use does indeed affect delay of gratification abilities. Therefore, the findings of this study are highly important, as significant differences may suggest very grim outcomes as rapid media continues to proliferate.

MacKillop et al. (2010) found a correlation between alcohol use and abuse and ability to delay gratification. Similarly, Wulfert, Block, Santa Ana, Rodriguez, and Colsman (2002) found a relationship between inability to delay gratification and cigarette use, alcohol use, and marijuana use. Claus et al. (2011) also found similar results, linking alcohol use to ability to delay gratification. These studies and many others focused on drugs, alcohol, obesity, gambling, and cigarette use (i.e. Mendez et al., 2010; Rivalan, Ahmed, & Dellu-Hagedorn, 2009; Roesch, Takahashi, Gugsa, Bissonette, & Schoenbaum, 2007; Weller, Cook, Avsar, & Cox, 2008) have supported a link between deleterious behaviors and inability to delay gratification. Because

these links are likely present, it is necessary to determine the outcomes associated with media usage in this culture.

Learning. A plethora of research has shown a link between an inability to delay gratification and poor learning outcomes. Wulfert et al. (2002) tested the correlation between GPA and delay of gratification abilities and found a negative correlation. Similarly, Bembenutty (i.e. Bembenutty, 1999; Bembenutty, 2009a; Bembenutty, 2009b; Bemebenutty, 2009c; Bembenutty, 2011a; Bembenutty, 2011b; Bembenutty & Karabenick, 2004) has found multiple learning difficulties due to an inability to delay gratification, including low academic performance, test anxiety, bad homework habits, and poor time management.

It is easy to understand how an inability to delay gratification may affect both substance abuse behaviors and academic performance. Academic performance is a long-term process that may be rewarding after years of work. Substance abuse is an immediately gratifying behavior. It comes as no surprise that these behaviors may be affected by self-control, impulsiveness, and ability to delay gratification. Due to Anokhin et al.'s (2011) findings that even socioeconomic status affected ability to delay gratification, it is possible that other environmental factors may affect this ability as well; especially encompassing environmental factors such as the ubiquity of instant gratification media and its place in the adolescent's home and life. It is possible that instant gratification media usage may affect ability to delay gratification, especially if the instant gratification is "rewarded" by the brain. Though clearly not as intensely effective as drugs, instant gratification may become "addictive" in such a way that the user seeks it out, and may not be able to deal with delays in gratification. This dissertation will seek to answer multiple questions about media's relationship with delay of gratification abilities.

What are the relationships between these variables?

Many variables have been noted as related to delay of gratification. This dissertation is not only interested in the relationships to delay of gratification, but also with the process in which it occurs. A dearth of research exists that describes a model of delaying gratification. Therefore, this dissertation will look to relate these variables by a process. A model may be very useful as some of the outcomes of inability to delay gratification can be highly dangerous or at least a disadvantage in life.

The model will suggest that a relationship exists between self-control, impulsiveness, delay of gratification, and time orientations. Of particular interest to this model is the placement of media usage. It is likely that the previous four variables will be related; however, it is unknown how, or if, media usage will affect any of these relationships. Therefore, not only will this dissertation test the relationship between these variables, it will also determine if media usage has a place amongst this process, or if those individuals with media access differ from those without.

Demographic variables. It is possible that each demographic variable may lead to each of the tested variables of self-control, impulsiveness, time orientation, and delay of gratification. These relationships have been found previously in the literature numerous times (Bembenutty, 2001; Chapple et al., 2010; Esteban, & Tabernero, 2010; Gottfredson, & Hirschi, 1990; Olson et al., 2007; Pratt et al., 2004; Scales et al., 2000; Spinella, 2004; Spinella, & Miley, 2003).

Self-control and impulsiveness. As noted by Forzano et al. (2011), impulsiveness may be due to a lack of self-control. Further, Berkowitz (2011) stated that impulsiveness occurs because self-control was not sufficient. Baumeister et al. (1994) found that impulsiveness was one dimension of self-control. These findings suggest that self-control is a much broader

concept than impulsiveness. In particular, impulsiveness seems to occur due to a lack of self-control, suggesting that self-control likely precedes impulsiveness. There is a clear relation between impulsiveness and self-control. However, these two concepts are not completely distinct from one another. There is clear overlap in that a lack of self-control creates impulsiveness and high self-control impedes impulsiveness. Therefore, it is likely that self-control precedes impulsiveness.

Self-control and delay of gratification. Perhaps the greatest example of the relationship between self-control and delay of gratification is the original Stanford Marshmallow Experiment (Mischel et al., 1972). This experiment linked self-control and delay of gratification by asking children to control themselves for a few minutes and then they would receive a better reward. Similarly, Forzano et al. (2011) found a relationship between self-control and delay of gratification. It is clear that a relationship exists between self-control and delay of gratification. Specifically, a lack of self-control elicits an inability to delay gratification.

Self-control and time orientation. The relationship between self-control and time orientation is less clear; except for the intuitive idea that your time orientation may affect your self-control tendencies. Specifically, individuals with a present time orientation would be less likely to control themselves if there was a possibility of a good time, and future time orientations are more likely to control themselves in order to gain in the future (D'Alessio et al., 2003). Therefore, the time-order relationship of time orientation to self-control is not completely clear and must be tested.

Self-control and substance abuse and learning. The relationship between self-control and substance abuse is well documented (i.e. Cook, Young, Taylor, & Bedford, 1998; Peluso, Ricciardelli, & Williams, 1999; Storey, 1999; Wills, DuHamel, & Vaccaro, 1995). Similarly,

self-control has often shown a relationship with academic difficulties (i.e. Schunk & Zimmerman, 2003). Shared outcomes of a lack of self-control and an inability to delay gratification suggest that a relationship exists. However, self-control issues also create outcomes that are not shared by an inability to delay gratification (Tangney et al., 2004). Further, some outcomes of self-control are shared by impulsiveness, but not with an inability to delay gratification, and some outcomes of self-control are only related to self-control. This suggests that self-control is conceptually different, yet related, to both impulsiveness and ability to delay gratification.

Taken in concert, these findings all suggest that self-control precedes impulsiveness, delay of gratification, and the deleterious effects often associated with an inability to delay gratification. There is little research that supports the temporal relationship between time orientation and self-control. However, these two are intuitively related by nature.

Impulsiveness and delay of gratification. Forzano et al. (2011) noted a relationship between impulsiveness and delay of gratification, in that delay of gratification was one dimension of impulsiveness. Specifically, delay of gratification occurs because one can control their impulses. An inability to delay gratification occurs because one cannot control their impulses (i.e. Benhabib & Bisin, 2005; Bernheim & Rangel, 2004; Fudenberg & Levine, 2006; Gul & Pesendorfer, 2001; Laibson, 1997; Mischel & Ayduk, 2010; Thaler & Shefrin, 1981; Wigfield, Klauda, & Cambria, 2011). This suggests a temporal order of self-control to impulsiveness to delay of gratification. Delay of gratification is contingent upon impulses, which is contingent upon self-control. This relationship suggests that these variables are related in a process.

Impulsiveness and time orientation. Wittmann et al. (2011) found a direct neurological link between impulsiveness and time perspective. These authors found that the more impulsive an individual, the more likely they were to be focused on the present. This research suggests that a relationship may exist; however, a temporal order is unclear. Wittmann et al. further suggested that an impulsive individual may strive for immediate gratification because their time perspective focuses them on the present, distorting their understanding of the delay. This suggests that either a mediating or moderating relationship exists between impulsiveness, time orientation, and ability to delay gratification.

Impulsiveness and substance abuse and learning. Multiple studies have found a relationship between impulsiveness and substance abuse (Hirschtritt, Potenza, & Mayes, 2011). Impulsiveness has been linked to several similar outcomes as ability to delay gratification, including gambling (Dussault, Brendgen, & Vitaro, 2011) and substance abuse and addiction (Cuomo, Sarchiapone, Giannantonio, Mancini, & Roy, 2008). Similarly, impulsiveness shows a relationship with academic difficulties as well (Volpe & Chafouleas, 2011). This suggests that a problem with impulsiveness also shares similar outcomes as a problem ability to delay gratification and self-control.

Delay of gratification and time orientation. Time orientation and delay of gratification have been seen to be related multiple times (i.e. Daugherty & Brase, 2010; Spears, Xiaohua, & Mowen, 2001). These two variables share similar outcomes and effects as well. However, it is not clear exactly where time orientation falls in the temporal order. Wittmann et al. (2011) suggested that a direct link occurred between time orientation and impulsivenesss, which has been noted to likely precede ability to delay gratification. It is possible that time orientation is a product of ability to delay gratification; however, due to Wittmann et al.'s research, it is more

likely that time orientation either precedes, moderates, or mediates the relationship between impulsiveness and delay of gratification.

Delay of gratification and substance abuse and learning. As stated earlier, multiple studies have found a direct link between ability to delay gratification and academic achievement (i.e. Bembenutty, 1999; Bembenutty, 2009a; Bembenutty, 2009b; Bemebenutty, 2009c; Bembenutty, 2011a; Bembenutty, 2011b; Bembenutty & Karabenick, 2004). Most famously, Mischel's work with the Stanford Marshmallow Experiment children showed a long-term effect of ability to delay gratification. Delay of gratification has also shown a link with substance abuse issues, as noted by Anokhin et al. (2011).

Time orientation and substance abuse and learning. Time orientation has also shown a relationship with substance abuse and learning (i.e. Keough, Zimbardo, & Boyd, 1999; Petry, Bickel, & Arnett, 1998; Smart, 1968). Those individuals with a present time perspective were more likely to abuse drugs and alcohol. Time perspective has also shown a relationship with academic outcomes. Specifically, an individual with a future outcome is more likely to pursue long term academic goals (i.e. de Bilde, Vansteenkiste, & Lens, 2011; Peetsma & van der Veen, 2011). These similar outcomes also suggest that time perspective plays a role in ability to delay gratification.

These findings suggest a temporal order of self-control, impulsiveness, time orientation, delay of gratification, and finally, deleterious outcomes. This dissertation will test this model. However, it will also take into account the effect that media usage may have on all of these variables.

Why might media use affect these variables?

The media environment- from everything that we take in to the mediated world we live in- has affected our lives in many ways. Multiple mass communication theories suggest that the media that we take in affect our attitudes, thoughts, beliefs, etc. to such a point that we may influence others within our environment, or it may even change our own behavior. The media is a very powerful influence in the world.

Perhaps even more interesting is the influence that our environment has on us. Neural plasticity is in reference to our neural circuits being able to change in order to adapt to our surroundings. Very important neural changes may occur very early in development, including through learning in what is known as developmental plasticity (West-Eberhard, 2003). However, plasticity still occurs as we age, as we are constantly adapting to new environments. Our brains are always looking for the most efficient way to deal with new stimuli; therefore, our neuronal structuring may change (Huttenlocher, 2002).

It is possible that a mediated world that is focused on one goal- instant gratification- may in some way affect our neurological structuring. This dissertation will take into account the effects of plasticity in our behavior.

Social Cognitive Theory

Bandura's (1986) social cognitive theory takes an agentic perspective on human behavior. According to Pajares, Prestin, Chen, and Nabi (2009), social cognitive theory "espouses a bidirectional influence in which evolutionary pressures alter human development such that people can create complex environmental innovations, which in turn create selection pressures for the evolution of specialized biological systems for functional consciousness, language, and symbolic communication" (p. 284). In summation, social cognitive theory is a

developmental and learning theory that suggests that people's behaviors and functions are a result of the reciprocal influences of personal determinants, behavioral determinants, and environmental influences.

This study will use social cognitive theory as a guide for model development. Social cognitive theory suggests that triadic reciprocal causation (Bandura, 1986) is the formula for outward behaviors and functions. These three reciprocal factors are personal determinants, such as cognitions and affect, behavioral determinants, or reinforcement and self-efficacy, and environmental determinants. These factors are also prevalent in this study. In order to determine the ability to delay gratification, a behavior, personal determinants such as self-control, impulsiveness, and time orientation will be tested, as well as environmental determinants, such as the mediated environment in which the adolescent grew up.

Hypotheses and Research Questions

The following hypotheses and research questions follow the reasoning as laid out in the previous literature review.

RQ1: How does use of instant gratification media (smart phones, Internet, laptops, etc.) in different stages of development affect ability to delay gratification?

There is little research on this topic to suggest that a certain outcome exists; however, the environment can affect our neural circuitry in ways, and if this occurs over development, it may affect who it is that we become (Huttenlocher, 2002). Therefore, there is reason to test, but a likely outcome is not clear.

RQ2: How does use of instant gratification media in different stages of development affect the onset of ability to delay gratification?

There is little research on this topic to suggest that a certain outcome exists; however, the mediated culture being as expansive and ubiquitous as it is currently, it is possible that it can affect our behaviors and development. Knowing that our ability to delay gratification develops while we are young, but doesn't mature fully until around the age of 16 (Spencer-Smith & Anderson, 2009) gives a comparable value to compare. It is likely that a spike in delay abilities will occur between the 15 year old population and the 18 year old population. However, without that spike, it is possible that media could have affected development.

H1a: Ability to delay gratification will be positively related to self-control

Self-control has shown a relationship with ability to delay gratification in previous research (Forzano et al., 2011). Specifically, delay of gratification is occurs due to strong self-control abilities.

H1b: Ability to delay gratification will be positively related to impulsiveness

Not only does a relationship exist, but inability to delay gratification likely occurs due to a lack of impulse control (i.e. Benhabib & Bisin, 2005; Bernheim & Rangel, 2004; Fudenberg & Levine, 2006; Gul & Pesendorfer, 2001; Laibson, 1997; Mischel & Ayduk, 2010; Thaler & Shefrin, 1981; Wigfield, Klauda, & Cambria, 2011).

H1c: Ability to delay gratification will be positively related to future time orientation

Future time orientation has been related to an inability to delay gratification in multiple research studies (i.e. Daugherty & Brase, 2010; Spears, Xiaohua, & Mowen, 2001). It is likely that a similar outcome will occur in this research.

H2: Self-control will precede impulsiveness

Impulsiveness has often been found to be due to a lack of self-control (i.e. Baumesiter et al., 1994; Berkowitz, 2011; Forzano et al., 2011). Therefore, it stands to reason that if a lack of self-control creates impulsiveness, it is likely that self-control should precede impulsiveness.

H3: Impulsiveness will precede delay of gratification

Similar to self-control, delay of gratification abilities may be due to impulsiveness (i.e. Benhabib & Bisin, 2005; Bernheim & Rangel, 2004; Fudenberg & Levine, 2006; Gul & Pesendorfer, 2001; Laibson, 1997; Mischel & Ayduk, 2010; Thaler & Shefrin, 1981; Wigfield, Klauda, & Cambria, 2011). This suggests that impulsiveness is a required condition for an inability to delay gratification and therefore suggests that impulsiveness must precede ability to delay gratification.

RQ3: What is the temporal relationship between time orientation and the other relevant variables?

The temporal relationship between time orientation and the other relevant variables of this study is not certain. There is evidence to suggest that impulsiveness precedes time orientation (Wittmann et al., 2011); however, it is yet unknown how time orientation and ability to delay gratification interact temporally.

RQ4: Is there a temporal relationship between media usage and the other relevant variables?

This question will seek to answer how the usage, or over-usage, of instant gratification media affects the process of the ability to delay gratification. How, or if, there is an interaction will be tested. There is little evidence to make a claim about where media usage may be present in this model; however, there is some evidence that a relationship is at least possible. (The suggested model for this study is displayed in Figure 2.1.)

Figure 2.1 *Proposed Model*

Demographics

(Age, Income, Parent's Education,

Time with Parent, Race, Sex)

Time Orientation

⟹ Self-Control ⟹ Impulsiveness   Ability to Delay Grat.

Media Usage
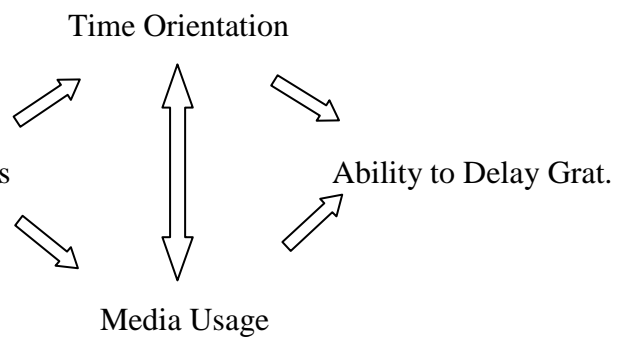
CHAPTER THREE

This chapter focuses on the methodological strategies undertaken by this dissertation.

Four samples (6th grade, 9th grade, 12th grade, and college students) were collected in order to test

the relationships between the variables, and to work to create a model of the relationships and

interactions. This chapter describes the sampling procedures, the survey instruments and

procedure, and the data analysis.

Methodology

Model Development

Established conceptual relationships already exist between self-control, impulsiveness,

and delay of gratification. Specifically, self-control is seen to precede impulsiveness, which is

seen to precede delay of gratification (Forzano et al., 2011). It is likely that delay of gratification

and time orientation are also conceptually related. However, these relations have not yet been

fully delineated. Casey et al. (2008) suggested that the adolescent brain is naturally inclined to

sensation seek, due to the nature of the neural maturation of a teenager. This occurs due to the

reward center maturing before the executive functions. However, there is little to no evidence to

suggest a temporal order to the relationship between time orientation and delay of gratification.

This research will be interested in determining how these variables may be related. Specifically,

determining how these variables may be related temporally.

Creating a model to determine these relationships is important because of the drastic

effects of inability to delay gratification. Not only will this model take these variables into

account, it will also determine the temporal relationship of instant gratification media usage in this process. Knowing this relationship can be of high efficacy in future research and in the creation of delay of gratification remediation techniques and therapies. By determining the temporal placement of media in this process, this model can describe the full effect of media usage on the development of this generation.

Participants

Because it is noted that ability to delay gratification may change throughout development (Spencer-Smith & Anderson, 2009), four different age groups of adolescents and young adults were tested. Due to the findings of the previous literature review, the age groups selected (due to the average development) were adolescents in grade six (approximately 12 years old), grade nine (approximately 15 years old), and grade twelve (approximately 18 years old), as well as young adults at age 21 (approximately college juniors or seniors). Each age group was broken into two different groups: those with high access to instant gratification media and those with low access. The groups with high access were identified as having multiple computers in their home (more than one), having a computer in their bedroom with access to the Internet, owning their own cellular telephone with access to the Internet, and using these for more than one hour a day. The groups with low access were identified as having one family computer at most, no computer in the bedroom, no Internet access, and no Internet access on their phone.

A total of 271 adolescents and young adults participated. Of the four age groups, 38% were college students ($n = 103$), 44% were 6th graders ($n = 120$), 5% were 9th graders ($n = 13$), and 13% were 12th graders ($n = 35$). The participants were collected from both a rural and an urban school district in west central Alabama. A summary of groupings by grade level, biological sex by grade level, race by grade level, parent's education by grade level, hours spent

with parent by grade level, grades earned in school by grade level, and school district by grade level can be found in Tables 3.1 - 3.7.

Amongst the college students (Table 3.1), 33% met the criteria for the low access group ($n = 34$), 57% were considered moderate, or did meet the criteria for the high access or low access group ($n = 59$), and 10% met the criteria for the high access group ($n = 10$). Within this age group (Table 3.2), 13.6% reported male ($n = 14$) and 86.4% reported female ($n = 89$). 81.6% were Caucasian ($n = 84$), 12.6% were African American ($n = 13$), 2.9% were Hispanic ($n = 3$), 1.9% were Multi-Ethnic ($n = 2$), and 1% were Native American ($n = 1$) (Table 3.3). Multiple demographics were collected, including the education level of the parent, the hours spent with a parent daily while growing up, and the grades earned in school while growing up. Of the parent's education (Table 3.4), 1% had some high school ($n = 1$), 6.8% were high school graduates ($n = 7$), 11.7% had some college ($n = 12$), 3.9% had an Associate's Degree ($n = 4$), 35% had a Bachelor's Degree ($n = 36$), 28.2% had a Master's Degree ($n = 29$), and 9.7% had a Ph.D., Law, or M.D. ($n = 10$); 4 did not report. Of the hours spent with the parent while growing up (Table 3.5), 2.9% spent one hour a day ($n = 3$), 8.7% spent two hours a day ($n = 9$), 13.6% spent three hours a day ($n = 14$), 19.4% spent four hours a day ($n = 20$), and 50.5% spent five hours a day ($n = 52$); 5 did not report. Of the participant's grades (Table 3.6), 33% normally earned A's ($n = 34$), 61.2% normally earned B's ($n = 63$), and 5.8% normally earned C's ($n = 6$).

Amongst the 12$^{\text{th}}$ grade students (Table 3.1), 11% met the criteria for the low access group ($n = 4$), 52% were considered moderate, or did meet the criteria for the high access or low access group ($n = 18$), and 37% met the criteria for the high access group ($n = 13$). Within this age group (Table 3.2), 45.7% reported male ($n = 16$) and 54.3% reported female ($n = 19$). 60%

Table 3.1 *Group Frequencies by Grade Level*

	High Access	Moderate	Low Access	Total
6th Grade				
Total	29	65	26	120
% Across	24%	54%	22%	100%
% Down	54%	43%	39%	44%
9th Grade				
Total	2	8	3	13
% Across	15%	62%	23%	100%
% Down	4%	5%	4%	5%
12th Grade				
Total	13	18	4	35
% Across	37%	52%	11%	100%
% Down	24%	12%	6%	13%
College				
Total	10	59	34	103
% Across	10%	57%	33%	100%
% Down	18%	40%	51%	38%
Total				
Total	54	150	67	271
% Across	20%	55%	25%	100%
% Down	100%	100%	100%	100%

Table 3.2 *Biological Sex by Grade Level*

	Male	Female	Total
6th Grade			
Total	51	69	120
% Across	43%	57%	100%
% Down	59%	38%	44%
9th Grade			
Total	5	8	13
% Across	38%	62%	100%
% Down	6%	4%	5%
12th Grade			
Total	16	19	35
% Across	46%	54%	100%
% Down	19%	10%	13%
College			
Total	14	89	103
% Across	14%	86%	100%
% Down	16%	48%	38%
Total			
Total	86	185	271
% Across	32%	68%	100%
% Down	100%	100%	100%

Table 3.3 *Race by Grade Level*

	1	2	3	4	5	6	Total
6th Grade							
Total	49	60	4	1	0	6	120
% Across	41%	50%	3%	1%	0%	5%	100%
% Down	31%	63%	57%	100%	0%	67%	44%
9th Grade							
Total	4	8	0	0	0	1	13
% Across	31%	62%	0%	0%	0%	7%	100%
% Down	3%	8%	0%	0%	0%	11%	5%
12th Grade							
Total	21	14	0	0	0	0	35
% Across	60%	40%	0%	0%	0%	0%	100%
% Down	13%	15%	0%	0%	0%	0%	13%
College							
Total	84	13	3	0	1	2	103
% Across	82%	13%	3%	0%	1%	1%	100%
% Down	53%	14%	43%	0%	100%	22%	38%
Total							
Total	158	95	7	1	1	9	271
% Across	58%	35%	3%	0.5%	0.5%	3%	100%
% Down	100%	100%	100%	100%	100%	100%	100%

Note: (1) = Caucasian, (2) = African-American, (3) = Hispanic,

(4) = Asian American, (5) = Native American, (6) = Multi-Racial

Table 3.4 *Parent's Education by Grade Level*

	1	2	3	4	5	6	7	8	9	Total
6th Grade										
Total	2	17	21	2	4	14	6	53	1	120
% Across	2%	14%	18%	2%	3%	12%	5%	43%	1%	100%
% Down	33%	61%	54%	20%	7%	29%	38%	100%	6%	44%
9th Grade										
Total	0	2	0	0	1	2	0	0	8	13
% Across	0%	15%	0%	0%	8%	15%	0%	0%	62%	100%
% Down	0%	7%	0%	0%	2%	4%	0%	0%	50%	5%
12th Grade										
Total	3	2	6	4	14	3	0	0	3	35
% Across	9%	5%	17%	11%	40%	9%	0%	0%	9%	100%
% Down	50%	7%	15%	40%	25%	6%	0%	0%	19%	13%
College										
Total	1	7	12	4	36	29	10	0	4	103
% Across	1%	7%	12%	4%	35%	28%	10%	0%	3%	100%
% Down	17%	25%	31%	40%	66%	61%	62%	0%	25%	38%
Total										
Total	6	28	39	10	55	48	16	53	16	271
% Across	2%	10%	14%	3%	21%	18%	6%	20%	6%	100%
% Down	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: (1) = Some High School, (2) = High School Graduate, (3) = Some College,

(4) = Associate's Degree, (5) = Bachelor's Degree, (6) = Master's Degree

(7) = Ph.D., Law, M.D., or Equivalent, (8) = I don't know, (9) = Did Not Report

Table 3.5 *Hours Spent with Parents by Grade Level*

	1	2	3	4	5	6	7	Total
6th Grade								
Total	4	3	8	3	13	88	1	120
% Across	3%	2%	7%	3%	11%	73%	1%	100%
% Down	80%	43%	29%	13%	35%	56%	7%	44%
9th Grade								
Total	0	0	0	1	1	3	8	13
% Across	0%	0%	0%	8%	8%	23%	61%	100%
% Down	0%	0%	0%	4%	3%	2%	57%	5%
12th Grade								
Total	1	1	11	5	3	14	0	35
% Across	3%	3%	31%	14%	9%	40%	0%	100%
% Down	20%	14%	39%	22%	8%	9%	0%	13%
College								
Total	0	3	9	14	20	52	5	103
% Across	0%	3%	9%	14%	19%	50%	5%	100%
% Down	0%	43%	32%	61%	54%	33%	36%	38%
Total								
Total	5	7	28	23	37	157	14	271
% Across	2%	3%	10%	8%	14%	58%	5%	100%
% Down	100%	100%	100%	100%	100%	100%	100%	100%

Note: (1) = No Time, (2) = 1 Hours, (3) = 2 Hours,

(4) = 3 Hours, (5) = 4 Hours, (6) = 5 or More Hours

(7) = Did Not Report

Table 3.6 *Grades Earned in School by Grade Level*

	1	2	3	4	Total
6th Grade					
Total	42	54	22	2	120
% Across	35%	45%	18%	2%	100%
% Down	45%	39%	63%	100%	44%
9th Grade					
Total	4	5	4	0	13
% Across	31%	38%	31%	0%	100%
% Down	4%	4%	11%	0%	5%
12th Grade					
Total	14	18	3	0	35
% Across	40%	51%	9%	0%	100%
% Down	15%	13%	9%	0%	13%
College					
Total	34	63	6	0	103
% Across	33%	61%	6%	0%	100%
% Down	36%	44%	17%	0%	38%
Total					
Total	94	140	35	2	271
% Across	34%	52%	13%	1%	100%
% Down	100%	100%	100%	100%	100%

Note: (1) = A's, (2) = B's, (3) = C's, (4) = D's

Table 3.7 *Urban or Rural School District by Grade Level*

	Urban	Rural	Total
6th Grade			
Total	77	43	120
% Across	64%	36%	100%
% Down	65%	88%	71%
9th Grade			
Total	7	6	13
% Across	54%	46%	100%
% Down	6%	12%	8%
12th Grade			
Total	35	0	35
% Across	100%	0%	100%
% Down	29%	0%	21%
Total			
Total	119	49	168
% Across	71%	29%	100%
% Down	100%	100%	100%

Note: College Students did not report school district

were Caucasian ($n = 21$), and 40% were African American ($n = 14$) (Table 3.3). Multiple

demographics were collected, including the education level of the parent, the hours spent with a

parent daily while growing up, and the grades earned in school while growing up. Of the

parent's education (Table 3.4), 8.6% had some high school ($n = 3$), 5.7% were high school

graduates (*n* = 2), 17.1% had some college (*n* = 6), 11.4% had an Associate's Degree (*n* = 4), 40% had a Bachelor's Degree (*n* = 14), 8.6% had a Master's Degree (*n* = 3), and 8.6% did not know their parent's education (*n* = 3). Of the hours spent with the parent while growing up (Table 3.5), 2.9% spent no time per day with their parents (*n* = 1), 2.9% spent one hour a day (*n* = 1), 31.4% spent two hours a day (*n* = 11), 14.3% spent three hours a day (*n* = 5), 8.6% spent four hours a day (*n* = 3), and 40% spent five hours a day (*n* = 14). Of the participant's grades (Table 3.6), 40% normally earned A's (*n* = 14), 51.4% normally earned B's (*n* = 18), and 8.6% normally earned C's (*n* = 3). 100% were from an urban school district (Table 3.7).

Amongst the 9th grade students (Table 3.1), 23% met the criteria for the low access group (*n* = 3), 62% were considered moderate, or did meet the criteria for the high access or low access group (*n* = 8), and 15% met the criteria for the high access group (*n* = 2). Within this age group (Table 3.2), 38.5% reported male (*n* = 5) and 61.5% reported female (*n* = 8). 30.8% were Caucasian (*n* = 4), 61.5% were African American (*n* = 8), and 7.7% were Multi-Ethnic (*n* = 1) (Table 3.3). Multiple demographics were collected, including the education level of the parent, the hours spent with a parent daily while growing up, and the grades earned in school while growing up. Of the parent's education (Table 3.4), 15.4% were high school graduates (*n* = 2), 7.7% had a Bachelor's Degree (*n* = 1), and 15.4% had a Master's Degree (*n* = 2); 8 did not report. Of the hours spent with the parent while growing up (Table 3.5), 7.7% spent three hours a day (*n* = 1), 7.7% spent four hours a day (*n* = 1), and 23.1% spent five hours a day (*n* = 3); 8 did not report. Of the participant's grades (Table 3.6), 30.8% normally earned A's (*n* = 4), 38.5% normally earned B's (*n* = 5), and 30.8% normally earned C's (*n* = 4). 46.2% were from a rural school district (*n* = 6), and 53.8% were from an urban school district (*n* = 7) (Table 3.7).

Amongst the 6th grade students (Table 3.1), 22% met the criteria for the low access group ($n = 26$), 54% were considered moderate, or did meet the criteria for the high access or low access group ($n = 65$), and 24% met the criteria for the high access group ($n = 29$). Within this age group (Table 3.2), 42.5% reported male ($n = 51$) and 57.5% reported female ($n = 69$). 40.8% were Caucasian ($n = 49$), 50% were African American ($n = 60$), 3.3% were Hispanic ($n = 4$), 5% were Multi-Ethnic ($n = 6$), and 0.8% were Asian/Pacific Islander ($n = 1$) (Table 3.3). Multiple demographics were collected, including the education level of the parent, the hours spent with a parent daily while growing up, and the grades earned in school while growing up. Of the parent's education (Table 3.4), 1.7% had some high school ($n = 2$), 14.2% were high school graduates ($n = 17$), 17.5% had some college ($n = 21$), 1.7% had an Associate's Degree ($n = 2$), 3.3% had a Bachelor's Degree ($n = 4$), 11.7% had a Master's Degree ($n = 14$), 5% had a Ph.D., Law, or M.D. ($n = 6$), and 44.2% did not know ($n = 53$); 1 did not report. Of the hours spent with the parent while growing up (Table 3.5), 3.3% spent no time with their parent daily ($n = 4$), 2.5% spent one hour a day ($n = 3$), 6.7% spent two hours a day ($n = 8$), 2.5% spent three hours a day ($n = 3$), 10.8% spent four hours a day ($n = 13$), and 73.3% spent five hours a day ($n = 88$); 1 did not report. Of the participant's grades (Table 3.6), 35% normally earned A's ($n = 42$), 45% normally earned B's ($n = 54$), 18.3% normally earned C's ($n = 22$), and 1.7% normally earned D's ($n = 2$). 35.8% were from a rural school district ($n = 43$), and 64.2% were from an urban school district ($n = 77$) (Table 3.7).

Procedure

Before any data collection began, a small pretest was completed to ensure both the viability of the delay of gratification scenarios and the readability of the survey. Current 6th grade teachers ($n = 3$) were asked to read the full survey to ensure that a 6th grade student would

be able to read and understand all the questions and scenarios. Further, they were asked to determine if the scenarios were applicable to 6th grade students. Current 9th ($n = 2$) and 12th ($n = 3$) grade students were asked to do the same in regards to their grade level. After a few small changes were made, the survey was deemed acceptable.

Approval of the University's Institutional Review Board, the Superintendents of two school districts in west central Alabama, and the approval of each school's principals were secured before data collection could begin. Data were collected in one rural and one urban school district. Within the rural school district, three high schools and two middle schools agreed to participate. Within the urban school district, one high school and one middle school agreed to participate. In total, eight school districts were contacted and two agreed to participate. Among the 1,300 6th, 9th, and 12th grade students that were recruited, 168 agreed to participate. Data were collected through an online survey that was distributed as each school chose. Each school decided to collect data within their regularly scheduled computer classes. Before the student could participate, they were required to secure permission from their parent or guardian through a consent form that was to be returned to school. Among the 1,300 students that were given consent forms, 168 were returned to the researcher.

The researcher first elicited permission from the University IRB. Then, the school districts were contacted. Finally, the school principals were contacted both in e-mail and in person. Those principals that agreed to participate were given their allotted number of consent forms and e-mailed the link to the online survey. When the students returned their consent forms to school, they were allowed to complete the online survey. All surveys were distributed during each school's regularly scheduled computer class. The researcher was not present. Due to low

response rates in high schools, the researcher offered an incentive of a drawing for a $15 iTunes gift card at two different schools in hopes of boosting responses.

College students were e-mailed the link to the online survey. They completed the survey in exchange for extra credit points. Each participant was allowed to complete the online survey in an environment of their choice.

Instruments

This research consisted of two separate, but highly similar surveys. The first survey was distributed to 6th, 9th, and 12th grade students. This survey included scales regarding impulsiveness, self-control, time orientation, delay of gratification scenarios, various demographics, and current media usage behaviors. The second survey was distributed to college students. It was exactly the same except that these participants were instructed to answer the media usage questions in reference to their adolescent years.

The demographic questions consisted of biological sex, race and ethnicity, current age, grade, county of residence, grades earned in school, hours spent with parents on a daily basis, and parent's education. These measures were taken in order to control for any effects that may have been discovered.

The media usage measures were taken in order to split the participants into three groups: the participants with high access to instant gratification media, the participants with low access, and the participants that do not fit either group's criteria. These measures consisted of total number of computers in the house, if there is a computer in your bedroom, if you have the Internet on those computers, average hours per day using these computers, if you own a cellular telephone, if the phone has Internet, and how many hours a day the phone is used. Similar

questions regarding laptops, video game systems, household rules, and iPads were used, but were determined to be too restrictive to use for determining groups.

A summary of each scale's statistics can be found in Table 3.8.

Each participant was given multiple scenarios in order to measure their ability to delay gratification. In each scenario, they were asked how long they would wait for certain rewards. These scenarios consisted of two monetary reward scenarios, one visceral reward scenario (food), and one academic reward scenario. These scenarios were patterned from multiple research studies, including the original Stanford Marshmallow Experiment (Mischel et al., 1972), O'Malley et al.'s (2010) research, and from Bembenutty's (2008; Bembenutty & Karabenick, 1998; 2004) Academic Delay of Gratification Scale (ADOGS). Originally, each scenario was to be collapsed into one measure of delay of gratification. However, after achieving an undesirable reliability ($\alpha = .41$), it was determined that each must be analyzed separately. These scenarios can be found in Appendix B.

Four scenarios were created to measure monetary delay of gratification, visceral delay of gratification, and academic delay of gratification. Monetary delay of gratification was measured using two separate techniques. Monetary delay was first measured using the physical reward of an iPod. Participants were asked to imagine that they had won a brand new iPod. They were also given the choice to wait for free songs to download to the iPod. They could claim the iPod immediately and receive no free songs, or they could wait for one week or a month to claim the iPod and receive free songs as well. This scenario was used to measure the participant's views of a valuable reward, or asset, that gains value over time.

The second technique measured the participant's views of actual monetary gratification. The participants were asked if they would rather claim $7 immediately or $10 later. The amount

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of time the participant was asked to wait was manipulated. These two scenarios were used to

measure the participant's ability to delay monetary gratification.

A third scenario was created to measure visceral delay of gratification. This measure was

built to resemble the Stanford Marshmallow Experiment (Mischel et al., 1972). Participants

were asked to imagine that they were being offered one cookie immediately or two cookies later.

This is similar to the experiment that was employed by Mischel et al. Those researchers placed a

marshmallow in front of a young child and told them that they could eat the marshmallow

immediately or wait for the researcher to find more marshmallows. The researchers measured

the amount of time that it took for the child to eat the one marshmallow. This was imitated in

this scenario. The amount of time that the participant was asked to wait for two cookies was

manipulated.

A fourth and final scenario was created to measure academic delay of gratification. This

measure was modeled after the Academic Delay of Gratification Scale (ADOGS; Bembenutty,

2008). This measured the participant's wish to focus on schoolwork or their social life. A

participant was given a scenario asking them to decide between hanging out with friends or

working on a school project. The penalty of not working on the project grew throughout each

choice. They could possibly fail the project, certainly fail the project, or fail the class. Each

scenario was pretested.

Each measure was scored similarly in order to create a continuous scale. Each question

was scored by the first time chronologically that the participant chose gratification. Immediate

gratification was always recorded as a "1." This would be scored if the participant answered

with gratification in the first choice. Delayed gratification was always scored as a "5." This

score was given if the participant chose full delay of gratification, or the last choice given. The

iPod delay of gratification scenario displayed three choices. If the participant chose the second

choice, they were scored as a "3." The other three scenarios were scored differently. The

participant was given two choices at each level. For example, they were asked if they would

choose $7 immediately or $10 after a certain amount of time. The amount of time would get

Table 3.8 *Scale Statistics*

	M	*SD*	*α*	Skew.	Kurt.
Self-Control	3.17	0.57	.76	0.11	-0.67
Impulsiveness	2.70	0.42	.81	-0.31	0.47
Time Orientation	3.69	0.39	.67	-0.11	-0.06
Monetary (iPod)	3.60	1.69	N/A	-0.69	-1.23
Monetary (Dollar)	3.65	1.46	N/A	-0.66	-1.12
Academic	4.64	0.94	N/A	-0.31	0.91
Visceral	2.48	1.68	N/A	0.54	-1.47

larger and the participant was measured for the moment they chose immediate gratification over the larger, delayed reward. If the participant chose immediate gratification in the second choice, they were scored as a "2." If they chose immediate gratification at the third choice, they were scored a "4."

Each participant completed a self-control scale. Tangney et al. (2004) created the 36-item Self-Control Scale. The short form, a 13-item scale, was employed. This measure has been previously found to be both reliable and valid (Tangney et al., 2004), and similar results were achieved here ($\alpha = .76$, $M = 3.17$, $SD = 0.57$). The Short Form Self-Control Scale can be found in Appendix C.

Each participant was asked to complete an impulsiveness scale. An adolescent impulsiveness scale was created and validated by Fossati, Barratt, Acquarini, and DiCeglie (2002). This scale was also validated in an adolescent population by Hartmann, Rief, and Hilbert (2011). This is a short form of the original Barratt Impulsiveness Scale (Barratt & Patton, 1983), containing 28 items and focused on an adolescent population. This measure achieved acceptable reliability ($\alpha = .81$, $M = 2.70$, $SD = 0.42$). The Short-Form Barratt Impulsiveness Scale (BIS-11) can be found in Appendix D.

Finally, participants were asked to complete a time orientation scale. D'Alessio et al. (2003) reported a 22-item short-form version of the Stanford Time Perspective Inventory (STPI). This short-form scale identifies the participant as past-minded or future-minded. These scores were recoded reflecting a high score for future orientation and a low score present orientation. This scale has been manipulated. Before inclusion into the survey, two items were removed, resulting in a 20-item measure. The items, "When I have money, I like playing and betting," and, "When I go to parties, I get drunk," were removed due to age-inappropriateness. After

distribution, two more items were excluded due to low reliability. These items were, "It gives me pleasure to think about my past," and "I try to live my life as fully as possible one day at a time." After these items were removed, this scale approached acceptable reliability ($\alpha = .67$, $M = 3.69$, $SD = 0.39$). The short-form STPI can be found in Appendix E.

CHAPTER FOUR

The groups discussed within this section reflect the high access individuals and the low access individuals. Of the 271 total participants, 125 were divided into two groups (n low access group = 67, n high access group = 58), leaving 146 participants out of the analysis. However, these 146 participants were accounted for in unreported analyses. To account for them, two strategies were taken. First, of the 271 total participants, two less stringent groups were formed. These groups divided the sample into high access and low access only, with no moderate group (n low access group = 141, n high access group = 130). All analyses were conducted on both versions of grouping. No remarkably different or notable results were present within the sample of 271. Second, the sample of 271 was further broken down in order to compare the highs (n = 58), lows (n = 67), and the moderates (n = 146). A series of ANOVAs were conducted. This was done in order to address the modest sample size within the 9th and 12th grade. However, there were no differences within these analyses when compared to the analyses conducted within the sample of 125. Therefore, the following analyses are in reference to only those within the sample of 125 unless otherwise stated.

Results

Research question one asked, how does use of instant gratification media in different stages of development affect ability to delay gratification? A series of t-tests were conducted. The sample was broken into three separate groups: those with high access to instant gratification media, those with moderate access to instant gratification media, and those with low access to

instant gratification media. These groups will be referred to as highs, moderates, and lows. Each

age group consisted of its own blend of highs, moderates, and lows. In order to test the effect of

instant gratification media, only the highs and lows were compared. These groups were

compared for delay of gratification (iPod monetary, dollar monetary, academic, and visceral

separately), impulsiveness, self-control, and time orientation.

Testing for differences between access groups

Within the college students, results of a *t*-test showed a significant difference between

highs and lows for iPod monetary delay of gratification (t (99) = - 2.21, p = .03). A closer

examination of the means indicates that the highs (M = 2.60, SD = 1.84) preferred to receive an

iPod now, rather than wait for free songs. The lows (M = 3.84, SD = 1.66) preferred to wait in

order to receive free songs. This suggests that the highs preferred instant gratification. Results

of a *t*-test showed no significant differences for dollar monetary delay of gratification (t (99) =

0.71, p = .48), academic delay of gratification (t (98) = - 0.47, p = .64), or visceral delay of

gratification (t (15.14) = - 1.94, p = .07). A summary of these findings can be found in Table

4.1.

Within the 12th graders, results of a *t*-test showed no significant differences for iPod

monetary delay of gratification (t (33) = 1.91, p = .07), dollar monetary delay of gratification (t

(33) = -0.13, p = .90), academic delay of gratification (t (33) = - 0.96, p = .34), or visceral delay

of gratification (t (33) = - 0.37, p = .72). A summary of these findings can be found in Table 4.2.

Within the 9th graders, results of a *t*-test showed a significant difference between highs

and lows for both academic delay of gratification (t (8) = - 3.03, p = .01) and visceral delay of

gratification (t (11) = - 5.95, p < .001). A closer examination of the means indicates that the

highs (M = 2.50, SD = 2.07) preferred to hang out with friends rather than study. The lows (M =

Table 4.1 *Independent Samples t-test Comparing the Means and Standard Deviations of the High Access Group (n = 10) and the Low Access Group (n = 34) within the College Students*

	Condition			
	High Access	Low Access	*t*	*p*
Dependent Variable	*Mean (SD)*	*Mean (SD)*		
iPod Delay	2.60 (1.84)	3.84 (1.66)	-2.21	.03
Dollar Delay	4.00 (1.16)	3.68 (1.36)	0.71	.48
Academic Delay	4.80 (0.42)	4.87 (0.43)	-0.47	.64
Visceral Delay	1.40 (0.97)	2.08 (1.60)	-1.94	.07

Table 4.2 *Independent Samples t-test Comparing the Means and Standard Deviations of the High Access Group (n = 13) and the Low Access Group (n = 4) within the 12th Grade Students*

	Condition			
	High Access	Low Access	*t*	*p*
Dependent Variable	*Mean (SD)*	*Mean (SD)*		
iPod Delay	4.23 (1.54)	3.09 (1.80)	1.91	.06
Dollar Delay	3.38 (1.71)	3.45 (1.50)	-0.13	.90
Academic Delay	3.69 (1.60)	4.18 (1.37)	-0.96	.34
Visceral Delay	2.46 (1.66)	2.68 (1.76)	-0.37	.72

4.80, *SD* = 0.45) preferred to study and ensure good grades rather than hang out with friends.

Further, the highs (*M* = 1.50, *SD* = 1.07) preferred to enjoy one cookie now rather than two later.

The lows (*M* = 4.60, *SD* = 0.55) preferred to enjoy two cookies later rather than one cookie now.

This suggests that the highs preferred instant gratification. However, no other significant results

were present within this age group. Results of a *t*-test showed no significant differences for iPod

monetary delay of gratification (*t* (11) = -1.37, *p* = .20), and dollar monetary delay of

gratification (*t* (11) = -1.05, *p* = .32). It should be noted that the sample size within this group

was extraordinarily low, at only 13 participants. A summary of these findings can be found in

Table 4.3.

Table 4.3 *Independent Samples t-test Comparing the Means and Standard Deviations of the High*

Access Group (n = 2) and the Low Access Group (n = 3) within the 9th Grade Students

	Condition			
	High Access	Low Access	*t*	*p*
Dependent Variable	*Mean (SD)*	*Mean (SD)*		
iPod Delay	2.00 (1.51)	3.40 (2.19)	-1.37	.20
Dollar Delay	2.25 (1.75)	3.40 (2.19)	-1.05	.32
Academic Delay	2.50 (2.07)	4.80 (0.45)	-3.03	.02
Visceral Delay	1.50 (1.07)	4.60 (0.55)	-5.95	< .001

Within the 6th graders, results of a *t*-test showed no significant differences for iPod monetary delay of gratification (*t* (116) = -0.15, *p* = .88), dollar monetary delay of gratification (*t* (118) = -0.92, *p* = .36), academic delay of gratification (*t* (118) = - 0.91, *p* = .38), or visceral delay of gratification (*t* (118) = - 0.03, *p* = .98). A summary of these findings can be found in Table 4.4.

Table 4.4 *Independent Samples t-test Comparing the Means and Standard Deviations of the High Access Group (n = 29) and the Low Access Group (n = 26) within the 6th Grade Students*

	Condition		t	p
	High Access	Low Access		
Dependent Variable	*Mean (SD)*	*Mean (SD)*		
iPod Delay	3.62 (1.70)	3.67 (1.65)	-0.15	.88
Dollar Delay	3.41 (1.66)	3.71 (1.49)	-0.92	.36
Academic Delay	4.48 (1.09)	4.68 (1.01)	-0.91	.37
Visceral Delay	2.76 (1.60)	2.77 (1.71)	-0.03	.98

The sample was collapsed to determine if there were any differences in total. Results of a *t*-test indicate a significant difference for academic delay of gratification (*t* (74) = - 2.38, *p* = .02). A closer examination of the means suggests that highs are more likely to hang out with friends even if it means that they might fail a project (*M* = 4.37, *SD* = 1.19) but not if it meant certainly failing the project or class, whereas the lows were unlikely to hang out with friends at

all if it meant there was a possibility of failing ($M = 4.79$, $SD = 0.59$). This suggests that the highs may be more willing to put their grade in danger. However, no other significant differences were present. Results of a *t*-test showed no significant differences for iPod monetary delay of gratification (t (118) = -1.36, $p = .18$), dollar monetary delay of gratification (t (119) = -0.25, $p = .80$), or visceral delay of gratification (t (118.4) = - 1.12, $p = .27$). A summary of these findings can be found in Table 4.5.

Table 4.5 *Independent Samples t-test Comparing the Means and Standard Deviations of the High Access Group (n = 54) and the Low Access Group (n = 67) amongst all Participants*

| | Condition | | | |
Dependent Variable	High Access *Mean (SD)*	Low Access *Mean (SD)*	*t*	*p*
iPod Delay	3.56 (1.71)	3.97 (1.62)	-1.36	.18
Dollar Delay	3.56 (1.56)	3.63 (1.52)	-0.25	.80
Academic Delay	4.37 (1.19)	4.79 (0.59)	-2.38	.02
Visceral Delay	2.39 (1.56)	2.73 (1.81)	-1.12	.27

Because differences were found between the access groups for academic delay of gratification, further analyses were required. In order to determine if the differences were solely caused by the grouping variable of media access, an ANCOVA was conducted. This included grade and biological sex as factors, and hours spent with parents, self-control, impulsiveness, and

time orientation as covariates. Because of the small sample size, the 9th grade sample was removed from this analysis. Further, only the high access and low access group were compared in order to be congruent with the previous analyses. Results of an ANCOVA suggest that the difference between access group is no longer significant when accounting for these variables (F (1, 69) = 2.68, r^2 = .23, p = .11). A closer examination of the adjusted means suggest that the high access group (M = 4.34) did not significantly differ from the low access group (M = 4.71). A summary of these results can be found in Table 4.6.

In summation, regardless of age group, a difference for academic delay of gratification was found between the high access and low access groups before controlling for demographic variables and self-control, impulsiveness, and time orientation. Further, the college students showed a preference for immediate gratification within the monetary delay of gratification scenario. Both of these findings may point towards the high access group's perception of value as well as their perceptions of costs and rewards. Perhaps the extra songs were viewed as a higher reward worth the cost of waiting to the low access group, while the cost of waiting was perceived as higher than the reward of extra songs for the high access group. Further, the reward of hanging out was worth more to the high access group than the cost of failing the project, while the cost of failing the project was greater than the reward of hanging out to the low access group. These findings suggest that future research on each group's valuation of cost and reward may be fruitful. However, these findings were affected by grade in school. Results of an ANCOVA suggest that grade in school (F (2, 115) = 9.56, p < .001) mediates the relationship between media usage and academic delay of gratification, resulting in insignificant findings for the grouping variables (Access Groups with Grade in School: F (1, 115) = 1.91, r^2 = .20, p = .17). A closer examination of the adjusted means shows that the low access group (Grade M = 4.28) did

Table 4.6 *ANCOVA accounting for multiple variables' effects on academic delay of gratification*

	Adjusted Mean	SE	F	p
Factors				
Grade			1.43	.25
6th	4.59	0.17		
12th	4.22	0.27		
College	4.77	0.19		
Biological Sex			0.67	.42
Male	4.63	0.21		
Female	4.43	0.13		
Covariates				
Self-Control	---	---	0.48	.49
Impulsiveness	---	---	0.45	.51
Time Orientation	---	---	3.63	.06
Hours with Parent	---	---	0.01	.94
Main Effect				
Access Group			2.68	.11
Low	4.34	0.17		
High	4.71	0.16		

not differ from the high access group (Grade $M = 4.51$) when accounting for this variable, suggesting that this variable is responsible for the difference.

Testing for differences between age groups

Research question two asked, how does use of instant gratification media in different stages of development affect the onset of ability to delay gratification? A series of factorial ANOVAs were conducted to look for differences between age groups for delay of gratification, impulsiveness, self-control, and time orientation. The factors tested were age groups by access groups. A significant interaction suggests that differences exist when accounting for the age groups and the access groups as independent variables.

Only one significant interaction was discovered. Analyses were conducted both with and without the small 9th grade sample; however there were little differences between the analyses. Therefore, each analysis includes the 9th grade sample. Results of a factorial ANOVA suggest that a significant interaction occurs for age group and access group for iPod delay of gratification (F (3, 119) = 2.97, p = .04). A closer examination of the means suggests that the interaction occurs between the 12th grade students. Those in the high access group ($M = 4.23$) were more likely to wait for free songs that those in the low access group ($M = 2.50$). However, the low access group of 12th graders consisted of only four participants. Further, the 12th grade sample as a whole consisted of only 33 participants. Therefore, these findings can likely be ignored.

No further significant interactions were discovered. Results of a factorial ANOVA displayed no significant differences for self-control (F (3, 107) = 1.20, p = .32), impulsiveness (F (3, 88) = 0.62, p = .60), time orientation (F (3, 102) = 0.54, p = .66), dollar monetary delay of gratification (F (3, 120) = 0.99, p = .40), visceral delay of gratification (F (3, 120) = 0.84, p =

.47), or academic delay of gratification (F (3, 120) = 0.82, p = .49). These findings are displayed

in Table 4.7.

Table 4.7 *Summary of Factorial ANOVAs Testing the Interaction between Age Group and Access*

Group for Delay of Gratification, Self-Control, Impulsiveness, and Time Orientation

	F	p
iPod Delay	2.97	.04
Dollar Delay	0.99	.40
Academic Delay	0.82	.49
Visceral Delay	0.84	.47
Self-Control	1.20	.32
Impulsiveness	0.62	.60
Time Orientation	0.54	.66

In summation, because the only significant interaction occurred between the very small

low access group of 12th graders and the high access group for 12th graders, it is likely that these

findings are of little value. Therefore, no interesting developmental findings were displayed in

this sample.

Correlating the variables

Hypothesis one states that ability to delay gratification will be positively related to self-

control, impulsiveness, and future time orientation. Because the measures of delay of gratification were broken into four scenarios due to low reliability, each of the previous variables were correlated with each of the scenarios separately. The four scenarios will be noted as iPod, dollar, academic, and visceral. Results of a Pearson correlation indicate that a significant relationship existed between the iPod monetary delay of gratification scenario and dollar monetary delay of gratification ($r = .23$, $p < .001$) as well as visceral delay of gratification ($r = .23$, $p < .001$), but no significant results existed for academic delay ($r = .10$, $p = .13$), self-control ($r = .10$, $p = .16$), impulsiveness ($r = -.08$, $p = .30$), or time orientation ($r = .12$, $p = .09$). Results of a Pearson correlation indicate that a significant relationship existed between dollar monetary delay of gratification and visceral ($r = .24$, $p < .001$) as well as impulsiveness ($r = -.19$, $p = .008$), but no relationship existed for academic delay ($r = .06$, $p = .30$), self-control ($r = .12$, $p = .08$), or time orientation ($r = .13$, $p = .051$). Results of a Pearson correlation indicate that a significant relationship exists between academic delay of gratification and time orientation ($r = .23$, $p < .001$), but no relationship existed for visceral delay ($r = -.12$, $p = .10$), self-control ($r = .09$, $p = .21$), or impulsiveness ($r = .10$, $p = .11$). Results of a Pearson correlation indicate that a significant relationship exists between visceral delay of gratification and time orientation ($r = .23$, $p < .001$), impulsiveness ($r = -.22$, $p = .002$), and self-control ($r = .14$, $p = .04$). These results are very weak. Further, only visceral delay of gratification displayed a relationship with all three variables- time orientation, impulsiveness, and self-control. Therefore, hypothesis one is only partially supported.

However, time orientation, impulsiveness, and self-control each showed strong relationships with each other. Results of a Pearson correlation indicate that a significant relationship exists between time orientation and impulsiveness ($r = -.53$, $p < .001$) as well as self-

control ($r = .40, p < .001$). Further, a relationship existed between self-control and impulsiveness ($r = -.71, p < .001$). These strong relationships suggest that these variables are most likely to relate to each other within the proposed model. A correlation matrix can be found in Table 4.8.

Table 4.8 *Correlations among Self-Control, Impulsiveness, Time Orientation, iPod Monetary Delay, Monetary Delay, Academic Delay, and Visceral Delay*

	1	2	3	4	5	6	7
1. Self-Control							
2. Impulsiveness	-.71**						
3. Time Orientation	.40**	-.53**					
4. iPod Monetary Delay	.10	-.08	.12				
5. Monetary Delay	.12	-.19*	.13	.23**			
6. Academic Delay	.09	-.12	.23**	.10	.06		
7. Visceral Delay	.14*	-.22**	.23**	.23**	.24**	.10	

Note: *$p < .05$, ** $p < .001$

Building each model

The collection of the final analyses will be used to test the remaining hypotheses and research questions. The final analyses were conducted in order to build a model of delay of gratification. A path model was forwarded and is available in Figure 2.1. However, after discussion, it was determined that building two models, one for the highs and one for the lows,

and comparing them would be more advantageous. Therefore, two models were built to depict the relationship between the variables. To begin, each group was split into a separate data set. Then, all variables were correlated within each data set to determine where a significant relationship may exist. Those variables displaying relationships were then tested for each relationship using a multiple regression analysis. As hypothesized, the demographic variables were entered first, followed by time orientation, impulsiveness, self-control, and all delay of gratification scenarios. Few variables displayed significant relationships to each other. Both models that were formed are available in Figure 4.1 (lows) and Figure 4.2 (highs). Only those relationships that were significant are depicted.

Between each group, the same relationship existed between time orientation, impulsiveness, and self-control. Impulsiveness was directly related to both time orientation and self-control, and vice versa. Time orientation and self-control were not directly related to each other. However, few demographic variables predicted any other variables within the high and low access groups.

Within each group, simple linear regression analyses were conducted to determine the relationship between each variable. The first predictors included all demographic variables. All demographic variables were tested to predict time orientation, impulsiveness, self-control, and all delay of gratification scenarios. The demographic variables included were hours spent with parents, grades earned in school, academic grade (6th, 9th, 12th, or college), sex, and race/ethnicity. A similar step was taken next. The variables of self-control, impulsiveness, and time orientation were tested as predictors of all delay of gratification scenarios. Finally, all delay of gratification scenarios were tested amongst themselves as predictors.

After the original relationships were determined, multiple regression analyses were conducted to discover the prediction of each variable in concert. Those relationships that were significant were depicted in the model. The beta weights reported reflect each independent variable's correlation with the dependent variable when every predictor variable is accounted for. Stated differently, the beta weights reported reflect the multiple regression analyses, not the simple linear regressions analyses.

Low Access Model. For the sake of brevity, only those relationships that were determined to be significant will be reported. Within the first step of the low access group, self-control (F (1, 44) = 6.06, r^2 = .12, p = .02) was predicted by hours spent with parents (β = .35, t = 2.46, p = .02). Time orientation (F (1, 40) = 5.56, r^2 = .12, p = .03) was predicted by biological sex (β = .34, t = 2.27, p = .03). This suggests that few demographics predicted any variables. Practically, this suggests that a parent may be able to affect their child's self-control abilities.

Within the second step of the low access group, time orientation (F (2, 126) = 22.08, r^2 = .26, p < .001) was predicted by impulsiveness (β = -.49, t = -4.81, p < .001). Impulsiveness (F (2, 126) = 67.40, r^2 = .52, p < .001) was predicted by self-control (β = -.54, t = -8.18, p < .001) and time orientation (β = -.32, t = -4.81, p < .001). Self-control (F (2, 126) = 47.15, r^2 = .43, p < .001) was predicted by impulsiveness (β = -.65, t = -8.18, p < .001). These variables showed a similar relationship within each model. Impulsiveness was the centerpiece of this relationship, as it directly predicted both self-control and time orientation. However, time orientation and self-control were only indirectly related through impulsiveness.

Finally, the delay of gratification variables did show relationships amongst themselves. iPod monetary delay of gratification (F (3, 205) = 7.86, r^2 = .11, p < .001) was predicted by dollar monetary (β = .20, t = 2.87, p = .004) and visceral delay (β = .17, t = 2.41, p = .02). Dollar

monetary delay ($F(3, 205) = 7.84$, $r^2 = .10$, $p < .001$) was predicted by iPod ($\beta = .20$, $t = 2.87$, $p = .004$) and visceral delay ($\beta = .18$, $t = 2.61$, $p = .01$). Visceral delay ($F(3, 205) = 7.24$, $r^2 = .10$, $p < .001$) was predicted by iPod ($\beta = .17$, $t = 2.41$, $p = .02$) and dollar monetary delay ($\beta = .18$, $t = 2.61$, $p = .01$). These findings suggest that the delay of gratification variables were not related to any of the previously tested variables within the low access group. However, they were related to each other. Interestingly, academic delay of gratification was not related to any of these variables. The model depicting the low access group is displayed in Figure 4.1.

Figure 4.1 *Model Built for Low Access Group*
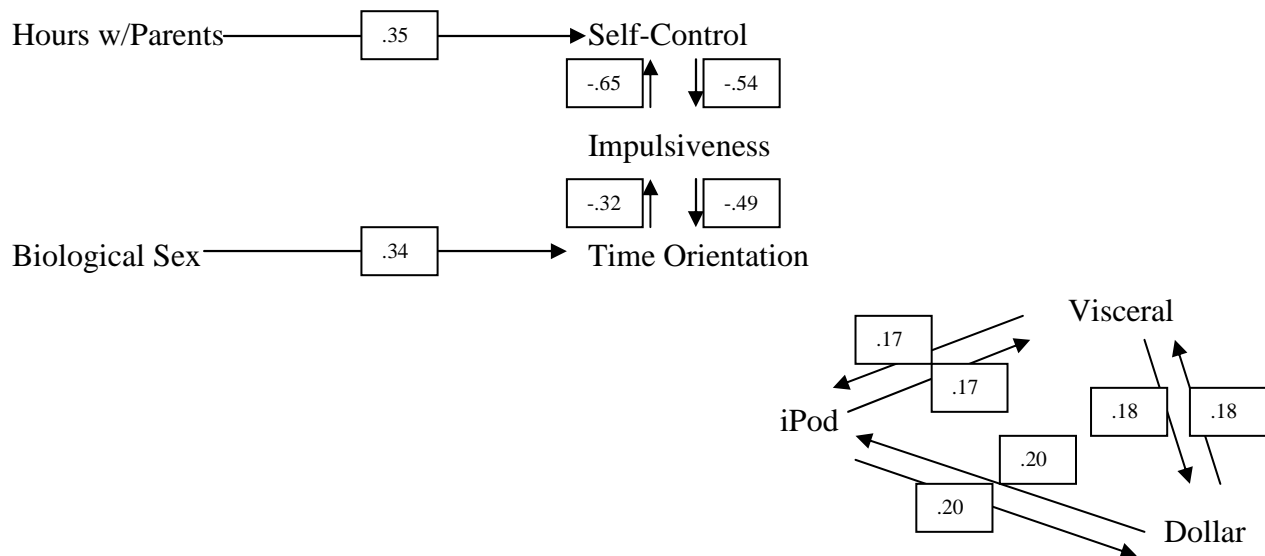
Note: n = 67

High Access Model. Within the first step of the high access group, self-control (F (1, 61) = 4.49, r^2 = .07, p = .04) was predicted by hours spent with parents (β = .26, t = 2.12, p = .04). Time orientation (F (1, 60) = 18.93, r^2 = .24, p < .001) was predicted by hours spent with parent (β = .49, t = 4.35, p < .001). iPod monetary delay of gratification (F (1, 65) = 7.12, r^2 = .10, p = .01) was predicted by hours spent with parent (β = .32, t = 2.67, p = .01). Academic delay of gratification (F (1, 65) = 9.34, r^2 = .13, p = .003) was also predicted by hours spent with parents (β = .36, t = 3.06, p = .003). These findings suggest that hours spent with the parent is a hugely important predictor for high access individuals. This is important because it points towards a practical implication of this study. Though these children may have high access to media, their self-control, time orientation, and delay abilities may all hinge on the amount of time their parents spend with them.

Within the second step of the high access group, time orientation (F (2, 31) = 6.37, r^2 = .31, p = .005) was predicted by impulsiveness (β = -.53, t = -2.36, p = .03). Impulsiveness (F (2, 31) = 22.46, r^2 = .61, p < .001) was predicted by self-control (β = -.61, t = -4.73, p < .001) and time orientation (β = -.30, t = -2.36, p = .03). Self-control (F (2, 31) = 16.52, r^2 = .53, p < .001) was predicted by impulsiveness (β = -.72, t = -4.73, p < .001). These variables showed a similar relationship within each model. Impulsiveness was the centerpiece of this relationship, as it directly predicted both self-control and time orientation. However, time orientation and self-control were only indirectly related through impulsiveness.

Finally, the delay of gratification variables did show relationships amongst themselves. iPod monetary delay of gratification (F (3, 259) = 8.60, r^2 = .10, p < .001) was predicted by dollar monetary (β = .19, t = 3.01, p = .003) and visceral delay (β = .18, t = 2.98, p = .003). Dollar monetary delay (F (3, 259) = 8.35, r^2 = .09, p < .001) was predicted by iPod (β = .19, t =

3.01, $p = .003$) and visceral delay ($\beta = .19$, $t = 3.07$, $p = .002$). Visceral delay (F (3, 259) = 8.94,

$r^2 = .10$, $p < .001$) was predicted by iPod ($\beta = .18$, $t = 2.98$, $p = .003$) and dollar monetary delay

($\beta = .19$, $t = 3.07$, $p = .002$). The model depicting the high access group is displayed in Figure

4.2. This suggests that the delay of gratification variables were related to each other. However,

this is a similar relationship to the low access model as academic delay of gratification was not

related to these variables.

Figure 4.2 *Model Built for High Access Group*
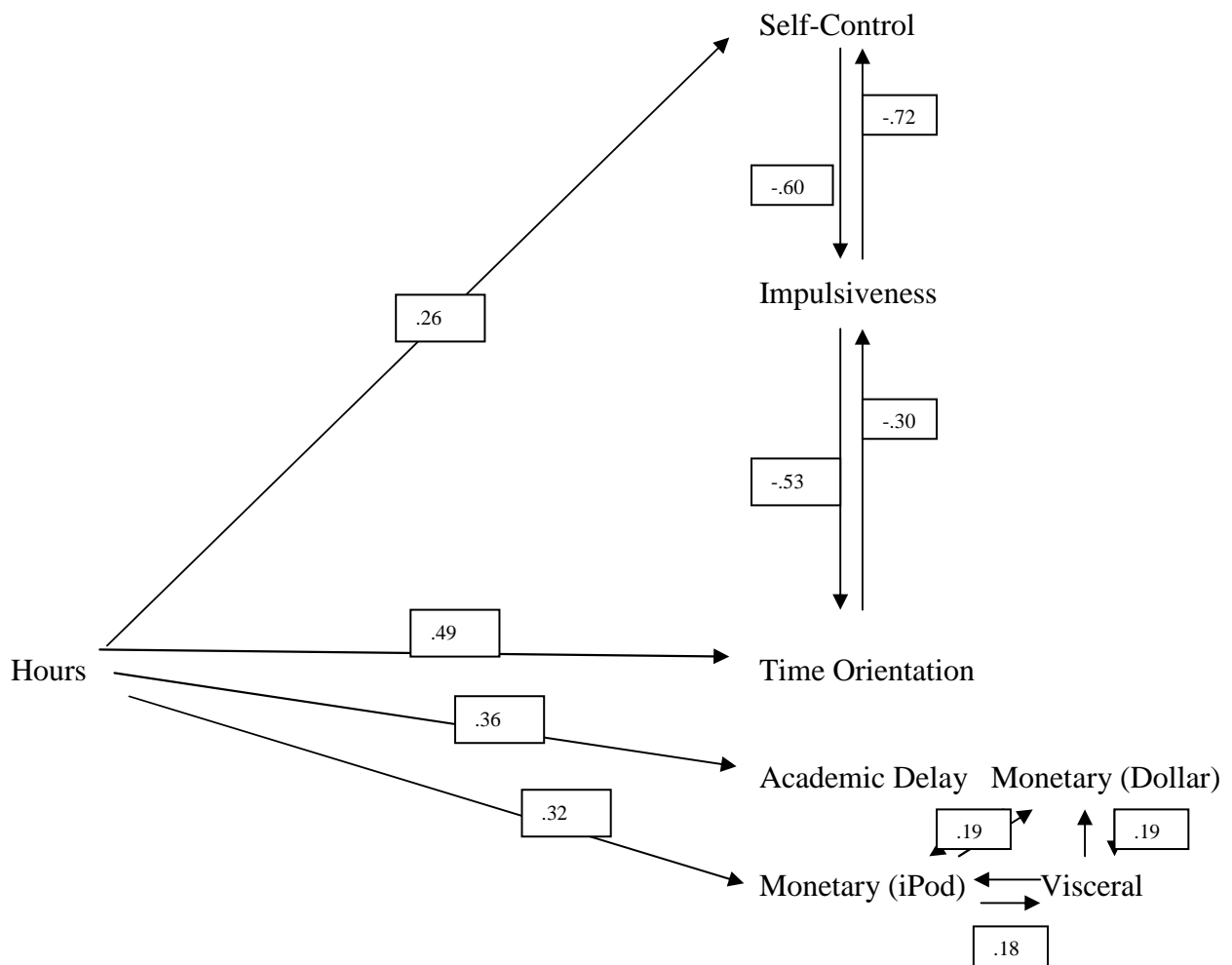
Note: n = 54

Model Collapsing each Group. In order to summarize both the high and low access groups, each group was included in one final series of multiple regression analyses. This final series took into account the grouping of each participant. At each stage, the group was included as a predictor. There were no significant results involving the group as a predictor. This model is available in Figure 4.3. Only the significant relationships are depicted.

Within the first step of the entire sample, time orientation (F (2, 76) = 17.17, r^2 = .32, $p <$ .001) was predicted by biological sex (β = .32, t = 3.31, p = .001). Visceral delay of gratification (F (4, 88) = 3.38, r^2 = .14, p = .01) was predicted by grade in school (College Student: β = -.27, t = -2.48, p = .02). This suggests that demographics were not highly important predictors. Further, these demographic variables are not under the control of the parent.

Within the second step of the entire sample, time orientation (F (2, 76) = 17.17, r^2 = .32, $p <$ .001) was predicted by impulsiveness (β = -.45, t = -4.66, $p <$ .001). Impulsiveness (F (2, 72) = 35.32, r^2 = .50, $p <$ .001) was predicted by self-control (β = -.58, t = -6.43, $p <$ .001) and time orientation (β = -.26, t = -2.93, p = .005). Self-control (F (1, 80) = 61.65, r^2 = .44, $p <$ .001) was predicted by impulsiveness (β = -.66, t = -7.85, $p <$ .001). These variables showed a similar relationship within each model. Impulsiveness was the centerpiece of this relationship, as it directly predicted both self-control and time orientation. However, time orientation and self-control were only indirectly related through impulsiveness.

Within the third step of the entire sample, visceral delay of gratification (F (4, 88) = 3.38, r^2 = .14, p = .01) was predicted by grade in school (College Student: β = -.27, t = -2.48, p = .02) and impulsiveness (β = -.27, t = -2.68, p = .009). Dollar monetary delay of gratification (F (1, 120) = 9.83, r^2 = .08, p = .002) was predicted by visceral delay of gratification (β = .28, t = 3.14, p = .002). Finally, iPod monetary delay of gratification (F (1, 119) = 4.66, r^2 = .04, p = .03) was

predicted by dollar delay of gratification ($\beta = .20$ $t = 2.16$, $p = .03$). The model depicting this is

displayed in Figure 4.3. This shows a different relationship than the previous models; however,

these variables are still related while academic delay of gratification is not significant within this

model.

Figure 4.3 *Model Built Including Both Highs and Lows*
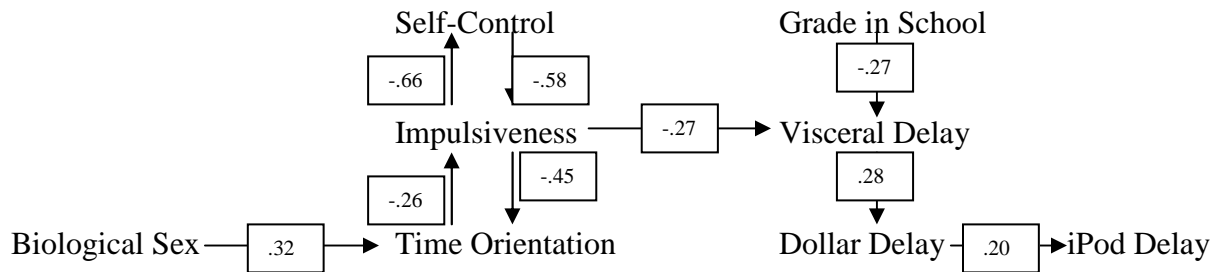
Note: n = 121

In summary, Hypothesis Two and Three were partially supported, and the research

questions found little relationship between the main variables. All models can be found in

Figures 4.1, 4.2, and 4.3.

CHAPTER FIVE

Discussion

The mediated world is changing at an ever-increasing pace. Many adapt to these changes while others are born into them. A world of changing media means a new world of media effects studies. This dissertation examined the effects of the availability of Internet and information over adolescent development. Middle school, high school, and college students were asked to report their own levels of self-control, impulsiveness, time orientation, and ability to delay gratification. Using this information, this dissertation tested the effects of media usage on each and aimed to build models that represent these relationships.

Forzano et al (2011) noted a relationship between self-control and ability to delay gratification. Within these findings, self-control was related to grade, visceral delay of gratification, impulsiveness, and time orientation. Specifically, self-control was lower for college students than both 6th and 9th graders. This finding is highly counter-intuitive and dissimilar to previous research in this area. Spencer-Smith and Anderson (2009) stated that an individual becomes more controlled as they age, and their executive functioning takes over. Though the results among the 9th graders may be ignored due to low sample size, the difference between the 6th graders and college students is interesting. Late adolescence is often associated with a need to thrill seek, or sensation-seeking behaviors (Somerville, Hare, & Casey, 2011). Sensation-seeking normally peaks around 14-15, an age that the 6th graders had not yet reached. However, sensation-seeking also declines over the period of late adolescence into adulthood

(Harden, & Tucker-Drob, 2011). It is possible that the 6th grade sample within this research had

not yet reached the sensation-seeking stage while the college students had not yet developed past

that stage. Sensation-seeking has been linked to self-regulation behaviors (Harden, & tucker-

Drob, 2011). However, this is unlikely as no other crucial differences were present amongst

these ages that would suggest there is a relationship here. Therefore, this is likely an anomaly of

this sample.

Self-control correlated with visceral delay of gratification, impulsiveness, and time

orientation. The correlation with visceral delay of gratification was very weak, however.

Further, no other analyses noted a strong relationship here. Self-control did show a strong

negative correlation with impulsiveness and a moderate correlation with time orientation. These

findings are important because they show similar relationships within the models built from this

data. Though no model displays a relationship between self-control and time orientation

directly, each model depicts an indirect relationship between the two. Further, each model

depicts a relationship with impulsiveness. This relationship suggests that a conceptual difference

between self-control and impulsiveness exists (Campbell, 2005; Forzano et al., 2010).

Hours spent with parents was the main predictor variable of self-control, appearing in the

low and high access model. This is important because it suggests that parents may play a role in

their child's self-control abilities. No other variable predicted self-control besides

impulsiveness. Self-control only predicted impulsiveness.

Forzano et al. (2011) and Anokhin et al. (2011) suggested that impulsiveness is related to

delay of gratification abilities. This research found that there were no differences between any

groups for impulsiveness. However, impulsiveness was correlated to monetary and visceral

delay of gratification. These were both negative correlations, suggesting that the less impulsive

are more likely to delay gratification. Further, impulsiveness displayed a negative relationship with both self-control and time orientation; suggesting that the less impulsive are more likely to display self-control and be future-oriented. These findings are all congruent with the previous literature review.

No demographic variables predicted impulsiveness. This is interesting because previous literature has found that many demographic variables may predict impulsiveness, including parental involvement (Abar, Fernandez, & Wood, 2011; Cohen-Vogel, Goldring, & Smrekar, 2010), age and biological sex (Esteban, & Tabernero, 2011), and intelligence (Spinella, & Miley, 2003). However, this study did not find any predictive relationships. It is possible that this is due to the wide range of ages within the sample of these findings. Interestingly, impulsiveness directly predicted both self-control and time orientation in every model. This suggests that no matter the media usage, these variables are likely to be related in this fashion. Finally, impulsiveness only predicted visceral delay of gratification in the model accounting for every participant. Impulsiveness predicted no other variable in any model.

Time orientation has previously shown a relationship to impulsiveness (Wittmann et al., 2011), self-control, and delay of gratification (D'Alessio et al., 2003; Romer et al., 2010). Time orientation was significantly correlated with both self-control and impulsiveness. This is important because these variables were closely related throughout each depiction of the model. This suggests that these variables may be highly important to each other in many scenarios, and can likely be tested in future research together.

Within the high access group, time orientation was predicted by hours spent with the parent. Within both the low access group and the entire sample, time orientation was predicted

by biological sex. Further, time orientation directly predicted impulsiveness in every model depiction. Time orientation predicted no other variables.

Delay of gratification was broken into four separate measures: monetary (involving a physical reward in an iPod), another monetary (involving money), academic, and visceral. These were used to measure delay of gratification abilities in multiple contexts. The monetary delay of gratification scenarios involved a physical reward- that of an iPod and that of money. The academic delay of gratification measured an individual's dedication to education and schooling, an action that has little immediate reward, but high long term reward. Academic delay of gratification tests the individual's ability to put off immediately gratifying behaviors today in order to succeed in the long term. Visceral delay of gratification measured the ability to delay gratification when an immediate, instinctually relevant reward was available.

Delay of gratification has shown relationships to each of the previous variables, as well as substance abuse behaviors and other detrimental behaviors (Anokhin et al., 2011). Understanding how the ability to delay gratification is affected by media usage is very important as the mediated world inches toward a world of instant gratification. Within this research, delay of gratification was tested within each age group (6th grade, 9th grade, 12th grade, and college juniors and seniors), within each access group (high or low), and the interaction between the two. Each age group was broken into highs, moderates, and lows for access to instant gratification media. The highs and lows were tested for differences in each of the four delay of gratification scenarios. Minimal differences were observed.

Within the college age sample, monetary delay of gratification (iPod) showed a difference between groups. The students were given a scenario that awarded them a brand new iPod Touch. They could claim the prize immediately and receive no free songs, they could claim

it in a week and receive 10 free songs, or they could claim it in a month and receive 50 free songs. Those individuals in the high access group were more likely to receive the iPod with no free songs whereas the individuals in the low access group were more likely to wait for free songs. This finding brings up a question of value. Are free songs valuable to an individual that already has high access to media? Or is a month-long wait too high of a cost to them? Further, this brings up a question of discrepancy in value. Are these individuals more likely to accept that they just won a brand new iPod and then undervalue the free song downloads? Because this finding is only within the college population, it is likely that the age of the participant has influenced this decision.

When the sample was collapsed to include all participants, a difference emerged for academic delay of gratification. Those individuals with high access were more likely to spend a night hanging out with friends than to work on a project that they might fail. Those individuals in the low access group were more likely to work on a project than to hang out with friends, no matter what. This finding was prevalent throughout analysis, and was included in the final model depicting the relationships between variables amongst all participants. This finding also brings up a question of value. The individuals with high access valued a good time over the reward of a passing grade on a paper. However, they were unlikely to hang out with friends if it meant certain failure on the paper or certain failure of a class, a high cost. This is interesting because a passing grade on a paper is truly not an immediate reward to these individuals, or it at least costs less than missing a night of social interaction. Over time, these poor grades may add up, though. If this decision is made continuously, it may affect the overall grades of the individual with high access, which in turn, will affect many aspects of life. Further, many other variables may affect this decision. What if the student does not like the teacher or the class?

This could be the subject of future research. This relationship was mediated by grade in school, however.

Each model depicted very different results for the delay of gratification scenarios. Within the high access group, only the demographic variable of hours spent with parents predicted any delay abilities, while the previously mentioned variables of self-control, impulsiveness, and time orientation did not predict any type of delay of gratification ability. Hours spent with the parent predicted academic and monetary (iPod) delay of gratification. This suggests that as the child becomes more accustomed to instant gratification media, a parent may still control their delay abilities in school by spending time with them. Further, iPod, dollar, and visceral delay of gratification were interrelated. This is similar to the low access group.

Within the low access group, self-control was also predicted by hours spent with the parent. This further suggests that the parent may play a role in a child's control abilities. Time orientation was predicted by biological sex. Time orientation, impulsiveness, and self-control were also related. Impulsiveness predicted self-control and time orientation. Similarly, time orientation and self-control predicted impulsiveness. However, self-control and time orientation were not directly related. Finally, similar to the high access group, iPod monetary delay was interrelated with visceral and dollar monetary delay of gratification.

Within the model depicting both groups, visceral delay of gratification was predicted by impulsiveness. Further, academic delay of gratification was not present within this model. Within this model, time orientation is predicted by biological sex. Impulsiveness, time orientation, and self-control showed a similar relationship to the previous models. Finally, grade in school also predicted visceral delay of gratification. Visceral delay predicted dollar delay. Dollar delay predicted iPod.

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What do these findings mean?

In summation, minimal results were found, especially amongst the delay of gratification variables. The focus of this dissertation is to determine how access to instant gratification affects ability to delay gratification throughout development. Because there were little significant findings along this line, it is likely that access to these media does not significantly affect ability to delay gratification in most forms.

The relationship between self-control, impulsiveness, and time orientation has become clearer. Multiple authors (Baumeister, 1994; Berkowitz, 2011; Forzano et al., 2011) have posited that impulsiveness is a dimension of self-control. These authors believed that in order to be impulsive, one must lack self-control, and that impulsiveness is only one dimension of self-control. This research found a similar relationship; however, self-control and impulsiveness shared a predictive relationship suggesting that these ideas are very similar. On the other hand, Wittmann et al. (2011) found a direct neurological link between time orientation and impulsiveness. This research found a similar relationship. Further, these variables were seen to predict each other as well. Interestingly, self-control and time orientation did not show a direct relationship in any direction; only an indirect relationship through impulsiveness. The previous literature review noted that the relationship between these variables was unclear; this finding supports that idea. However, these variables were related through impulsiveness.

Grade in school, biological sex, and hours spent with parents were the only demographic variables to display any relationships. This is important because both grade in school and biological sex cannot be manipulated by the parent. Therefore, it seems that the parent has little control over the child's self-control and delay abilities. However, the hours spent with a child was also a prominent predictor of these variables. Though a parent cannot control the sex or

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grade of their child, they can control the hours spent with them. This research suggests that spending time with your child can be crucial to their development. These demographics have been related to self-control and time orientation in previous research (i.e. Chapple et al., 2010; de Volder, & Lens, 1982; Gjeseme, 1979; Silveri et al., 2006; Spinella, & Miley, 2003; Tangney et al., 2004), therefore these findings are not surprising. Demographics such as the education of the parent showed no predictive effects on any of these variables.

Finally, when all grade levels were collapsed, the high access group showed a significant difference in academic delay of gratification, though this finding disappeared when controlling for grade. Specifically, the individuals in the high access group were more likely to put their grade on a project in danger by hanging out with friends instead of working on their project than were the individuals in the low access group. Further, when every participant was accounted for, this phenomenon was still present. This is interesting because of the long term effects that may be present from such an occurrence.

Academic delay of gratification is a "student's postponement of immediately available opportunities to satisfy impulses in favor of pursuing important academic rewards or goals that are temporally remote but ostensibly more valuable" (Bembenutty, 2011, p. 55). Academic delay of gratification is very similar to any other form of delay of gratification; however, academic delay of gratification is often a much more long term goal. While in school, a person is working toward a degree that will someday help them to get a valuable job. This degree is of high value, but it requires hard work for a long period of time. There is no immediate gratification available. Therefore academic delay of gratification is necessary to complete the goal of graduating from school. A lack of academic delay of gratification ability can lead to, in a worst case scenario, an individual dropping out of school. This clearly has long-term detrimental

effects. Within this research, the high access group was more likely to put off an assignment for a good time with friends. Though this may seem to be an overall harmless activity, this becomes potentially more detrimental when it occurs over time. Ignoring grades for a good time can add up to overall lower grades in school, which can lead to flunking or dropping out of school. Further, because this scenario was hypothetical, it is possible that the realistic outcomes could be greater. Attending a concert with friends is more appealing when it is realistic. If these situations were to occur in real life, the temptation may be stronger.

Bembenutty (2011a) stressed that academic delay of gratification is not simply a personality trait, but something that is learned and developed over time. Bembenutty noted that an individual learns to delay gratification over time. For this reason, finding that academic delay of gratification abilities may be affected by access to instant gratification media is important. As abilities develop, they become hindered by access to these media. Therefore, access to media may be a direct cause of inability to delay gratification in the academic context. The hours a child spends with their parents on a daily basis also showed a relationship to academic delay abilities. If academic delay is learned over time, the parent can play a very important role. These findings suggest that spending time with your child is crucial to their academic development.

Bembenutty (2007) wrote that "self-regulated learners engage in self-generated thoughts, actions, and feelings while pursuing academic goals. The most successful learners use appropriate learning strategies and maintain high levels of motivation" (p. 587). Self-regulated learning is associated with academic delay of gratification because of the necessity for motivation. A self-regulated learner is more likely to achieve academic excellence. A loss in

academic delay abilities signals a loss in motivation. This could lead to lower grades in school, lower achievement, test anxiety, and even dropping out of school.

If access to instant gratification media can affect academic delay abilities, it can lead to a multitude of deleterious outcomes. Besides leading to lower scores and achievement in the classroom, it may lead to dropping out of school altogether. However, Bembenutty (2002) and Zhang et al. (2011) have found that building self-efficacy and motivational strategies have helped to strengthen academic delay of gratification abilities. Because instant gratification media is not going away, it may be necessary to teach similar strategies to children in order to help them overcome possible issues that may occur from a loss of academic delay of gratification abilities. Future research should look into how motivation in school is affected by access to instant gratification media, and how intervention-type strategies may affect these outcomes.

How do these models compare to each other?

The final goal of this dissertation is to build a model that accurately reflects the relationships between these variables. Three models were built to depict these relationships- a model representing only those individuals with high access, a model representing only those individuals with low access, and a model representing those groups in concert. Surprisingly, these models were both very similar in some instances and very different in others.

To begin, each model consisted of different relationships with the demographic variables, but similar variables were prominent in each model. The most prominent of these variables were biological sex, grade in school, and hours spent with the parent. These relationships differed from model to model, but the patterns of relationships were similar. For example, hours spent with parent often predicted self-control, and biological sex often predicted time orientation. However, some relationships changed from the group to group. For example, hours spent with

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the parent predicted multiple variables within the high access model, but only self-control within the low access model. No model displayed any predictors for impulsiveness. Biological sex predicted time orientation in both the full participant model and the low access model. In summation, the demographic predictors were similar throughout, but showed different relationships as well.

Interestingly, within the high access group, only hours spent with parents predicted any delay of gratification variables. Within the low access group, no variables predicted delay of gratification. However, the delay of gratification measures of dollar, iPod, and visceral were similarly interrelated in both the high access and low access groups. Finally, while taking both groups into consideration, impulsiveness predicted visceral delay of gratification. Grade in school also predicted visceral delay of gratification.

The clearest outcome is the relationship between impulsiveness, self-control, and time orientation. These variables were consistently related in the same directions at similar beta weights throughout each model. This suggests that this relationship may be stronger than the other relationships within the model, and future research may test these relationships in a different sample. This is important because it may help to illuminate the relationship between these variables. Further tests can fully delineate these relationships.

Further possible predictors of delay of gratification

This research did not take into account multiple variables that could have played a role in delay of gratification ability. Further, it did not take into account the effect that access to media played in these abilities, either. To begin, the cognitive style (Epstein, 2003) of the participant was ignored. A cognitive style is in reference to an individual's desire to learn and make decisions through experience logic. A logical thinker is termed "rational" (p. 160), and one that

learns through experience is termed "experiential" (p. 160). Not only could these variables affect ability to delay gratification, but they could also affect media usage and access. It is also possible that an environment of high or low access to media may affect the cognitive style. Future research should take this variable into consideration. However, adaption-innovation cognitive styles have displayed no effects on delay of gratification abilities in the past (Foxall, Doyle, Yani-de-Soriano, & Wells, 2011).

Development was categorized by age; however, age may not predict maturity. Due to differing levels of development, stages of maturity are another feasible categorical system. Some 9th grade students may be more mature than their 12th grade counterparts, while some 6th graders may be more mature than some 9th graders. Age is not a rock solid predictor of maturity. Because this research is focused on maturity levels (i.e. the maturity of an individual to the point where they can control themselves and their impulses, etc.), using age as the sole category for maturity may not be fully encompassing of the concept. There are a multitude of developmental models that could be used to measure maturity levels (Lerner, Easterbrooks, Mistry, & Wiener, 2003). These can be used in future research as grouping variables.

Finally, Romer et al. (2010) found that sensation seeking and ability to delay gratification were related. Interestingly, those high in sensation seeking were more likely to be higher in delay abilities because being risky taught an individual to value long term rewards. Further, delay abilities were found to be affected by sensation seeking, but also had a direct effect on risky behaviors. Therefore, sensation seeking is an important variable that should be included in future research. Sensation seeking may also explain the relationship between age and self-control found in this research.

What is the contribution of this research?

Theoretically, this research adds to the study of the structure of media access. The structure of media access is changing, as information is becoming more available in new and different places everyday. This research is focused on the effects of this new structure, and therefore is important to the understanding of how this affects our cognitive processing. Because little outcomes were determined to exist due solely to media access, this research supports the idea that mediated access is advantageous to society.

Further, this research adds methodologically to the literature. By comparing the high access groups to the low access groups as has been done previously, this research brings further credibility to this methodological technique.

Limitations

This research has several limitations. There were issues with both the methodology and the sample. One particularly glaring result suggests that there may have been issues with the survey instrument. 6th grade students reported a higher level of self-control than did college students. There can be many explanations for this, including the level of understanding of the college students and the level of thought put into each item by college students. For example, a college student is more likely to think deeply and thoughtfully about their responses than a 6th grader. A short scale measuring need for cognition should have been included to control for the thoughtfulness of each response. A 6th grader is less likely to recognize the depth of the likert scale than a college student.

Further, most research suggests that self-control will only get better with age. It is slightly possible that a 6th grader leads a much more regimented lifestyle and schedule than a

college student, but a college student needs self-regulation in order to succeed. Therefore, it is possible that the scale itself was incorrectly applied to this project.

There were multiple issues with the sample as well. First, the sample size was much smaller than was desired. After recruiting 1,300 middle and high school students, a total of 168 students agreed to participate. Originally, 150 students per grade level were to be participants in order to create comparably sized groups. However, this number was difficult to reach. Of the eight school districts that were invited to participate, only two agreed. Within the school districts, only four schools took full participation. Multiple schools agreed to participate, but they never collected returned consent forms nor did they ever distribute the survey. Therefore, getting to 150 participants per group would be very difficult.

The lack of participants led to a major issue. The sizes of the groups were far too small for any meaningful analysis. Therefore, most meaningful analyses occurred when the entire sample was collapsed. For example, those analyses involving the 9th grade participants were much less meaningful because they only included approximately five students in total (once they were broken into groups). Further, the 12th grade participants were also less valuable due to sample size. However, the sample size amongst the 6th graders and college students were nearly ideal.

The delay of gratification measures did not reach an acceptable reliability when computed as a whole. Therefore, the measures were broken into four separate measures of delay of gratification. This is both an advantage and disadvantage because the differences between each type of delay of gratification ability were obvious, but no full measure of delay of gratification was available.

It is possible that issues arose with the scenarios that were created. Though they were pre-tested, the reality of each scenario is questionable. In all likelihood, the academic delay of gratification scenario is the most likely and generalizeable to the entire population. The scenarios regarding the iPod, money, and the cookies bring up questions of value. Free songs may not be a motivator to many 6th graders as they likely have little concept of the meaning of a dollar. Further, the difference between $7 and $10 dollars is likely negligible to a college student. Finally, cookies are likely of little worth to a college student that has the ability to buy their own, or may be on a diet, or any other intervening variable.

It is possible that this research was done too early. Or that this should have been completed on a younger sample. Internet on a cell phone has not been a hugely popular feature for very long. Therefore, these students may not have fully grown up with this technology.

The methodology is likely flawed. In order to communicate the value of each scenario, an experiment may have been necessary. When choosing between $7 or $10, a tangible $10 bill is more motivating than an imaginary bill. Further, a visceral cue is, by nature, more tempting in person. Food is also more tempting when it is tangible. Therefore, an experiment is the more logical methodology. However, it was not as reasonable. It would be unethical to randomize groups for this topic, and recruiting participants was an issue.

The survey was completed in school by the middle school and high school students, while the survey was completed in an area of the college student's choosing. This can create many effects in the sample as it is possible that other children could see each other's answers, the topics could be discussed amongst the class, and so on. Controlling for this issue would have been difficult as each school requested this data collection technique before accepting participation. Children may have viewed these scenarios as a test because they were taking them

in school. Further, the college students were asked to report on the past, which could result in a recall bias. Each question referred to "growing up," however growing up was never defined for the college students. It is possible that each student reported on a different time in their lives because this was not defined.

Finally, due to the nature of the findings and the groups, more sophisticated statistical analyses were unnecessary and not employed.

Future Research

Though there were little significant findings within this dissertation, future avenues for research are numerous. To begin, the effects of instant gratification media on academic delay of gratification and motivation in the classroom inspire multiple lines of research including determining long and short term effects, personality characteristics that are most prevalent within this effect, and even further supporting this finding.

The relationship amongst self-control, impulsiveness, and time orientation may be fully explored, especially as it pertains to the relationship found in these models. Because this relationship was consistent within each group, it is likely that this model may be used to apply to further research projects. However, people may be naturally more self-controlled, or naturally inclined to a future time orientation. Future research must take this into account. How does that affect these relationships?

This research should likely be repeated within each of the chosen age groups with a focus on each age group alone. This can also be repeated amongst different age groups to test for effects. Though the scenarios were likely not as realistic as previously tested, new scenarios may be created to test if an effect exists.

This dissertation studied how access to instant gratification media affected developing age groups that were born into this mediated world. How does access affect those that are adapting to the new mediated world? Perhaps an older sample would be interesting to test as well.

Many personality characteristics may be affected by high access to instant gratification media over time. How does this affect loyalty? How does this affect boredom and habituation? How does this affect an individual's perception of value and reward? Future research should compare these characteristics between access groups. Further research can be focused on the effects of access on multiple variables, including how individuals make decisions or manage their mood. Because media is changing, now is an important time to compare the differences between these groups.

Finally, this research should be completed as an experiment. These findings could benefit greatly from determining a causal relationship. However, a causal relationship may be unethical or difficult to determine. It is unethical to expose your sample to a treatment that may result in so many deleterious effects. However, it is difficult to determine causality without full control over the treatment.

Conclusion

In conclusion, this dissertation was focused on the effects of access to instant gratification media throughout development. It was found that very few effects were present; however, differences arose between the group with high access to instant gratification media in comparison to the group with low access in regard to academic delay of gratification. Further, a predictive relationship was determined to occur between impulsiveness, self-control, and time orientation.

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Appendix A

Access Survey

How many computers do you have in your house?

      ___0

      ___1

      ___2

      ___3

      ___4

      ___5 or more

Do you have a computer in your bedroom?

      _____-Yes

      _____-No

Does your home have the Internet?

      _____-Yes

      _____-No

How fast is your Internet?

      _____-Slow

      _____-Not slow or fast

      _____-Fast

Do your parents have any rules/restrictions regarding your Internet use? Please list all of them.

How many hours per day do you use the Internet at your house?

       ___0

       ___1

       ___2

       ___3

       ___4

       ___5 or more

Do you have a cell phone?

       _____-Yes

       _____-No

If you do have a cell phone, do you have the Internet on your phone?

       _____-Yes

       _____-No

If you do have a cell phone, can you call and text as much as you want to?

       _____-Yes

       _____-No

Do your parents have any rules/restrictions regarding your cell phone use? Please list all of them.

How many hours a day do you use the Internet on your cell phone?

       ___0

       ___1

_____2

_____3

_____4

_____5 or more

Do you have a laptop, iPad, or any other device with the Internet (video games, etc.)?

_____-Yes

_____-No

Does your home have wireless Internet?

_____-Yes

_____-No

Does your laptop, etc. have the ability to access wireless Internet?

_____-Yes

_____-No

Do your parents have any rules/restrictions regarding your use of these devices (Laptops, iPads, video games, etc.)? Please list all of them.

How many hours a day do you use these devices?

_____0

_____1

_____2

_____3

_____4

_____5 or more

What is your parent's education?

    ___Some High School

    ___ High School Graduate

    ___Some College

    ___Associate's Degree

    ___Bachelor's Degree

    ___Master's Degree

    ___Ph.D., Law, M.D., or Equivalent

    ___I don't know

What is your parent's job?

How many hours a day do you spend with your parents?

    ___0

    ___1

    ___2

    ___3

    ___4

    ___5 or more

My Age: _____

I am in:

    ___6th Grade

    ___9th Grade

___12th Grade

___College

I live in:

___Hale County

___Jefferson County

___Tuscaloosa County

In school, I usually get:

___A's

___B's

___C's

___D's

___F's

I am:

___Male

___Female

My Ethnicity:

_____Caucasian (White)

_____Black/African American

_____Hispanic

_____Asian/Pacific Islander

_____Native American/Alaska Native

_____Other/Multi-Racial

Appendix B

Delay of Gratification Abilities Measure

Directions: Please answer each question <u>truthfully</u>.

1. (Monetary Delay Measure- iPod) Imagine you have just won an iPod Touch. You can have it now with no free songs, or you can wait and also win free songs. I would

   a. Claim the iPod Touch today and receive 0 free songs

   b. Claim the iPod Touch in one week and receive 10 free songs

   c. Claim the iPod Touch in one month and receive 50 free songs

2. (Monetary Delay Measure) I would rather have:

   a. $7 <u>now</u>

   b. $10 in a <u>week</u>?

   I would rather have:

4.4 $7 <u>now</u>

4.5 $10 in a <u>month</u>?

   I would rather have:

   a. $7 <u>now</u>

   b. $10 in a <u>year</u>?

3. (Academic Delay of Gratification) You have a homework assignment due tomorrow that you have not done yet. Your friend calls you and wants to hang out. You can stay home and complete the homework assignment but not hang out, or you can go hang out, and never complete the homework. I would:

> a. Go hang out
>
> b. Stay home and do my homework

What if it was a big class project and you might fail the class if you don't hand it in? I would:

> a. Go hang out
>
> b. Stay home and do my homework

What if it is a big test and you will fail the class if you don't study? I would:

> a. Go hang out
>
> b. Stay home and study

4. (Visceral Delay of Gratification) Imagine that your favorite cookie is placed right in front of you. You can eat one now, or get two later. I would rather have:

> a. One cookie now
>
> b. Two cookies in one half hour

I would rather have:

> a. One cookie now
>
> b. Two cookies in an hour

I would rather have:

> a. One cookie now
>
> b. Two cookies in two hours

Short Form Self-Control Scale (Tangney et al., 2004)

Directions: Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

Not at All   Neutral   Very Much

1   2   3   4   5

1. I am good at resisting temptation.

2. I have a hard time breaking bad habits. I

3. I am lazy. I

4. I say inappropriate things. I

5. I do certain things that are bad for me, if they are fun. I

6. I refuse things that are bad for me.

7. I wish I had more self-discipline. I

8. People would say that I have iron-self-discipline.

9. Pleasure and fun sometimes keep me from getting work done. I

10. I have trouble concentrating. I

11. I am able to work effectively toward long-term goals.

12. Sometimes, I can't stop myself from doing something, even if I know it's wrong. I

13. I often act without thinking through all of the alternatives. I

I = Reverse Coded

Appendix D

Short Form Barratt Impulsiveness Scale for Adolescents (Fossati et al., 2002)

Directions: Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

Not at All		Neutral		Very Much
1	2	3	4	5

1. I do things without thinking.

2. I am happy-go-lucky.

3. I do not "pay attention."

4. My thoughts are racing too fast.

5. I am self-controlled. I

6. I concentrate easily. I

7. I am a "saver." I

8. I cannot sit still at movies or school.

9. I say things without thinking.

10. I get easily bored when solving thought problems.

11. I change friends.

12. I buy things on impulse.

13. I spend more than I should.

14. When I think about something, other thoughts pop up in my mind.

15. I am more interested in the present than the future.

16. I am restless at the movies or lectures.

17. I plan what I have to do. I

18. I plan my spare time. I

19. I like to think carefully about things. I

20. I plan for my future. I

21. I like to think about complex problems. I

22. I am a great thinker. I

23. I like to play chess or checkers. I

24. I am future oriented. I

25. I make up my mind quickly.

26. I change my mind about what I will do when I grow up.

27. I act "on impulse."

28. I act on the spur of a moment.

Appendix E

Short Form Stanford Time Perspective Inventory (D'Alessio et al., 2003)

Directions: Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

Not at All   Neutral   Very Much

1   2   3   4   5

1. I believe that getting together with one's friends to party is one of life's important pleasures.

2. I believe that a person's day should be planned ahead each morning.

3. If things don't get done on time, I don't worry about it.

4. It gives me pleasure to think about my past.

5. When I want to achieve something, I set goals and consider specific means for reaching those goals.

6. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.

7. I believe that my future is beautiful and well planned.

8. I try to live my life as fully as possible one day at a time.

9. It doesn't make sense to worry about the future since there is nothing to do about it anyway.

10. When I have money I like playing and betting.

11. It upsets me to be late for appointments.

12. I do things impulsively and I take decisions at the moment.

13. I feel that it's more important to enjoy what you're doing than to get work done on time.

14. I don't make friends that are important for me in the future, if they don't like me now.

15. I'm inclined to lose my self-control if someone provokes me.

16. It upsets me when people are late for appointments.

17. When I go to parties I get drunk.

18. I complete projects on time by making steady progress.

19. I take risks to put excitement in my life.

20. I make lists of things to do.

21. I keep working at difficult, uninteresting tasks if they will help me get ahead.

22. I am able to resist temptations when I know that there is work to be done.

Questionnaire

Directions: Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

Not at All		Neutral		Very Much
1	2	3	4	5

_____1. I believe that getting together with one's friends to party is one of life's important pleasures.

_____2. I believe that a person's day should be planned ahead each morning.

_____3. If things don't get done on time, I don't worry about it.

_____4. It gives me pleasure to think about my past.

_____5. When I want to achieve something, I set goals and consider specific means for reaching those goals.

_____6. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.

_____7. I believe that my future is beautiful and well planned.

_____8. I try to live my life as fully as possible one day at a time.

_____9. It doesn't make sense to worry about the future since there is nothing to do about it anyway.

_____10. When I have money I like playing and betting.

_____11. It upsets me to be late for appointments.

Not at All		Neutral		Very Much
1	2	3	4	5

_____12. I do things impulsively and I take decisions at the moment.

_____13. I feel that it's more important to enjoy what you're doing than to get work done on time.

_____14. I'm inclined to lose my self-control if someone provokes me.

_____15. It upsets me when people are late for appointments.

_____16. I complete projects on time by making steady progress.

_____17. I take risks to put excitement in my life.

_____18. I make lists of things to do.

_____19. I keep working at difficult, uninteresting tasks if they will help me get ahead.

_____20. I am able to resist temptations when I know that there is work to be done.

_____21. I do things without thinking.

_____22. I am happy-go-lucky.

_____23. I do not "pay attention."

_____24. My thoughts are racing too fast.

_____25. I am self-controlled.

_____26. I concentrate easily.

_____27. I am a "saver."

_____28. I cannot sit still at movies or school.

_____29. I say things without thinking.

_____30. I get easily bored when solving thought problems.

_____31. I change friends.

_____32. I buy things on impulse.

_____33. I spend more than I should.

_____34. When I think about something, other thoughts pop up in my mind.

_____35. I am more interested in the present than the future.

_____36. I am restless at the movies or lectures.

_____37. I plan what I have to do.

Not at All		Neutral		Very Much
1	2	3	4	5

_____38. I plan my spare time.

_____39. I like to think carefully about things.

_____40. I plan for my future.

_____41. I like to think about complex problems.

_____42. I am a great thinker.

_____43. I like to play chess or checkers.

_____44. I am future oriented.

_____45. I make up my mind quickly.

_____46. I change my mind about what I will do when I grow up.

_____47. I act "on impulse."

_____48. I act on the spur of a moment.

_____49. I am good at resisting temptation.

_____50. I have a hard time breaking bad habits.

_____51. I am lazy.

_____52. I say inappropriate things.

_____53. I do certain things that are bad for me, if they are fun.

_____54. I refuse things that are bad for me.

_____55. I wish I had more self-discipline.

_____56. People would say that I have iron-self-discipline.

_____57. Pleasure and fun sometimes keep me from getting work done.

_____58. I have trouble concentrating.

_____59. I am able to work effectively toward long-term goals.

_____60. Sometimes, I can't stop myself from doing something, even if I know it's wrong.

_____61. I often act without thinking through all of the alternatives.

Directions: Please answer each question <u>truthfully</u>.

3. (Monetary Delay Measure- iPod) Imagine you have just won an iPod Touch. You can have it now with no free songs, or you can wait and also win free songs. I would

   a. Claim the iPod Touch today and receive 0 free songs

   b. Claim the iPod Touch in one week and receive 10 free songs

   c. Claim the iPod Touch in one month and receive 50 free songs

4. (Monetary Delay Measure) I would rather have:

   a. $7 <u>now</u>

   b. $10 in a <u>week</u>?

   I would rather have:

4.6 $7 <u>now</u>

4.7 $10 in a <u>month</u>?

   I would rather have:

   c. $7 <u>now</u>

   d. $10 in a <u>year</u>?

3. (Academic Delay of Gratification) You have a homework assignment due tomorrow that you have not done yet. Your friend calls you and wants to hang out. You can stay home and complete the homework assignment but not hang out, or you can go hang out, and never complete the homework. I would:

   a. Go hang out

   b. Stay home and do my homework

What if it was a big class project and you might fail the class if you don't hand it in? I would:

     c. Go hang out

     d. Stay home and do my homework

What if it is a big test and you will fail the class if you don't study? I would:

     c. Go hang out

     d. Stay home and study

4. (Visceral Delay of Gratification) Imagine that your favorite cookie is placed right in front of you. You can eat one now, or get two later. I would rather have:

     c. One cookie now

     d. Two cookies in one half hour

I would rather have:

    a. One cookie now

    b. Two cookies in an hour

I would rather have:

    a. One cookie now

    b. Two cookies in two hours

How many computers do you have in your house?

      ___0

      ___1

      ___2

      ___3

      ___4

      ___5 or more

Do you have a computer in your bedroom?

      _____-Yes

      _____-No

Does your home have the Internet?

      _____-Yes

      _____-No

How fast is your Internet?

      _____-Slow

      _____-Not slow or fast

      _____-Fast

Do your parents have any rules/restrictions regarding your Internet use? Please list all of them.

How many hours per day do you use the Internet at your house?

      ___0

      ___1

      ___2

___3

___4

___5 or more

Do you have a cell phone?

_____-Yes

_____-No

If you do have a cell phone, do you have the Internet on your phone?

_____-Yes

_____-No

If you do have a cell phone, can you call and text as much as you want to?

_____-Yes

_____-No

Do your parents have any rules/restrictions regarding your cell phone use? Please list all of them.

How many hours a day do you use the Internet on your cell phone?

___0

___1

___2

___3

___4

___5 or more

Do you have a laptop, iPad, or any other device with the Internet (video games, etc.)?

     _____-Yes

     _____-No

Does your home have wireless Internet?

     _____-Yes

     _____-No

Does your laptop, etc. have the ability to access wireless Internet?

     _____-Yes

     _____-No

Do your parents have any rules/restrictions regarding your use of these devices (Laptops, iPads,

video games, etc.)? Please list all of them.

How many hours a day do you use these devices?

     ___0

     ___1

     ___2

     ___3

     ___4

     ___5 or more

What is your parent's education?

     ___Some High School

     ___ High School Graduate

     ___Some College

___Associate's Degree

___Bachelor's Degree

___Master's Degree

___Ph.D., Law, M.D., or Equivalent

___I don't know

What is your parent's job?

How many hours a day do you spend with your parents?

___0

___1

___2

___3

___4

___5 or more

My Age: _____

I am in:

___6[th] Grade

___9[th] Grade

___12[th] Grade

___College

I live in:

     ___Hale County

     ___Jefferson County

     ___Tuscaloosa County

In school, I usually get:

     ___A's

     ___B's

     ___C's

     ___D's

     ___F's

I am:

     ___Male

     ___Female

My Ethnicity:

     _____Caucasian (White)

     _____Black/African American

     _____Hispanic

     _____Asian/Pacific Islander

     _____Native American/Alaska Native

     _____Other/Multi-Racial

Appendix G

Internet Availability Survey as Manipulated for College Students

Growing up, how many computers did you have in your house?

    ___0

    ___1

    ___2

    ___3

    ___4

    ___5 or more

Did you have a computer in your bedroom?

    _____-Yes

    _____-No

Did your home have the Internet?

    _____-Yes

    _____-No

How fast was your Internet?

    _____-Slow

    _____-Not slow or fast

    _____-Fast

Did your parents have any rules/restrictions regarding your Internet use? Please list all of them.

Growing up, how many hours per day did you use the Internet at your house?

       ___0

       ___1

       ___2

       ___3

       ___4

       ___5 or more

Growing up, did you have a cell phone?

       _____-Yes

       _____-No

If you did have a cell phone, did you have the Internet on your phone?

       _____-Yes

       _____-No

If you did have a cell phone, could you call and text as much as you wanted to?

       _____-Yes

       _____-No

Did your parents have any rules/restrictions regarding your cell phone use? Please list all of them.

Growing up, how many hours a day did you use the Internet on your cell phone?

     ___0

     ___1

     ___2

     ___3

     ___4

     ___5 or more

Growing up, did you have a laptop, iPad, or any other device with the Internet (video games, etc.)?

     _____-Yes

     _____-No

Did your home have wireless Internet?

     _____-Yes

     _____-No

Did your laptop, etc. have the ability to access wireless Internet?

     _____-Yes

     _____-No

Did your parents have any rules/restrictions regarding your use of these devices (Laptops, iPads, video games, etc.)? Please list all of them.

Growing up, how many hours a day did you use these devices?

     ___0

     ___1

     ___2

     ___3

     ___4

     ___5 or more

What is your parent's education?

     ___Some High School

     ___ High School Graduate

     ___Some College

     ___Associate's Degree

     ___Bachelor's Degree

     ___Master's Degree

     ___Ph.D., Law, M.D., or Equivalent

     ___I don't know

What is your parent's job?

How many hours a day do you spend with your parents?

     ___0

     ___1

     ___2

     ___3

    ___4

    ___5 or more

My Age: _____

I am in:

    ___6[th] Grade

    ___9[th] Grade

    ___12[th] Grade

    ___College

I live in:

    ___Hale County

    ___Jefferson County

    ___Tuscaloosa County

In school, I usually get:

    ___A's

    ___B's

    ___C's

    ___D's

    ___F's

I am:

    ___Male

    ___Female

My Ethnicity:

     _____Caucasian (White)

     _____Black/African American

     _____Hispanic

     _____Asian/Pacific Islander

     _____Native American/Alaska Native

     _____Other/Multi-Racial

January 9, 2012

Office for Research

Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R   E   S   E   A   R   C   H

Thomas Meade
Department of Communication Studies
College of Communication & Information Sciences
The University of Alabama

Re: IRB # 12-OR-007 "Testing Ability to Delay Gratification throughout
Development"

Dear Mr. Meade:

The University of Alabama Institutional Review Board has granted approval for
your proposed research.

**Please be aware that approval is being issued to conduct research within the
Jefferson and Hale County School Districts at this time. Should additional
school districts be added at a later date, a modification request must be
submitted to and approved by the UA IRB prior to conducting research
within those districts.**

Your application has been given expedited approval according to 45 CFR part
46. You have also been granted the requested waiver of documentation of
informed consent for the college student population.   Approval has been given
under expedited review category 7 as outlined below:

*(7) Research on individual or group characteristics or behavior (including, but
not limited to, research on perception, cognition, motivation, identity, language,
communication, cultural beliefs or practices, and social behavior) or research
employing survey, interview, oral history, focus group, program evaluation,
human factors evaluation, or quality assurance methodologies.*

Your application will expire on January 8, 2013. If your research will continue
beyond this date, complete the relevant portions of the IRB Renewal Application.
If you wish to modify the application, complete the Modification of an Approved
Protocol Form. Changes in this study cannot be initiated without IRB approval,
except when necessary to eliminate apparent immediate hazards to participants.
When the study closes, complete the appropriate portions of the IRB Study
Closure Form.

Please use reproductions of the IRB approved informed consent form to obtain
consent from your participants.

Should you need to submit any further correspondence regarding this proposal,
please include the above application number.

Good luck with your research.