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Impact of Computer-Mediated Communication Duration on Adolescent Social Self-Efficacy, Social Anxiety, and Depression

Melaney Laine Davis-McShan
Walden University

Walden University

College of Social and Behavioral Sciences

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Melaney Laine Davis-McShan

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Review Committee
Dr. Amy Sickel, Committee Chairperson, Psychology Faculty
Dr. Charlton Coles, Committee Member, Psychology Faculty
Dr. Thomas Trocchio, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

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Abstract

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Melaney Laine Davis-McShan

MEd, Prairie View A&M University, 1993

BFA, Carnegie-Mellon University, 1980

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Research suggests that Internet and cell phone overuse may result in lower levels of social skills and encourage isolation from peers. Less clear is whether the duration of computer-mediated communication (CMC) influences adolescent perception of their social skills competency or emotional health. This research was guided by the social cognitive theory, which suggests that social self-efficacy (SSE), the belief that they have the skills to engage successfully with others in conversation and social activities, develops from mastery experiences that regulate thought, motivation, and action. This quantitative cross-sectional survey design utilized a convenience sample of 49 adolescents ages 11-19, living in Austin County, TX, to examine the impact of CMC duration on adolescent SSE, social anxiety, and depression. Regression analyses indicated CMC duration did not significantly affect SSE, social anxiety, or depression at the $p <$. 05 level. Computer-mediated communication duration did influence SSE at the $p = .07$ level, suggesting a trend toward statistical significance. Post hoc analysis revealed a significant interaction at the $p < .05$ level when CMC restriction severity was tested as a moderator in the CMC duration–SSE relationship. These findings suggest that the interaction between CMC duration and restrictions may influence social self-efficacy. Additional research on the relationship between CMC and adolescent psychosocial health would be helpful, particularly using larger and more generalizable samples. This study may inform the efforts of authority figures to adolescents, specifically, on the ways in which technological changes affect adolescent social development and will help to ensure that adolescents are safe, psychologically healthy, and able to maintain healthy relationships.

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Dedication

I dedicate this dissertation to my husband, Buddy, and my young adult children, Wesley and Paige. Wesley and Paige, it seems like you grew up during the time I was working on this project, and Buddy, it seems like we grew old during the process. Buddy, your strength and confidence in me kept me going through this whole project. You never failed to help me feel smart or deserving of this degree. Wesley, I hope you remember that you can do this and so much more; so, don't ever give up on yourself. Paige, I am so proud that you want to do what I do within your own interests. It is such an honor to be your mother and I look forward to seeing you forge ahead for your dreams. Do not give up. I could not have completed the life dream of mine if it were not for all of your dedication to my dream and me. I appreciate you all for every time you did for me and did without me because I was writing or studying or researching. I pray that you are rewarded with a satisfying life, with all of your dreams coming to fruition. Thank you for helping me with mine.

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Chapter 1: Introduction to the Study

Introduction

Over the past decade, adolescents have used the Internet and cellular telephones for communication with their friends at rising rates (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). Pew reported that when adolescents socialize, they tend to rely on computer-mediated communication (CMC), a text-based process that requires people to participate in a message interchange where at some point there is a computerized medium exchange (Spitzberg, 2006), as a replacement for face-to-face socialization (Madden, et al., 2013). The increase in duration of CMC use may inhibit relationship nurturance and lead to lower levels of emotional stability, including social anxiety and depression (Kraut, Patterson, Lundmark, Kiesler, & Mukopadhyay, 1998; Stoll, 1995; Valkenburg & Peter, 2007b). Listed was adolescent depression, as one of the major risk factors for youth suicide (National Institute of Mental Health [NIMH], 2007). Another study indicated that the increase in depression from late childhood to early adolescence might be a precursor for more severe psychopathological symptoms continuing into adulthood (Keenan-Miller, Hammen, & Brennan, 2007). These social contextual risk factors may contribute to depressive moods in adolescents (Cicchetti & Toth, 1998), and can impact adolescent self-efficacy. Adolescent self-efficacy is the belief that they have the skills to engage successfully with others in conversation, social activities, being helpful, or showing friendly behavior with an impression of confidence (Connolly, 1989). The body of research needs more study on the relationship between adolescent SSE and CMC duration.

In this study, I examined the duration of adolescent CMC use (i.e., using any kind of communication that requires a computer program or application to send the information) with friends and how the duration of this type of communication impacted adolescent social self-efficacy, social anxiety, and depression. Studying the impact that CMC duration has on adolescent social self-efficacy, social anxiety, and depression has several positive social change implications. First, adding to the research on child and adolescent social development will provide contemporary perspectives not yet explored—specifically, how CMC use spans from adolescent social skill building to communication applications. Second, parents may better understand if this technology is an asset or a hindrance as their child develops social skills and establishes confidence in social relationships. Educators may consider broadening their scope of learning tools to include the technology that is a central part of adolescents' daily lives.

In this chapter, I provide an overview and introduce the study by giving the background and purpose of the study, and describing the problem statement, research questions, and hypotheses. I also discuss the theoretical framework, nature, and significance of the study, as well as the assumptions, limitations, and scope of delimitations.

Background of the Study

Joinson (2003) discussed the evolution of communication, from speaking face-to-face, using tools such as the pen to write letters, using a telephone, and now CMC. Joinson contended CMC is a tool used to make a task easier, just as individuals use the pen and telephone. The outcomes of using CMC may be different. For instance, when a

person uses a text message to communicate, facial expressions, body language, and voice inflections are lost; therefore, the message may not be what the sender intended. There may be wider social changes stemming from a presumably simple task as well (Joinson, 2003), because an easier task changes the way an individual thinks and approaches a task. By way of an example, Joinson described contrasted shopping (a task) with a shopping list (a tool), rather than leaving the task to the individual's memory. Computer-mediated communication may play an important role in widening an individual's social circle, as well as helping them to keep in touch with current friends and family and feel more confident in their social ability.

Researchers have examined the effects of social isolation, anxiety, and depression related to CMC duration in adults (Kraut et al, 1998; McKenna & Bargh, 2000; Moody, 2001; Shapiro, 1999). Researchers have shown that computer-mediated communication has both encouraged social isolation and decreased face-to-face contact with friends (Humphreys, 2008) and keep adults connected around the clock (Wellman, 2001). Researchers know less about how CMC use affects adolescents. The average age of CMC users has decreased over the past decade (Madden et al., 2013). Elementary school youth often own cell phones, computers, electronic notebooks, and other electronic devices used for entertainment. Parents are willing to allow their children to own these devices for various reasons, including their own need to be able to contact the child at any time, perceived safety when the child has access to help through these devices, and the desire to keep their children occupied while they are unavailable (Madden et. al., 2013).

The amount or duration of adolescent CMC use may affect some adolescents' social self-efficacy as they rely on using CMC to be social, make friends, and feel included in groups of peers who share their age or interests. Computer-mediated communication use may present some challenges related to an adolescents' perceived self-efficacy in relationship development and maintenance, as well as adolescent emotional stability (e.g., social anxiety and depression). The prevalence of relationships that were previously face-to-face in nature is decreasing, while at the same time, duration of adolescent CMC use is increasing. Social anxiety and depression are also on the rise in adolescents (Derks, Fischer, & Bos, 2007); therefore, it is warranted that examination be done regarding adolescent social self-efficacy, social anxiety, and depression when there is an increased use of CMC duration (Livingstone, Olafsson, & Staksrud, 2013).

Self-efficacy is a key cognitive process that impacts healthy emotional functioning. Positive social self-efficacy development in adolescence relies in part on reactions and feedback from teachers, peers, and family modeling, while negative influences can lower a young person's self-efficacy (Joinson, 2003). According to Piaget's (as cited in Griggs, 2012) theory of cognitive development (1936) (stage 3), from ages 6-12, children gain a fuller understanding of mental operations; however, their logical thinking ability is restricted to concrete events. As the child reaches the formal operational stage 5 (older than 12 years) they start to think more abstractly and can exercise hypothetical-deductive thought. These developmental differences may be important as the younger adolescent participates in CMC activities.

Bandura's (1986) social cognitive theory suggests that peer influence on self-efficacy occurs because some adolescents are not familiar with many tasks (e.g., texting or gaming), and they use their friend's behaviors to gauge their own self-efficacy (Schunk & Meese, 2006). The social self-efficacy distinction specifically related to social functioning and relationships fit under the broad self-efficacy construct. Social functioning is an important part of adolescent development. The transition from middle school to high school is a complex time for the adolescent and brings changes in relations with teachers and peer groups. The influence of the peer is especially important at this time because the peer contributes to the adolescents' view of themselves and their socialization practices (Schunk & Meese, 2006).

Derks, Fischer, & Bos, (2008) attempted to determine if there are differences in emotional expression, such as anger, sadness, or happiness, between face-to-face versus CMC interactions. Derks et al. found that there was no indication that CMC contains less emotional or personal expression as a medium for communicating; moreover, the authors found that anger, sadness, and happiness are rather similar in terms of frequency of expression, and any differences actually showed more frequent and explicit emotional communication in using CMC. This is notable because developing adolescents need validation of their social skills, especially concerning their emotional development and social self-efficacy. Researchers have examined teen relationship building and maintenance, problematic Internet use, issues related to teen misuse of digital media such as cyberbullying, and parent or other authority figures monitoring or restricting CMC duration by adolescents (Arrizaalango-Crespo, Aierbe-Barandiaran, & Medrano-

Samamieg, 2010; Gazelle & Druhen, 2009; Livingstone, 2009). However, studies examining the use of CMC and how it relates to the adolescents' own perceived competence in social relationships and emotional stability is scarce. Having information on this topic may increase understanding of what benefits come from CMC use, how is it influencing these young users, whether adolescents rely heavily on CMC use to nurture their friendships, and the role CMC duration plays in adolescent social self-efficacy, social anxiety, and depression. This information could better equip parents, educators, and society as a whole on how to improve interaction with, teach, and guide adolescents.

Problem Statement

Although Internet overuse may be problematic, and CMC duration may be used to bully, ostracize peers, and encourage isolation from peers, this study addressed a gap in the literature concerning CMC duration and its effects on adolescent social self-efficacy, social anxiety, and depression. According to the U.S. Department of Health and Human Services (as cited in Pratt, Brody, & Gu, 2011), 11% of Americans over the age of 12 take antidepressants for depression and anxiety disorders. Between 2005 and 2008, adolescents aged 12- 17 accounted for almost 16% of all the antidepressants sold followed by those age 60 and over at almost 15%. The National Institute of Mental Health (2012) reported that 8% of teenagers aged 13-18 have an anxiety disorder, and only 18% of those received mental health care.

Relationships with peers and lack of dyadic friendships are suggested as an important part of the problem; friendless youth have a greater number of depressive symptoms compared to those youths who have friends (Ladd, 1990). The National

Institute of Mental Health statistics (2007) indicated that one in five children have a mental, behavioral, or emotional problem. Diagnosed with major depression, is one in 10 children, and considered a serious mental illness by the *Diagnostic and Statistical Manual of the American Psychiatric Association* (*DSM-IV-TR*, 2000). With the rise in CMC use, such as using social networking sites, web surfing, blogging, or gaming (Madden et. al., 2013), the adolescent may or may not benefit from the CMC technology in terms of developing a sense of social self-efficacy, social anxiety, and depression (i.e., emotional stability).

With societal and family stressors on the rise, many individuals may think they do not have enough time to spend on friendships. The research available on CMC mainly addresses overuse, social isolation, depression, and loneliness related to CMC use for adults, not adolescents (Bargh & McKenna, 2004; boyd & Ellison, 2007; Kraut et al., 1998). It was important to find out if CMC duration helps or hinders adolescents' confidence that they can form and maintain friendships within the structure of his or her lifestyle. Studying the relationship between CMC duration and social self-efficacy, social anxiety, and depression in adolescents gives researchers, teachers, and parents more understanding of the impact CMC duration has on perceived adolescent competence in social relationships and emotional stability. With this understanding, the stakeholders will be better equipped to encourage healthy psychosocial and CMC functioning in the adolescent generation.

Purpose of the Study

The purpose of this quantitative study was to explore the impact that CMC duration has on adolescent social self-efficacy, social anxiety, and depression. The independent variables in this study are CMC duration and CMC restrictions (as moderating variable). The dependent variables were adolescent social self-efficacy, social anxiety, and depression.

Research Questions and Hypotheses

The research questions and hypotheses originate from the gaps identified in the literature review. Computer—mediated communication duration and CMC restrictions were measured by information gained from the Demographic Questionnaire. The Social Self-Efficacy Scale (S-EFF) measured social self-efficacy for adolescents. The Social Anxiety Scale for Adolescents (SAS-A) measured social anxiety in adolescents. The Beck Depression Inventory-II (BDI-II) measured depression in adolescents. Information gained from the Demographic Questionnaire provided data on CMC restriction severity and used as a possible moderator related to the research questions showing significant impact. The research questions and hypotheses follow:

Research Question 1

What is the strength and nature of the relationship between computer-mediated communication duration and social self-efficacy in adolescents?

H_o1: The number of hours spent per week on computer-mediated communication does not predict social self-efficacy, as measured by S-EFF, in adolescents.

H_a1: The number of hours spent per week on computer-mediated communication does predict social self-efficacy, as measured by S-EFF, in adolescents.

Research Question 2

What is the strength and nature of the relationship between computer-mediated communication duration and social anxiety?

H_o2: The number of hours spent per week on computer-mediated communication does not predict social anxiety, as measured by SAS-A, in adolescents.

H_a2: The number of hours spent per week computer-mediated communication does predict social anxiety, as measured by SAS-A, in adolescents.

Research Question 3

What is the strength and nature of the relationship between computer-mediated communication duration and depression in adolescents?

H_o3: The number of hours spent per week on computer-mediated communication does not predict depression as measured by BDI-II, in adolescents.

H_a3: The number of hours spent per week on computer-mediated communication does predict depression, as measured by BDI-II in adolescents.

Research Question 4

Do computer-mediated communication restrictions, as measured by the number of restrictions, moderate the computer-mediated communication–social self-efficacy relationship?

H_o4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy will be negative when number of restrictions is high and the relationship between computer-mediated communication duration and social self-efficacy will be positive when number of restrictions is low.

H_a4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy will be positive when number of restrictions is low and the relationship between computer-mediated communication duration and social self-efficacy will be negative when number of restrictions is high.

Theoretical Framework for the Study

The basis for this study comes from three main theoretical frameworks: the (social) self-efficacy component of social cognitive theory (SE) (Bandura, 1997), social identity theory (Tajfel & Turner, 1986), and developmental theories such as Piaget's cognitive developmental theory (1936) and Erikson's psychosocial theory of development (1950).

The self-efficacy component of social-cognitive theory stems from diverse sources of information that regulate one's thoughts, motivation, and behaviors (Bandura, 1997). Bandura indicated that mastery experiences, produced when an individual has

successful performances, make or adjust cognitive events. The events, in turn, alter the individual's expectations of their self-efficacy. An individual's conviction that they can successfully perform a certain behavior required for an outcome is an efficacy expectation. Adolescent social self-efficacy (SSE) occurs when the adolescent has confidence in their ability to function within the realm of their social circle, possess the necessary social skills to satisfy the desire to fit in, and develop fulfilling friendships. I discuss the dimensions that efficacy beliefs occur (e.g., level, generality, and strength) further in Chapter 2.

According to social identity theory, social identity is a person's sense of who they are; in turn, this is how they base their social group membership (Tajfel & Turner, 1986). In theory, an individual has several social identities depending upon the social groups they perceive themselves as belonging (Hogg & Vaughan, 2002). Tajfel and Turner (2004) proposed that an individual's relates their sense of self-esteem and pride to the groups to which they belong. An individual's sense of belonging in the world, with a social identity, stems from being a member of a group (e.g., social class, family, football team, etc.). Additionally, self-concept, a part of identity, lies in one of two subsystems: personal identities and social identities. Developmental theories regarding adolescent social functioning help explain more about identity stages and features.

Piaget's developmental theory (1936) addresses how adolescents actively construct the way they understand the world (Santrock, 2011). Erikson's psychosocial theory (1950) addresses how the individual's development unfolds as the adolescent

confronts different life crises and resolves them (Santrock, 2011). Erikson's crises are not catastrophic events but rather turning points that are manifested in each individual with increased vulnerability, yet enhanced potential, which marks the individual's healthy development (Santrock, 2011).

Piaget (1936) and Erikson's (1950) theories complement each other; the sense of social identity successively lays the foundation for the individual to cross over different groups, gaining whatever a particular group has to offer at the time. When one believes he or she has the ability to belong to a group and function within it effectively and with satisfaction, he or she may experience a rise in SSE. Moreover, this foundation offers an opportunity for the individual that typically has more access to friends attain an even higher level of SSE. The developmental theories proposed by Piaget and Erikson help one to understand how the adolescent's cognitive processes work within the social self framework. Erikson's theory of development, in particular, addresses the development of resolving developmental crises as they arise and successfully adapting to the social functioning of their group of peers.

The theories relate to the research approach as I explored how CMC use duration can facilitate or impede the individual's perception of their social competence, or how it affects emotional stability relative to social anxiety or depression. In Chapter 2, I provide a more detailed description of these and supporting theories as the basis for this study.

Nature of the Study

With the intention of examining the relationship between CMC duration and social self-efficacy, social anxiety, and depression, I surveyed a sample of 49 adolescent

students in Austin County, TX. Previous researchers have used quantitative design to examine social self-efficacy, social anxiety, and depression, the dependent variables in this study (Aleem, 2005; Connolly, 1989; LaRose, Eastin, & Gregg, 2001). Because my objective was to study relationships between independent and dependent variables and not merely increase overall understanding about the issue being examined, a quantitative method was the appropriate approach to this study (Mitchell & Jolley, 2004).

From the literature search, I noted that the type of CMC used, the duration, or the frequency were factors that may have impacted the dependent variables in this study. Therefore, age and ethnicity were entered into the Demographic Questionnaire to quantify the independent variable, CMC duration. This study measured the dependent variable, SSE, using validated scales that have been previously used to measure adolescent social self-efficacy (Connolly, 1989). This study measured social anxiety, the dependent variable, by using validated scales for measuring adolescent anxiety (SAS-A) (La Greca & Lopez, 1998). The dependent variable depression was measured with the BDI-II (Beck, Steer, & Brown, 1996). The surveys were distributed to adolescent participants from Austin County after parents gave informed consent and the students assented to participation in the study. The survey design was appropriate given the types of questions being asked and its successful use in other similar studies (Connolly, 1989; Durkin, Conti-Ramsden, & Walker, 2009). The data were entered into the SPSS 17.0 program and analyzed using a correlation and regression analysis.

Operational Definitions

Adolescent social self-efficacy: Social self-efficacy refers to one's belief that they can (a) successfully engage in conversations, (b) participate in social activities, (c) get or give help, and (d) exhibit friendly behavior with an air of confidence (Connolly, 1989). Based on the above, adolescent social self-efficacy is defined by the belief that an adolescent can successfully do what is necessary to form and maintain satisfying relationships.

Computer-mediated communication (CMC): Any text-based interaction, facilitated by way of digital technology such as a computer or cellular network is Computer-mediated communication (Spitzberg, 2006). The process requires people to participate in a message interchange where at some point the medium exchange is computerized (Spitzberg, 2006). These interactions are not restricted to online interaction; any communication medium between individuals that involves computer-assisted technologies applies (Spitzberg, 2006).

CMC duration: CMC duration refers to the amount of time per week an individual spends using CMC (e.g., texting, social networking, email, or blogging) (Yan, 2006).

Depression: Depression occurs when individuals experience sadness mostly every day and lack interest in activities that previously brought them pleasure. Depression may be characterized by a lack of energy, feelings of worthlessness, and social isolation (*DSM-IV-TR*, 2000).

Emotional instability: Emotional instability (ES) has features that are often synonymous with neuroticism (H. J. Eysenck & S. B. Eysenck, 1975; Hardie & Tee,

2007). Loneliness, social isolation, social anxiety, and depression are hallmarks of emotional instability (Aleem, 2005). Emotional instability may be measured through assessment or psychological evaluation; it is also recognized in behaviors such as avoidance or anxiety related to social situations or interactions (Caplan, 2007) and depression. In this study, ES refers to the degree to which an individual has high levels of social anxiety and depression.

Social anxiety: Social anxiety occurs when an individual has a fear of social situations or interactions with other people that will make them feel self-conscious, inferior, or judged. They may feel better when they are alone than when they are in social situations (Weeks, Jakatdar, & Heimberg, 2012).

Assumptions

In survey research, a researcher must reveal underlying assumptions to bolster the strength and relevance of the study (J. Cohen, P. Cohen, West, & Aiken 2003). First, I assumed all of the participants were truthful in their survey responses. This assumption was essential in order to get information that would make the study results valuable. Second, the sample was, ideally, representative of the population being studied. However, because I used a convenience sample, I could at best only assume the population shared the sample characteristics (Cohen et. al., 2003). This pertained to the third assumption, that the results are generalizable, and replication will be possible (Mitchell & Jolley, 2004). Fourth, I assumed that the instruments I used were valid and measured the constructs important to this study, leading to accurate inferences from the collected data (Mitchell & Jolley, 2004).

Scope and Delimitations

The scope of this study involved assessing CMC duration as the independent variable and its relationship with the dependent variable, adolescent social self-efficacy, and if there is one, the extent to which CMC restrictions moderate that relationship. In addition, I examined whether the independent variable, CMC duration, affects the dependent variables: social anxiety and depression. When considering the relationship between CMC duration with social self-efficacy, social anxiety, and depression, I considered other independent variables; however, this study was designed to assess only the relationships stated in the research questions and hypotheses.

This current study used a convenience sample of adolescent students residing in Austin County, TX. The population was sampled because of its convenience to the researcher; however, Austin County is contiguous to Harris County and its seat, Houston, one of the largest cities in the United States, where many students and their families work, shop, and socialize. Thus, the measures used in this study that were normed on metropolitan residents will be appropriately used with this sample. To the extent the sample reflects the population, I expected the findings to be generalizable to the entire population of adolescents living in Austin County.

Several theories related to this research problem were excluded from this research study included self-presentation, impression management, signaling theory, and social presence theory regarding adolescents who use CMC. Self-presentation, impression management, signaling theory, and social presence theory are supportive in that they explain some of the phenomenon present within the realm of the variables in this study,

and are explained in Chapter 2. However, the primary theories in this study are social self-efficacy and social identity.

Limitations

Limitations of a study are the features in the methodology and design that set the boundaries on the application or interpretation of the results of the study (Mitchell & Jolley, 2004). These limitations put constraints on the generalizability, validity, and usefulness of the results, and thus make it difficult to draw inferences from the sample group about the population.

One limitation may have been the sample. Using a convenience sample and participants who volunteered could have created a sample selection bias. Although participation was voluntary, some participants may have felt pressure from their parents or teachers to participate. To discourage this type of bias, I made it clear to each potential participant that no gains or losses for volunteering would occur (Cone & Foster, 2006) and that participants were able to withdraw from the study without penalty at any time. Using a convenience sample can also affect the external validity of the study when the sample is not generalizable beyond the area it was gathered (e.g., Austin County, TX). One county in Texas may not be truly representative of a larger area, even if contiguous to an urban and rural area (Mitchell & Jolley, 2004).

Another limitation may result from the participants not responding honestly to survey questions for fear that their responses would not be socially desirable (Mitchell & Jolley, 2004). Participants gain the confidence needed to respond factually to survey items when they receive assurance from the researcher that their responses were held in

the strictest of confidence, there was no identifying information on the survey instruments, and they were encouraged to respond truthfully. I assured them (see Assent Form Appendix C) that their responses were confidential and would be private and only I would see them.

Significance

The significance of this study comes from its contribution to the study of the field of psychology and interactive computerized communication. More specifically, it is important to adolescents and those who are in charge of their wellbeing to understand how they use CMC and if the duration impacts the adolescents' social self-efficacy, social anxiety, or depression. This study examined the factors that have the greatest potential to impact the adolescents' current and future relationships, social anxiety, depression, and social self-efficacy.

Teachers and educational decision makers can use the findings to plan policy that supports the methods most useful from new technological advances in communications. Parents and other caregivers can make more informed decisions regarding appropriate age of use, type of use, and CMC duration when allowing their child to stay in touch with friends. Parents may better understand if this technology is an asset or a hindrance for their children as they learn to develop and maintain friendships and gain perceived confidence in social relationships. Educators may consider broadening their scope of learning tools to include those to which the adolescent generation responds.

The potentially positive social change implications from this study are at both local and global levels. Computer-mediated communication is becoming a part of

everyday life to more individuals as the technology increases. Moreover, the study may provide a foundation for future research in this area as more technology is being developed for communication.

Summary

With the increase in CMC duration replacing and complementing face-to-face interactions over the past decade, researchers have examined the effects on relationships, behaviors, and cognitive changes in adults (Kraut et al, 1998; McKenna & Bargh, 2000; Moody, 2001; Shapiro, 1999). During this same period, children and adolescents have mainly used electronic technology for entertainment purposes. More recently, the duration of the younger adolescent generation using CMC is increasing at rapid rates. There may be effects for this age group similar to their adult role models; however, research efforts have concentrated on adults (Kraut et al., 1998; McKenna & Bargh, 2000; Moody, 2001; Shapiro, 1999).

Using Bandura's (1977) social self-efficacy theory, Tajfel and Turner's (1986) social identity theory, and the developmental theories of adolescent stages as proposed by Piaget and Erikson, this study explored the impact CMC duration on adolescent social self-efficacy, social anxiety, and depression. The results can assist parents, school personnel, and policy makers in making decisions regarding monitoring or restricting CMC use duration for the adolescents they are charged to protect, as well as, understanding how this new way to communicate among the adolescent generation impacts their psychosocial functioning.

In Chapter 2, I provide a detailed review of the literature examining the theoretical foundation and research regarding CMC duration, parents restricting CMC use, and theories related to adolescent interactions, self-efficacy, social anxiety, and depression (e.g., emotional stability).

Chapter 2: Literature Review

Overview of the Chapter

In this review I introduce SE within the framework of social-cognitive theory (SCT) and consider how adolescent SSE, social anxiety, and depression are developed through social interactions and environmental expectations. I discuss CMC, as both a supportive and viable communication medium and as detrimental to relationships. I also explore social identity and the concept of self-presentation to further understand how identity and identity management play a role in strengthening SSE in adolescents and how SSE affects social anxiety and depression. I introduce signaling theory and social presence theory as supporting elements in the theoretical foundation of the relationship of CMC to adolescent social self-efficacy, social anxiety, and depression.

In this review I also orient the reader to different types of CMC and the uses, including the popular methods of CMC such as social network sites, instant messaging (IM), chat rooms, gaming, and texting. I then present the current literature on adolescents' use of CMC, and the impact of CMC on adolescent SSE, social anxiety, and depression. Factors that tend to undermine adolescent SSE will be examined next. Additionally, I present literature on social anxiety and depression and the type of computer use engaged in by adolescents and other factors associated with the CMC-SSE relationship.

Literature Search Strategy

The primary source for articles in this study was the EBSCO database, along with MEDLINE, Academic Search Premiere, CINAHL Plus, PsycARTICLES, PsycINFO, and

SAGE. I initiated an Internet search using Google and Google Scholar, along with reference lists, which provided the titles of additional journal articles for review. Keywords used in the literature searches included *computer-mediated communication, self-efficacy, relationship building, and maintenance, computer use, adolescent development, social network sites, social anxiety and depression, depression, social anxiety, neuroticism,* and *parental controls*. The search primarily included the past 15 years of published peer-reviewed journal articles, and earlier-dated books and literature on the theoretical framework used in this study.

An important resource for statistical data in terms of CMC usage is the Pew Internet Project, a part of the Pew Research Center since 2004 (Pew, 2010). The Pew Internet Project gathers information for the Pew Research Center, which provides information to inform the public on issues, attitudes, and trends that have an important role in shaping and influencing society. The Pew project monitors who are using the Internet and the dimensions of social life that inform the reader how the Internet affects families, communities, and other key groups (Pew, 2010).

The Role of Computer-Mediation Communication

The purpose of this study was to examine how CMC duration affects adolescents' social self-efficacy, social anxiety, and depression. From their 2009 survey data, (Smith, 2011) reported that adolescents in the 12-17 year old age group use the Internet and cell phones to communicate with friends at an ever-increasing rate. In the 12-17 year old group, 93% used the Internet, 75% had cell phones, and 73% used social networking sites. The 2009 data showed 54% of youth aged 12-17 years used text messaging on their

cell phone, up from 27% in 2006. At the same time the increase in depression from late childhood to early adolescence may be a precursor for more severe psychopathological symptoms and can continue into adulthood (Keenan-Miller, Hammen, & Brennan, 2007). Social contextual risk factors may contribute to depressive moods in adolescents (Cicchetti & Toth, 1998). Youth with problematic relations with peers and a lack of dyadic friendships can lead to a greater number of depressive symptoms compared to those who have friends (Ladd, 1990). The National Institute of Mental Health (2007) indicated that one in five children have mental, behavioral, or emotional problems; one in 10 children have a serious condition. Among adolescents, one out of eight is depressed with emotional and behavioral instability (NIMH, 2007). In 2007, suicide was the third leading cause of death in individuals 15-24 years of age. Almost one youth among every 100,000 between ages 10-14 commit suicide, 6.9 in 100,000 youths aged 15-19, and 12.7 in 100,000 individuals aged 20-24. Depression is listed as one of the major risk factors for suicide in youth (NIMH, 2007).

Bullying and cyberbullying, as well as ostracism and cyberostracism, contribute to negative feelings experienced by youth who feel they have little control over their wellbeing (Graham & Juvonen, 2001). Ortega et al. (2009) studied the emotional impact on adolescent victims of direct bullying, indirect bullying, mobile phone cyber-bullying, and Internet cyber-bullying. Depression was consistent across groups of emotions reported by the adolescents who experienced bullying and cyberbullying (Ortega et al., 2009). Since the growth and widespread use of CMC by adolescents, the bullying phenomenon is becoming more complicated (Slonje & Smith, 2008).

Computer-mediated communication by adolescents and adolescent depression rates are simultaneously on the rise. Although CMC provides youth an opportunity to relate in a social context, which would appear to have a positive effect, there may be relations in the rise in depression rates to social contextual factors. Over the past few decades, it has debated whether there is association between CMC and social self-efficacy (SSE) (boyd & Ellison, 2007; Kraut et al., 1998; Pew Internet & American Life Project, 2009). Computer-mediated communication is an identified as a factor affecting relationship building and maintenance (Cai, 2004; Cummings Sproull, & Keisler, 2002; Kraut et al., 1998, 2002; McKenna, Green, & Gleason, 2002; Morahan-Martu & Schumaker, 2003; Nie & Erbring, 2000; Peris et al., 2002; Spitzberg, 2006; Tidwell & Walther, 2002). Researchers have found that online social networks help connect friends, business associates, and other individuals using Internet applications (Tong, 2008). Life-streaming and micro-blogging sites, which allow people to meet and communicate with large groups of people from all over the world, provide an ultra-casual, non-invasive form of communication. It is thought that these methods help develop persistence in relationships and help build a network of people (Tong, 2008).

There are conflicting views over the role CMC plays in relationships. The Internet has been blamed for disconnecting local groups and family for relations with unknown and often unconfirmed identities (Hidalgo & Rodriguez-Sickert, 2008). Other researchers perceive the Internet as vital to maintaining work and social connections in everyday life (Haythornthwaite, 2005). We accept these findings for adults; however, the implications CMC has for adolescent relationships, social anxiety, and depression are unclear.

Empirical evidence shows that adolescents' unmonitored and unrestricted use of the Internet may set them up for negative psychological effects; therefore, Internet overuse is related to emotional instability (Hardie & Tee, 2007).

Individuals with social anxiety or isolating behaviors can use the Internet to keep in touch with other humans, but the Internet does not help get them out to initiate face-to-face contact. If Internet use supports or sustains emotional instability, the question arises if the use of chat rooms, instant messaging (IM), and e-mail is a form of social activity for some and detriment to others. Unmonitored and unrestricted Internet use by adolescents may result in poorer social and emotional development as well as inducing risk-taking behaviors. When Internet monitoring and restricting occurs, young people may be less vulnerable to self-isolating behaviors and depression. Educating students on the relational risks of Internet use and the personal risks they may encounter through inappropriate use of time and Internet may change some of the negative effects of excessive Internet use. Providing information on possible effects of Internet use by their children is valuable in educating parents, schools, and communities on how CMC can aid adolescents who feel socially isolated or dissatisfied with the quality of their relationships.

Self-efficacy (SE) is a construct introduced by Bandura (1977), who described it as "the conviction that one can successfully execute the behavior required to produce… certain outcomes" (p. 193). Under the umbrella of SE, Bandura further delineated the construct into personal, perceived, and social self-efficacies. Bandura postulated that perceived efficacy beliefs determine how difficult things appear. That is, if an activity

exceeds one's perceived capabilities, then the activity will seem difficult; however, if it falls within the bounds of perceived capabilities, then it will be thought of as doable. The combination of preexisting and induced levels of perceived SE influences whether an individual will adopt mass media innovations that benefit the individual (Bandura, 2001). Although innovative practices are promoted through modeling in mass media, some innovations are promoted through informal, personal channels. Thus, the group or network an individual belongs to will determine which innovations will be frequently observed and adequately learned (Bandura, 2001).

Knowledge and skill alone does not determine the adoption of innovations (Bandura 1997). Incentives influence the individual and benefits provided by the innovation influences the individual to adopt the innovation. Yet, until the practice is tried, benefits are not experienced. The value placed on the benefits of use governs the adopted behavior (Bandura, 1997). Needing further examination is the influence mass media and individuals' social network play in their perceived SE by using innovative social tools such as CMC to advance their social status and comfort. The more people in individuals' social network who adopt certain innovations like CMC, the more individuals are likely to adopt the same (Bandura, 2001). Computer networking produces new social structures that link people from dispersed locations without concern for time and space (Turoff & Hiltz, 1978). Different networks prefer different innovations, and because networks overlap in membership, the possibilities to connect and build social networks are infinite.

The SE distinction specifically related to relationships fits under the social self-efficacy (SSE) umbrella. For the purpose of this study, the definition of SSE is as the belief in the ability to form, build, and maintain relationships in a manner that proves to be personally satisfying (Connolly, 1989).

Human communication has evolved over the last 150 years from the U.S. Postal Service delivering mail to homes in 1861, the invention of the telephone in 1876, the first IBM home computer sold in 1981, the 1983 launch of cellular networks in the United States, and, in 1994, the Internet being opened to consumers. By definition, the current state of CMC is a human interaction that is text-based and facilitated by some sort of digital-based technology (Spitzberg , 2006).

Computer-mediated technology grants the individual an opportunity to communicate through methods other than face-to-face interactions. Most adolescents (starting with those as young as 12 years old) and an increasing number of adults are choosing to use sources of electronic communication, as opposed to face-to-face communication (Pew, 2009). At the same time, Americans are socially isolated and that the use of communication technology has the potential for people to prefer using technology over face-to-face social engagements have resulted in fear that people using or relying on such technologies will become isolated, depressed, and alienated (Kraut et al., 1998; Pew, 2009). Researchers have studied how CMC technology has affected the strength of ties and the frequency of communication within an individual's social network (Pew, 2001); however, it is not clear whether social anxiety and depression is a contributing factor in relationship maintenance or if it is an outcome of CMC alone. The

nature and quality of interaction among adolescents in particular remains a research interest (Brignall & Van Valey, 2005). Researchers have suggested that positive social relationships are predicted when social skill mastery occurs in children (Harman, Hansen, Cochran, & Lindsay, 2005), and that, with increased CMC use, social anxiety and depression may increase (Harman et al., 2005; Kraut et al., 1998). When children function well in social settings, there is mastery in social competence and self-control (i.e. self-esteem, social anxiety, behavior control, and general social skill acquisition). Researchers continue to find associations between social functioning and psychological wellbeing (Lee, Keough & Sexton, 2002; Riggio, Throckmorton, & DePaola, 1990).

In response to concern for the adolescent's wellbeing, parents and other stakeholders may monitor or restrict their adolescents' CMC. Understanding the person-technology interaction will enable individuals to conceptualize the challenges that the interaction presents to the current population of adolescents. Therefore, I designed this study to examine the impact that CMC duration has on adolescent SSE, social anxiety, and depression.

Theoretical Foundations

Self-Efficacy

Since Bandura first introduced the concept in 1977, the study of SE has evolved (Bandura, 1997; Corcoran, 1991). Self-efficacy is an individual's belief that they can accomplish certain goals. The construct is domain-specific (Cox, 2005), as it pertains to differing areas or domains of functioning. For example, a person may have high SE relating to academic skills, but have low SE in areas of social skills (Di Clemente, 1986;

Hofstetter, Sallis, & Hovell, 1990). According to Bandura (2003), the structure of SE beliefs is diverse: No single measure that predicts SE across different tasks, activity demands, and situational circumstances. Self-efficacy is one component of social-cognitive theory and is derived from distinct sources of information that regulate thought, motivation, and action (Bandura, 1997). Bandura (1977) proposed that mastery experiences, produced from successful performance, induce, and alter cognitive events. The events, in turn, alter expectations of a person's self-efficacy. An individual's conviction that he or she can successfully perform a certain behavior that is required for an outcome in a certain domain is an efficacy expectation.

Efficacy beliefs occur on three different dimensions: level, generality, and strength (Zimmerman, 1995). Levels vary from being a simple task demand and extend to the most difficult of performance demands within certain domains of functioning (e.g., certain math problems of increasing difficulty) (Zimmerman, 1995). In terms of generality, individuals think of themselves as efficacious across a variety of activities (e.g., math problems used in science) or only within specific domains of functioning (e.g., math as distinct from science) (Bandura, 1995). Generality can vary on the degree of similarity in activities; for example, a teacher who has comparable confidence in her ability to organize and successfully manage a kindergarten class and leads a camping trip for a young scout troop. The skills required for both activities rely on similar organizational and interpersonal skills. Another dimension is in the qualitative features of the situation or skills required for a task; for example, an individual who successfully completes a marathon has heightened efficacy beliefs regarding physical tasks that

require endurance but not dissimilar tasks that require social or cognitive prowess (Bandura, 1995). Generality of efficacy beliefs can occur when the process of co-development exists; that is, when competencies from more than one domain are acquired together. For example, when a student is tutored in math and language with comparable adequacy and the development of the competencies are socially structured so that the dissimilar skills are acquired together, the levels of perceived efficacy in both areas will be positively related, even though they both require different cognitive skills (Bandura, 1995).

Perceptions of efficacy beliefs are at different strengths. Weak efficacy beliefs are easily invalidated when disconfirming experiences occur. People with strong beliefs in their capabilities will persist and not give up when an obstacle is present (Bandura, 2001; Zimmerman, 1995).

Outcome expectancies help shape an individual's efficacy beliefs according to whether the individual expects his or her efforts to produce outcomes that are favorable or adverse (Bandura, 2001). Bandura (1997) distinguished performance from outcome: Performance is an accomplishment, whereas outcome is the consequence of the performance. Therefore, outcome expectancy is what individuals expect will happen once they perform a certain task (e.g., making new friends by attending a party). These constructs, efficacy beliefs and outcome expectancies (see Figure 1), are distinguished as separate because individuals may believe that certain actions produce a specific result but doubt whether they can perform the action themselves (Bandura, 1977).

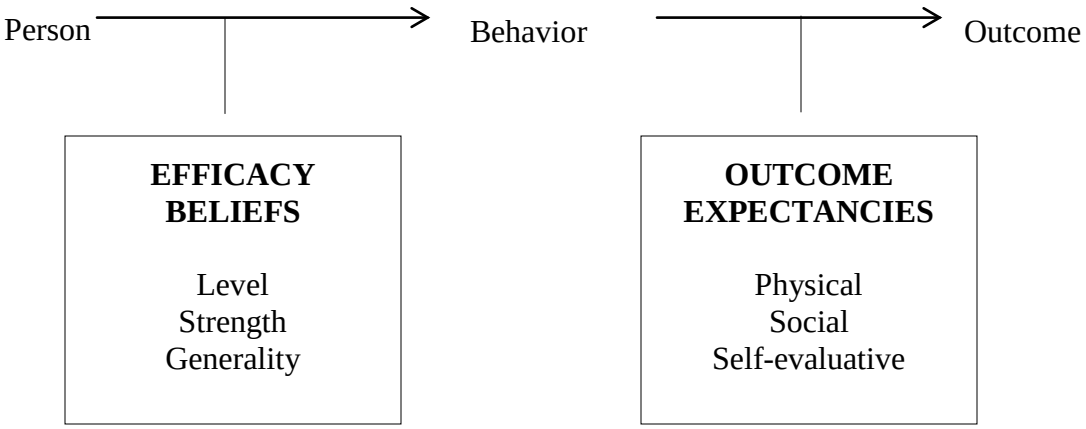

Figure 1. Separating a person's beliefs from outcomes expectancies by their behaviors. Self-efficacy constructs. Adapted from Zimmerman & Cleary (2006), in F. Pajaras & Urban (Eds.), *Self-efficacy Beliefs of Adolescents.*

Social cognitive theory posits that across different domains, areas of functioning, and conditions, an individual may have SE within any or all of the areas. Bandura (2010) explained inter-domain relations as taking place when different classes of activities are served by similar subskills. Moreover, perceiving that certain subskills are similar is a personal construction and not decided by counting the number of objective common elements between tasks (Bandura, 1997). When no transfer of efficacy beliefs across activities or settings occurs, developing and using capabilities is greatly constricted.

If extreme specificity and indiscriminate transfer of efficacy beliefs were adaptive, those who had low SE would avoid any new pursuits or undermine their own efforts if they did become involved. Likewise, the individuals with high SE would approach every new venture with unrestrained efficacy in the belief they had no personal limitations, leading to disappointment when not every pursuit was successful. Most activities contain a mixture of novel and common aspects. Individuals who focus on the common aspects will have an easier time transferring perceived self-efficacy than if they focused on the

newer aspects of the activity (Cervone, 1989). The individual's belief in their learning efficacy expands across different types of challenges when common self-regulation strategies apply across different areas of activity. Self-efficacy should be interpreted apart from and is distinct from and self-esteem, locus of control, and outcome expectancies, since it reflects an individual's judgment of his or her effectiveness in handling certain situations (Bandura, 2003). A feeling of overall self-worth, which is different from a judgment about specific capabilities in a specific situation, relates to self-esteem (Bong, 2006; Pajares, 2000; Zimmerman & Cleary, 2006). The difference between SE and locus of control can be illustrated in individuals who have an internal locus of control and perceive their success as being dependent upon their own actions; however, due to SE, they may or may not believe they have the competence to bring successful outcomes. For example, a student who received a poor grade because he or she did not study (within one's control), or received a poor grade because the teacher gave a test on material not covered in class (external to one's control), accredits the grades to where he or she perceives the control coming from (Bandura, 1997). Self-efficacy is not as important in a person who has an external locus of control because he or she believes that the outcome of their actions is not within their control (Bandura, 1997).

The efficacy beliefs individuals hold helps determine how they think, whether they have an optimistic outlook, or whether they see their own life from a negative, cynical standpoint (Bandura, 2001). Efficacy beliefs correlate with how much effort people will be put forth, how long individuals will persevere when they come against obstacles in attaining their goals, how much stress or depression they will experience

when coping with challenging environmental demands, what accomplishments an individual will make, and the choices an individual will make at different decisional points (Bandura, 2001, 2003).

Cox (2005) supported Bandura's theory that SE also has an effect on behavior and has a significant connection to affect, that is, one's feelings and emotions (Cox, 2005). Individuals who find themselves in a difficult situation tend to have positive emotional responses if they also have high SE. Individuals with low SE are more likely to be anxious and may be despondent or depressed when they think about their desires, and they believe that these goals will not be achieved due to their own inabilities (Cox, 2005).

According to Bandura (1995), when an individual believes his or her actions can affect an outcome, it becomes a predictable event. Subsequently, predictability promotes preparedness. When individuals believe they have no control or influence over events that affect their lives, apprehension, apathy, and despair are triggered. In sum, a person's affective state, level of motivation, and actions are based more on what they believe they do than what may objectively be the case (Bandura, 1995).

Self-efficacy theory gives clears guidelines on how to increase and improve efficacy. Four influences help beliefs of personal efficacy develop:

1. *Mastery experience* provides evidence of whether an individual has what it takes to succeed and successes construct a strong belief in an individual's personal efficacy. Failures undermine efficacy, especially if they occur before a robust sense of efficacy is built. Mastery experience involves acquiring cognitive, behavioral, and self-regulatory tools for employing the

most effective course of action in managing life's changing situations (Bandura, 1995).

2. *Vicarious experiences* provided by social models, especially the models that an individual relates to and sees as similar to him or herself, is a strong influence on an individual's beliefs of personal efficacy. The more perceived similarity the individual has to the model, the greater the influence the model's successes and failures are (Bandura, 1995). In fact, Bandura (1995) postulated that people seek out models that have the competencies to which the person aspires.

3. *Social persuasion* is another way in which to strengthen an individual's efficacy beliefs. When an individual is verbally persuaded that he or she has the necessary skills to master certain activities, he or she is more likely to try harder and sustain his or her efforts than if the individual holds self-doubt in his or her abilities or dwell on his or her shortcomings when difficult situations arise. Self-affirming beliefs encourage skill acquisition and a sense of personal efficacy (Bandura, 1995).

4. To judge their own capabilities, people also rely on their *physiological and emotional states*. People interpret their own moods and physical states as signs of vulnerability to poor performance or an aid to good performance. Personal, social, and situational factors affect how an individual will interpret efficacy-relevant experiences (Bandura, 1997).

Social self-efficacy. Social self-efficacy, or SSE, refers to one's belief that he or she can: (a) successfully engage in conversations, (b) participate in social activities, (c) get or give help, and (d) exhibit friendly behavior with an air of confidence (Connolly, 1989). Wheeler and Ladd (1982) described social self-efficacy (SSE) as more closely related to perceived social acceptance and self-esteem than to belief in competence of domains such as those of an academic or physical nature (Connolly, 1989). Bandura's SSE is domain-specific, in contrast to general, perceived, and personal self-efficacies, which are considered broad spectrum and not specific in the area in which they concentrate. For example, personal efficacy is a core belief in the foundation of motivation, feelings of wellbeing, and accomplishments (Bandura, 2001), which plays an important role in whether an individual has high SSE in relationships. As such, SSE suggests one believes he or she can successfully do what is necessary to form and maintain satisfying relationships. Because adolescents use their problem-solving skills attained from previous social relationships and experiences, as with CMC, they perceive themselves as more confident, and they believe they can handle other stressful situations. Gresham (1984) termed this kind of learned resourcefulness an "enactive" mastery experience. Bandura (1986, 1993) expected that one's experience of perceived SE would affect problem-solving skills; those with high SSE would use effective ways of solving their problems or attain what they desire. In this way, problem-solving skills and enactive mastery experiences are related (Bandura, 1997). Individuals who have fewer problem-solving behaviors reportedly have a low level of SSE, and show avoidance in

social opportunities (Innes & Thomas, 1989). Therefore, SSE seems to be the product of the individual's accumulation of experiences and problem-solving skills.

Vicarious experiences, such as CMC, provide indirect sources of SE, according to Bandura (1997). Individuals use their enactive experiences as a source of information about their capabilities; however, partly through vicarious experiences, experiences are also influencing individuals' efficacy appraisals. People also learn from and appraise their own capabilities by comparing their own capabilities to those of others (Bandura, 1997). When observing performance of others is customary, social comparison functions as the main factor in one's appraisal of his or her capabilities (Goethals & Darby, 1977; Miller & Suls, 1977). Whether an individual out-performs a person with less ability, or is surpassed by a person with superior ability, the individual's efficacy beliefs are more often changed only by similar people, resulting in raised efficacy beliefs from modeled success or lowered efficacy beliefs from modeled failure (Bandura, 1997, p. 96). Efficacy beliefs seem to be greater when an individual considers his or her performance as superior to the group norm, but lower when his or her standing is low compared to the normative group (Bandura, 1997).

Social self-efficacy as related to peer and family attachment. In examining relationships, the influence that parental and family attachment has on vicarious experiences is apparent (Bandura, 1997; Markiewicz, Doyle, & Brendgen, 2001). There is a strong association between attachment to caregivers from toddler through elementary school years and peer relationships (Coleman, 2003; Erikson, Sroufe, & Egeland., 1985). Attachment to primary caregivers is linked to efficacy in peer relationships, particularly

social competence, peer acceptance, and popularity. Insecure attachments then appear to be a precursor to peer rejection and negative emotions when interacting with peers, and behaviors that include anger and hostility, low assertiveness and self-confidence levels, withdrawal and a tendency to feel frustrated easily (Coleman, 2002). In a study of adolescent SSE relative to parental and peer attachment, Coleman (2003) found that when individuals feel less SSE, they will also feel less attachment to friends and family. Bilgin and Akkapulu (2007) found that learned resourcefulness--the "extent an individual can make use of cognitive strategies when he or she comes across a stressful situation" (Rosenbaum, 1980)--was the strongest predictor of an adolescent's SSE level (p. 781). When an individual is successful with social relationships, he or she will feel more socially self-efficient (Bilgin & Akkapulu, 2007). Bandura (1997) proposed that the most effective way to gain SE is through performance. Learned resourcefulness through performance is associated with and is a predictor of SE (Akgun, 2004; Rosenbaum & Ben-Ari, 1985). Additionally, stressful situations and social avoidance, shyness, or inhibition in social situations in which the individual is not self-confident may be the cause of low SE in adolescent social relationships (Innes & Thomas, 1989). Bandura (1997) asserted that an individual's belief regarding his or her own competency and behavior in that situation might be a triggering factor concerning the initiative the individual takes in that situation. Therefore, being successful at behaviors, and initiating future opportunities for performance, are major factors in being self-efficient. Bilgin and Akkapulu (2007) suggested from their study that peer attachment was a stronger predictor

of SSE than those attachments that were weak or nonexistent. Zero connection between sentences

Time spent with peers is greater and qualitatively different than that spent with parents during adolescence (Neuman, 1991). Quality time spent with peers seems to translate to feeling acceptance and respect by peer group members. If an individual believes he or she is preferred in social relationships, his or her SSE increases (Bilgin & Akkapulu, 2007).

Adolescence is thought to be a period in an individual's life where turmoil in psychosocial domains (e.g. emotions, personality characteristics, and interpersonal relationships) abounds (Bandura, 1997). Although popular belief attaches the stereotype of "storm and stress" (Bandura, 1997, p. 177), most adolescents find their way through this time in their life without acquiring any emotional disturbance (Bandura, 1964; Peterson, 1988). Individuals tend to choose friends who share similar values and behaviors. Moreover, the peers help to uphold the behavioral standards and keep family conflicts to a minimum (Bandura, 1997). The strength of personal efficacy built up through mastery experiences in an individual's past contribute to the successful negotiation of the challenges he or she faces during adolescence.

Social self-efficacy in relationships. Social self-efficacy is the belief that one has the ability to form and maintain successful relationships that are satisfying to that person. Relationships may be familial, social, or peer cohort (Coleman, 2003); the relationship may be with a person as close as a family relative or as superficial as an acquaintance. Adolescent relationships tend to be different from adult relationships (Igarashi, Takai, &

Yoshida, 2005; Valkenburg & Peter, 2007a). The depth and breadth of relationships, as well as the time spent face-to-face with the friend, differs in adult versus adolescent relationships (Igarashi, Takai, & Yoshida, 2005; Valkenburg & Peter, 2007a). Differences in relationship structure and activities between these groups are apparent in purpose, behavior, and need. Feeling confident that one has the ability to have opportunities to interact with others of his or her choice is empowering (Schunk & Meece, 2006).

Part of forming and building relationships is being comfortable enough in a given situation to make the effort to initiate contact or return contact made by another individual (Engels, Finkenauser, Meeus, & Dekovic, 2001). Adolescent relationships comprise several components of SSE. The actions needed to establish a relationship, regardless of strength or type of relationship; meeting people, making introductions, and communicating interest, are necessary to progress in relationship building. The individual's current social status and the motivation to change it or maintain it is a consideration, and the individual must know what he or she has to do to, whether that is to join a group of individuals, or change the group of membership of which he or she is currently part (Asher, Parker, & Walker, 1996). in either case, individuals must be aware they are making themselves available to opportunities where they can meet new people or be with those who are currently considered friends. An individual's self-esteem and the effect of rejection will affect the individual's SSE. He or she needs a healthy sense of self and must be well prepared for acceptance or rejection by others (Asher, Parker, & Walker, 1996)

Friendships. Formation and maintenance of a satisfying friendship is an achievement built on a foundation of intermingling of skills and expectations of at least two individuals; in a broader sense, social circumstances help determine how the friendship will develop. Emphasis is on the complexity of the challenge that friendships represent to an individual's social skills when examining factors that are out of the individual's control and the range of skills an individual can access (Parker, 1996). Parker (1996) examined the factors that contributed to initiating friendships and separated the factors that lend to making friendships more satisfying and enduring to an individual. Parker suggested an individual must conceive of friendship as a relationship outside of a specific context and have the opportunities to initiate contact outside the typical setting where interactions with peers occur. Hallmarks of existing friendships are invitations or initiatives for interaction opportunities and having eagerness to spending free time with one another. Although many friendships develop settings where they begin (e.g., school), they are helped by invitations and opportunities outside of the original setting.

One problem that children and adolescents face in nurturing their friendships is that the interaction opportunities can be thwarted by their parent's decisions not to encourage meetings outside of the original setting. In addition, geographic moves or the broader community factors (e.g., parent's imposing limits on where they may go after school activities) may make it difficult for meetings to occur (Bryant, 1985). Aside from all the constraints that make it difficult to interact with peers, the individuals must perceive the opportunities for interaction as a path to a closer friendship. They must have the necessary confidence to initiate and accept social invitations. If an individual is too

afraid of rejection from his or her peers, he or she may let many important social invitations pass by them (Goetz & Dweck, 1980).

The skills and dispositions necessary for an individual to be seen as a resourceful, fun companion is important in establishing and maintaining friendships. Therefore, enjoying activities with friends and asserting themselves with upbeat moods, a good sense of humor, skill in games and sports, and having a general knowledge of the elements in the culture that are interesting to peers (e.g., TV shows, videogames, rock stars and celebrities, fashion trends) is helpful in being appealing to friends (Berndt, 2002; Parker, 1986). Self-disclosure is another skill that is necessary to consider a relationship as a friendship. Since self-disclosure exposes areas of vulnerability, friendship requires an established trust between individuals. An individual who has difficulty trusting his or her peers and who conceives friendship as an inappropriate arena for self-disclosure will have difficulty initiating and maintaining friendships (Buhrmester, 1990). Being a good listener and having the ability to practice self-control or restrained reactions when discussing sensitive issues plays a role in establishing trust among friends.

Other social skills necessary in building friendships listed by Parker (1997) included: (a) having the ability to express caring, concern, admiration, and affection appropriately; (b) having the ability to help friends when a friend is in need, (c) showing reliability and consistency; (d) being able to manage and resolve disagreements and other conflicts; (e) being able to forgive by accepting that wrongs are not always intentional; (f) recognizing that friendship occurs within the broader social network of one’s peer group

and classroom; and (g) being prepared to address issues within or outside the friendship that result from interferences by third parties, such as jealousy, envy, and rivalry.

Social self-efficacy includes the major constructs of SE introduced by Bandura (1997). Social self-efficacy in relationships applies those constructs to friendships and relationship building and maintenance. The ability to form and maintain a satisfying friendship is built on a foundation of interpersonal and social skills (Parker, 1996). Therefore, the individuals who have more social skills tend to have more successful and satisfying friendships, which would theoretically, lead to higher levels of SSE.

Social Identity Theory

Social identity is a person's sense of whom they are based on the membership of the groups they belong to (Tajfel & Turner, 1986). An individual has not just one personal identity but also several social identities, relating to the circles of group membership in which an individual perceives he or she belongs (Hogg & Vaughan, 2002). Tajfel and Turner (2004) proposed that the groups in which individuals belong to are important to the individual's sense of pride and self-esteem. Being a member of a group (e.g., social class, family, football team, etc.) gives individuals a social identity of belonging in the world.

Self-concept, a part of identity, is divided into two subsystems: personal identities and social identities. An individual's system of self-concepts falls into two main categories or classes: terms related to roles and membership of a variety of formal and informal social groups, and terms that are more personal and specific to the attributes of the individual (Gergen, 1971). Gorden (1968) proposed that people tend to categorize

themselves as belonging to different social categories (e.g., sex, nationality, religious orientation) more readily than using personal descriptors, such as feelings of competence, psychological or physical features, personal likes, or concerns. Moreover, once individuals locate themselves relative to society, the personal terms in which they categorize themselves will single them out within the social group they belong. For example, a person may see himself or herself as being Catholic (i.e., a social category), and then the individual will perceive him or herself as being a "good" Catholic, one who is devout and faithful (i.e., personal terms). Turner (1982) contended that this first class of terms, known as the social category, parallels social identity, and the latter, in personal terms, personal identity. Turner also suggested that different situations tend to generate different conceptions of self, and when situations are manipulated, it is possible to manipulate the functioning self-image at any given time.

The hierarchal system of classification developed by Turner & Oakes, (1997) provides self-categorization on three levels of abstraction important to the development of self-concept. The *personal self-categorizations*, or personal identities, are based on comparing oneself to members of the in-group. The *social self-categorizations* are based on comparisons with other humans, defined in in-group/out-group terms. Last, *human self-categorizations* are based on comparisons with other species.

Social identity theory incorporates the approach people use, as a member of certain groups, when dealing with social change or organizational change. Social identity theory also addresses prejudice and stereotyping, as well as negotiation and use of language (Tajfel & Turner, 1986). One's social identity plays a role, based on the theory

of social identity and self-categorization, in many types of communication (e.g. face-to-face, CMC) and in social self-efficacy. The way an individual perceives him or herself with respect to group membership and self-categorization may be different when factors such as ostracism or cyberostracism take place (i.e., ostracism taking place online), depending on the individual's access to the group in which they enjoy membership.

Additionally, social identity theory posits that an individual's identity, the sense of who a person is and his or her worth, is embraced by his or her group or socially ascribed category membership (Festinger, 1954). The awareness of the individual's group membership, put together with the individual's emotional evaluation, becomes the individual's social identity. The perception that an individual has of himself or herself and others in a group changes once the individual is aware of being a member of a certain social group (e.g., the in-group), compared to other social groups (the out-group) (Festinger, 1954).

According to social identity theory, the value of the group membership is internalized and becomes part of the individual's self-concept. The prestige or influences the individual associates to the group have implications for feelings of self-worth. Amaral and Monteiro (2002) suggested that the Internet and CMC might function as one social identity dimension for the individual users.

Summary of Theoretical Foundations

Bandura's social cognitive theory advanced the propositions made in social learning theory. Social cognitive theory explains human functioning by focusing on the roles of cognitive, vicarious, self-regulatory, and self-reflective processes in adaptation

and change. These processes are relative to the forces of one's environment and personal impulses that individuals frequently encounter (Bandura, 1986). Self-efficacy is a major component of social cognitive theory, based on the cognitive processes that regulate thought, motivation, and action (Bandura, 1997). Self-efficacy is an individual's level of conviction that he or she can perform a certain task; it is central to human behavior in organizing and executing necessary actions to achieve certain goals. The conviction an individual has about his or her abilities is formed from his or her beliefs, which are influenced through mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states.

Social identity theories set the stage for networking, a concept that explains how relationships can be configured around a common individual. Understanding how CMC technology works is important, as well. Important to the phenomenon of using CMC as an optimal method of communicating with one's network of relationships is the individual's social identity, which, in theory is related to groups with which an individual associates him or herself.

The social self-efficacy construct has an important role in the empowerment of adolescents to communicate using CMC. When an individual experiences sufficient self-efficacy, he or she has the necessary confidence to pursue his or her goals. Having the ability to confidently communicate with others is powerful in giving people a feeling that they can control the outcomes of their relationships. Related to these concepts is the amount of social self-efficacy in relationships and friendship individuals' possess.

Theoretical Foundations of the Study

Self-Presentation and Impression Management

The idea that social network sites provide individual users a mechanism to "construct" their own identity through computer-mediated self-presentation is important. Social psychologists have suggested that there is a link between creating self-presentations and constructing one's self-concept (Bem, 1972; Shlenker & Trudeau, 1990). One of the major aspects in generating self-construction is the idea that other people will be viewing what an individual is presenting about him or herself (Gonzales & Hancock, 2008). The primary motivation for enacting self-presentation through CMC may be the ability the individual has to "create, maintain, or modify" the impression that displays what they want to portray and reflect the qualities they want people to see, one's ideal self (Baumeister, 1982). Gonzales and Hancock (2008) asked whether self-presentation could shape identity. This is important to consider when studying individuals who use CMC as a means to make new friends or to communicate with self-confidence and expressiveness. However, Gonzales and Hancock (2008) questioned whether acting a certain way online changes one's self-concept offline or, more importantly, whether the offline view of an individual is influenced by his or her online behavior.

The public nature of social network sites may determine how people "construct" themselves through self-presentation (Gonzales & Hancock, 2008). The "publicness," or understanding that one has an audience, can enhance the effect that self-presentation has on identity (Kelly & Rodriguez, 2006; Schlenker, Dlugolecki, & Doherty, 1994). It is much easier to modify what others will discover about an individual when the self-

presentation is online (Bargh, McKenna, & Fitzsimmons, 2002). When self-presentation is online, presentation of the most selective versions of self are easily applied. Previously unexpressed aspects of an individual's identity, or even a new identity the individual wants to express, can be performed relatively simply (Ellison, Heino & Gibbs, 2006). Social psychological research has focused on the effect of self-presentation on identity (Kelly & Rodriguez, 2006). Links have been found between self-presentation and changes in some types of self-knowledge, such as self-concept, self-appraisal, and an individual's sense of personal autonomy (Gonzales & Hancock, 2008). Further, a study conducted by manipulating the participant's self-presentation to exhibit extroversion or introversion to an audience found that the participants reported internalizing the trait that was assigned to them when they displayed their self-presentation publically (Tice, 1992). Schlenker and colleagues (1994) called this concept "public commitment," whereas the identity that individuals commit themselves to publically will be established as part of their permanent perception of self. This public commitment comes from the social need by maintaining consistent internal and external states; therefore, the public behavior is internalized, even when it is artificially induced (Gonzales & Hancock, 2008).

One of the features that many CMC users perceive as beneficial, especially in social networking, and which has emerged in the research, is impression management (Jacobson, 1999). Impression management is a construct and body of research, which denotes developing one's image. Impression management is used in the process when an individual forms an impression of himself or herself through his or her online profile (Jacobson, 1999). The interpretations and expectations people construct about an

individual online while using CMC may be different from when they meet offline (Jacobson, 1999). These impressions are gathered through text-based CMC, without visual or auditory cues, and guide the individual's "image presentation," the process in relational development where individuals use personal strategies in their own best interest to give a favorable impression to other people (Ellison, Heino, & Gibbs, 2006). Impression management processes benefit social network sites and other asynchronous methods of communication. The processes give the user the ability to control the impression that they present to their network or others. For individuals who are isolated or anxious, the anonymity is a benefit they use to overcome worry about their appearance or awkwardness in communicating. The individual has the ability to go over what they want to communicate before they send it, and to control the images they present of themselves.

One of the most popular reasons for using the Internet is to participate in social communication (Amichai-Hamburger, Wainapel & Fox, 2004). Although the early literature (Kraut et al., 1998) suggested that Internet use led to loneliness and depression for users, McKenna and Bargh (1998) found that when a user thought his or her identity had some sort of stigma, he or she still used the Internet's anonymous environment to find people who had things in common, including a desired for marriage. The individual's motivation was driven by his or her dissatisfaction with their daily interactions, and turning to the Internet served his or her needs, whether they were personal or social. When individuals cannot express their real self in their immediate environment they will strive to find a social framework where they can receive

recognition for expressing his or her personality and needs (McKenna & Bargh, 2002). An individual's self-related and social-related needs are fulfilled through a medium where individuals are anonymous as long as they choose, and they have the ability to control the interactions much more so than for a friendship happening in real-time (Amichai-Hamburger et al., 2004).

Although research supports the premise that CMC can enhance an individual's repertoire of communication mediums, whether they are social and extroverted or shy and introverted (Kraut et al., 2002), individuals do not always use CMC to maintain and nurture relationships. Not only are increased opportunities for inclusion in online social interactions occurring, opportunities for being ignored or excluded in online groups also exist (Williams, Cheung, & Choi, 2000).

Gonzales and Hancock (2011) tested the effect of exposure on Facebook, a social networking site on self-esteem. The authors used two theoretical models: (a) the hyperpersonal model from CMC research, which posits that individuals utilize the technological features of CMC that allow them to enhance the messages they create in order to manage impressions and advance desired relationships, and (b) the objective self-awareness theory from social psychology, to argue that Facebook exposure would either enhance or diminish self-esteem. The results are important to the self-presentation and impression management models because they depend on the individual accessing his or her own profile, examining and adjusting his or her self-presentation, which in turn influence his or her impressions of their sense of self. Objective self-awareness theory assumes that individuals experience the self as both subject and object. The self, as

subject, is experienced free of self-consciousness through the individual's everyday activities. Individual becomes the object of their own consciousness when they focus attention on themselves, which can have either positive or negative effects (Duval & Wickland, 1972) on the self.

Walther (2007) contended through the hyperpersonal model that having the ability to selectively self-present in CMC exposes the individual to positively biased stimuli. Exposure to the positive stimuli counters the effects of the objective self-awareness model, and prompts a positive view of one's self. This positive view, although self-designed, promotes positive self-esteem, a vital construct to SSE (Gonzales & Hancock, 2011).

Signaling Theory

In social network sites, when establishing and maintaining relationships, individuals access a different form of language than they do in face-to-face encounters. Language helps people learn about each other and their cultures, evaluate behaviors or appearances, and keep up with what is going on around them and share opinions about such (Donath, 2008). People can benefit from these experiences because these experiences help them decide whom they like, who is nice and does good, and who may be dishonest and not be someone the individual wants as a friend. Language helps maintain relationships, manage the trust, and form a larger network of friends.

While technology helps users keep up with expanding social networks and needs, people still must be able to understand the changing relationships (Nardin et al., 2002), keep up with his or her friends in the context of the social environment, and determine

whom they can trust (Bacharach & Gambetti, 2001). Social network sites provide the framework for maintaining these contacts (boyd & Ellison, 2008) within its format, that is, using the site (e.g., Facebook, MySpace) to make contact or to keep in touch. In the social network site format, the possibility and capability for users to exercise self-presentations in a deceptive way exists; however, signaling theory may explain how the structure of social network sites can actually bring about a greater sense of trust and reliability to online relationships (Donath, 2008).

Signaling theory may just be what keeps communication honest (Donath, 2008). Since people rely on "signals" to know what they cannot see (e.g., beliefs, experiences, thoughts about others), the signals are what help individuals determine the information that is not obvious. The signals used in face-to-face interactions are different from those that are communicated through social network sites, including facial expressions, statements made on site profiles, and consumption patterns, as well as the types of activities the individual participates in when using social network sites (Donath, 2008). The theory shows why certain signals are reliable and others are not, and classifying the signals as assessment signals, which are inherently reliable (Donath, 2008), or conventional signals, which are not inherently reliable, but most often used in human communication. Self-presentations in online communities are mostly conventional signals, kept honest by the individual's sense of social morality or outside laws that may threaten to intervene (Donath & boyd, 2004).

Social Presence Theory

The subjective sense that there is obvious presence of an interactive partner is consistent with social presence theory, which includes verbal and visual cues and which may or may not be salient in some forms of CMC. The fewer of these cues that are present, the less amount of social presence is experienced by the user; therefore, based on this theory, an individual feels less social presence when using CMC (Hu & Sundar,, 2007). When there are fewer contextual, visual, and auditory cues, there is naturally a lower level of sensitivity and awareness making it a more impersonal medium than face-to-face communication (Hu & Sundar, 2007). Walther (1996) proposed social information processing theory, which challenges social presence theory by positing that as users manage uncertainty and develop relationships, they adapt to the absence of visual and acoustic cues by using increased textual cues. CMC can convey relational messages; it just takes longer to do so (Walther, 1996).

Three factors influence friendships through CMC: (a) people are apparently motivated to form friendships; (b) users are able to decode interpersonal textual cues more easily over time, which helps in forming impressions (e.g., use of emoticons such as “smiley faces”); and (c) users adapt strategies for attaining psychological-level knowledge (e.g., self-disclosure, deception detection skills) through CMC (Hu & Sundar, 2007). Time may be a critical component of relationship development through CMC. Social presence is in the domain of short-term interactions. Using Twitter or Instagram, with their simple statements, shared quotes, or photos with captions, may fall into the

category of short-term interaction. Therefore, any interaction beyond the short term enters into the normal interpersonal levels (Hu & Sundar, 2007).

Summary of Supporting Theories

Because of the link between creating self-presentations and constructing one's self-concept, self-presentation and impression management are important to the relationship between CMC use and SE. When individuals have the ability to portray the image they desire others to see, they adopt a certain confidence that they can control the outcome of their efforts to make friends or establish relationships. This confidence in one's abilities contributes to a more positive view of oneself (Walthers, 2007), an important element in SSE.

Signaling theory is important to consider when examining how relationships can be established and maintained using CMC technology. Applying and understanding how signals work in CMC explain trust and reliability in online relationships. In addition, social presence theories explains how an individual must adapt to the absence of visual or verbal cues, and increase his or her use of contextual cues in order to communicate relational information.

Overview of Computer-Mediated Communication

In recent years, computer technology has influenced personal communication. Spitzberg (2006) provided a "tentative" definition of CMC as "any symbolic text-based interaction conducted or facilitated through digitally-based technologies" (p. 630). This definition operationally includes Internet, cellular telephone text, instant messaging (IM), multiuser interactions (MUDs [multi-user domain] and MOOs [object-oriented MUD]);

email and Listserv interactions; and text-supplemented video-conferencing. This process requires people to participate in a message interchange where at some point the medium exchange is computerized (Spitzberg, 2006). It is important to note that these interactions are not restricted to online interaction, whereas any communication medium between individuals that involve computer-assisted technologies applies (Spitzberg, 2006).

As early as 1997, major networking sites such as Sixdegrees were launched to bring users together via computer. Social networks sites such as MySpace (launched in 2003) and Facebook (launched in 2006) were introduced into the homes of users. Handheld computer technology made its impact as well through telephony applications such as text messaging and Twitter (2006), an application using cell phones to update the user's network by sending status updates initiated by the user on a cell telephone. As recently as 2010, cell phone companies launched campaigns to encourage friends to meet with other friends by offering products for the individual to inform his or her chosen network of friends' places where they want to meet (Simonite, 2010). The social implications of CMC have led to discussions about the extent to which Internet use will harm the strength of social relationships or degree of community involvement (boyd & Ellison, 2007; Kraut et al., 1998, 2002; Pew, 2009). The widespread use of CMC may affect how users perceive his or her own ability to form and maintain friendships. Whether this technology is helpful or a hindrance has remained in debate. Pew (2010) found that over a 7-year period when Internet use by teens was examined, teens emerged as the most "wired segments of the American population" (p. 1).

Maintaining contact with relational partners has progressed from sending cards and letters through the postal service as means to augment face-to-face interactions to use of electronic technology. In the mid-20th century the telephone became a main method of enjoying immediate exchanges (Ramirez & Broneck, 2009). Bargh and McKenna, (2004), pointed out how the newer, interactive communication technologies have taken users beyond telephone by bringing them closer together, virtually at any time, and the popularity of Internet-based communication has become a vital part of everyday life.

Since the early days of email CMC has afforded users an opportunity to communicate through methods other than face-to-face interactions. For many users, the Internet and IM became a preferred method of communication. Social networking sites, like Facebook, MySpace, and Xanga, began on college campuses as a way to link students and create a network that would make it easy and fun for students to connect and reinforce the feeling of community (boyd & Ellison, 2007; Ellison, Steinfield, & Lampe, 2007). Short message services, including e-mail and mobile phone text messaging systems, paved the way for mobile social networking systems and became popular among young consumers (Bryant, Sanders-Jackson, & Smallwood, 2006). Voice-over Internet applications (VoIP), such as Skype, and macro- and microblogging with status updates, such as Twitter, took networking to a new level, allowing synchronous applications with up-to-the minute interactions in text (e.g., Twitter) and with video (e.g., Skype) (Ramirez & Broneck, 2009; Thurlow & McKay, 2003). Within the category of CMC, there is what seems like endless possibilities for users to connect and stay connected with their friends and family.

Virtual worlds such as Gaia online and SecondLife are popular, along with gaming systems that offer the capability for the user to go online and communicate with opponents during play (e.g., Play Station Portable [PSP], Nintendo DSi, and Wii). Since the popularity of asynchronous email to keep in touch, synchronous methods have emerged to exchange messages in "real time,'' and have gained popularity for facilitating routine social interactions (Parks & Floyd, 1996; Parks & Roberts, 1998). Instant messaging, which is near synchronous, provides individuals who are geographically separated the opportunity to engage in "real time" conversations (Ramirez & Broneck, 2009). Rather than replacing conventional forms of interaction and relational maintenance (Baym, 2002), IM represents an extension of everyday talk in a different format than email or face-to-face interaction (Ramirez & Broneck, 2009).

In its (2009) survey, Pew examined the extent to which teenagers aged 12 to 17 years, young adults aged 18 to 29 years, and adults over 30 used e-mail, text messaging, and social networking site technology to communicate, and compared the effects of these types of communication with face-to-face communication. Pew found that teens' use of cell phones was catching up to adults' use. In 2004, 45% of teens had cell phones, rising to 71% in 2008. During this same period, 2004 to 2008, adults owning cell phones increased from 65% to 77%, and of these adults, 88% were parents. The largest increase in use by teens occurred at age 14. In 2008, 52% of 12-13 year olds had cell phones, 72% had cell phones by age 14, and 84% of 17-year-olds reported having their own cell phone. Pew pointed out that personalized devices such as cell phones, mp3 players, and game-related devices are more likely to be thought of as owned by the children, whereas

computers are more likely to be seen as owned collectively by the whole family or by the parents.

Pew found that in 2008 71% of the teens owned cell phones, 77% owned a game console (e.g. Xbox, PlayStation), 74% owned an mp3 player, 60% owned a desktop or laptop computer, and 55% owned a portable gaming device. All of these devices can be used for communication through wireless capabilities. PewInternet.org (2011) provided statistical information about CMC use and teens (Table 1).

Table 1

CMC Use Among Adolescents Between 2000 and 2009

CMC format	2000 - %[a]	2004 - %	2009 - %	% Difference
Internet/day	42	-	63	+21
News	86	76	62	-6, -14
Social networking site	-	55	73	+18
Shopping	31	43	48	+12, +5
Surf/fitness	26	31	31	+5, =
Difficult subject	22	-	17	-5
Own blog	19	28	14	+9, -14
Share creation	33	39	38	+6, -1
Twitter	-	-	8	=
Virtual Worlds	-	-	8	=
Internet-email	73	87	93	+14, +6

Note. Adapted from PewInternet.org (2001)
[a] Percentages show different CMC services and devices used by year.

While adults use CMC, research suggests that adolescents and young adults dominate the "CMC highway" (Thurlow & McKay, 2003; Valkenburg & Peter, 2007a). Pew (2009) found that 26% of the teens surveyed used email, IM, and group messages through social network sites, and 43% used a social network site to send private messages. Another 26% of the teens sent and receive IMs, and 16% sent email daily (Pew, 2009). While 32% of teens admitted still using landlines to make calls, 33% were cell phone owners. Forty percent of teens used text messaging to communicate with friends, and more than 33% used their cell phones to talk to their friends. In addition to all the CMC used by teens, Pew (2009) found that still almost 33% of teens spend time face-to-face with their friends outside of school each day.

Given the increase number of modes of CMC and usage over the past decade, understanding the association of CMC to relationship building and maintenance is critical.

Chat, IM, and Mobile Phone Networks

Valkenburg and Peter (2007b) found a positive relationship between online communication using chat and IM, and close existing friendships. The same relationship did not exist for those who primarily talked online with strangers, for example, in public chat rooms or MUDs. Valkenburg and Peter also examined whether those individuals with friends use CMC as an additional means to communicate (e.g., the rich get richer), or whether the socially isolated individual used CMC to establish and enjoy friendships online (e.g. social compensation). The socially anxious respondents in the study reported communicating less often than the group of non-socially anxious respondents. The former

group reported perceiving the Internet as a more valuable tool for intimate self-disclosure than the latter group. This perception, according to Valkenburg and Peter (2007a), led to more online communication, which is consistent with the social compensation hypothesis. With age came an increase in online communication and intimate self-disclosure, creating a curvilinear relationship with age and perceived value of the Internet for intimate self-disclosure. Fifteen-year- olds were the largest group using heightened self-disclosure, with girls being closer to friends and more socially anxious than the boys in the study.

In 1999, adolescents used Internet mostly for seeking information and entertainment (Valkenburg & Soeters, 2001), whereas more recently they appear to be using it more for interpersonal communication. Adolescents spend more time on the Internet than adults using IM and chat (Lenhart, Madden, & Hitlin, 2005), and appear to be the defining users of the Internet (Valkenburg & Peter, 2007b). The majority of adolescent users maintain their existing network of friends through the Internet (Gross, 2004), while some do go online to make new friendships with strangers (Wolak, Mitchell, & Finhelkor, 2003).

The reduction hypothesis concentrates on with whom adolescents are communicating, while the stimulation hypothesis concentrates on how they communicate. It appears that communication online and offline overlap; therefore, the distinct separation between online and offline contacts do not exist with adolescents (Lenhart et al., 2005). Gross (2004) found that most teens use IM to communicate with school friends about other friends and gossip when outside of school. IM and chat rooms

provide a setting for “real time” or synchronous communication, unlike emails or blogs, which are asynchronous formats. This allows private (e.g., IM) and public (i.e., chat) venues for youth socializing online (Subrahmanyau, Smahel, & Greenfield, 2006).

Ramirez and Broneck (2009) examined IM in social and personal relationship maintenance, specifically, in types of services used based on the gender of individuals, and types of relationships emerging in all forms of CMC, with IM being used along with other forms of communication. IM facilitated relational maintenance as a complement to face-to-face communication (Ramirez & Bronek, 2009) and e-mail, a more traditional CMC as the first Internet tools used to connect individuals (R. H. Zakon & R. H. Zakon, 2006).

H. Kim, G. J. Kim, Park, and Rice (2007) proposed that maintaining peer relationships is of utmost importance to adolescents, as the adolescent transitions into adulthood and from a parent-defined self to a peer-defined self. Adolescents tend to use email to communicate with adults or when sending lengthy information, and IM for their day-to-day conversations with their friends (Lenhart, Madden, & Hitlin, 2005). Research with 13-18 year olds indicates that conversations using IM are more social than conversations using telephone or face-to-face contact (Boneva, Quinn, Kraut, Kiesler, & Shklovski, 2006). In maintaining a small network of fellow users, instead of trying to connect to new users, instant messaging may generally be used (Kim et al., 2007). Schiano et al. (2002) found that most teenagers communicate with fewer than five friends using IM, which supports the assumption that adolescents IM with their closest friends. Kim et al. (2007) proposed that cell phones are used predominately when individuals in

close relationships communicate, and IM with the least close relations. They suggest that in face-to-face settings, communication with weaker relations is difficult to avoid; however, adolescents need cell phones to communicate with, and maintain, only the closest of relationships. Adolescents use cell phones primarily in reinforcing existing social networks, apart from these existing networks, mobile services are not likely to succeed, other than for the uses described (Kim et al., 2007). Since adolescents use the cell phone as a narrowing-down medium (i.e., communicating with people having strong connections), IM tends to be an expanding medium.

The strength of an individual's peer connection is seen by how persistent their social relationships with their peers are, more so than the number of links or density of his or her social structure. Hidalgo and Rodriguez-Sickert (2008) found that in persistent relationships a key element was reciprocity, the returning of friend's calls. The measurement of persistence in the friend connection was by how often the friends called each other. The greater the number of contacts, within 15-day intervals, the higher the persistence value was. When there were other connections, such as common friends, the connections lasted longer. It appears that those friends, who were busier or had more time restraints, had less persistence on average; however, people with more ties had more persistent ties than those with fewer connections. Hidalgo and Rodriguez-Sickert concluded that behavior and personality affect the social structure surrounding an individual more so than does age or gender.

Social Network Sites

Social network sites, such as Facebook, support maintaining friendships and forming new connections with people. Previous research assumed that online and face-to-face interactions overlapped (Parks & Floyd, 1996); however, subsequent research suggested the new technologies enhance established connections and facilitate formation of new ones (Hampton, 2002; Hampton & Wellman, 2003). Lampe, Ellison, and Steinfield (2006) found Facebook users search for people they know offline, more than they browse for users they are not acquainted with but are interested in connecting. Paxton (1999) argued an individual will increase his or her social capital, which generally has a positive effect within the social network (Helliwell & Putnam, 2004), by expanding to connections outside one's current social network; this has been linked to some positive social outcomes (Adler & Kwon, 2002). Reports show that connections to friends relate to indices of psychological wellbeing, life satisfaction, and self-esteem (Bargh & McKenna, 2004; Helliwell & Putnam, 2004). Using social network sites may give individuals the ability to increase strength of connections formed and maintained within its framework due to the technology being analogous to maintaining the ties easily and with very little cost (Donath & boyd, 2004). Online relationships can be established through social network sites that have access to distribution lists, photo directories, and search engines (Resnick, 2001) that make it possible to form new relationships, support weak social ties, and create larger, diffuse connections/networks from which users can draw on network sites' resources (Donath & boyd, 2004; Resnick, 2001; Wellman, Haase, Witte, & Hampton, 2001).

Summary of Computer-Mediated Communication Literature

Individuals who have difficulty forming and maintaining connections with relationships, whether considered weak ties or strong ties, can benefit from online social network tools (Ellison et al., 2007). Bargh and McKenna (2004) suggest that Internet use helps those with low psychological wellbeing due to few connections with friends and neighbors. Connections are possible, whereas interactions that would not occur otherwise are seen as more feasible. Some network communication encourages more self-disclosure and lowers any barriers to interaction (Bargh et al., 2002; Tidwell & Walther, 2002). Ellison et al. (2007) found a strong connection between benefits of social network sites and social capital. Further Internet use alone did not predict more connections; however, frequency of use did. Ellison et al. suggested the online interactions did not remove users from face-to-face interactions, but led to supporting relationships by making contact with friends possible, even in life transitions and moves compromised geographic proximity with friends

Factors Associated With Computer-Mediated Communication

As noted earlier, there is a split in the research examining whether CMC promotes isolation and depression (Stoll, 1995; Kraut et al., 1998) or whether CMC is a tool used to strengthen existing relationship ties (Ramirez & Boneck, 2009; Brignall & Van Valey, 2006; Bryant, Sanders-Jackson, & Smallwood, 2006). Some research suggests that CMC takes time away from family, friends, and activities that are considered “maintenance activities” when considering previously established relationships (Cummings et al., 2002; Kraut et al., 2002; Nie & Erbring, 2000; Tidwell & Walther, 2002; Whitty, 2002).

Others maintain that CMC helps facilitate and enhance established relationships while making it possible to form new friendships that otherwise would not have been formed (Morahan-Martu & Schumaker, 2003; McKenna, Green, & Gleason, 2002). Thus, CMC may be a catalyst for those individuals who were previously more shy or isolated than most.

According to Humphreys (2008), researchers reconsidered some initial concerns that Internet use facilitated social isolation behaviors) due to a then more recent body of research suggesting that Internet use and particularly CMC can help develop, maintain, and even strengthen social connections through this type of networking (Kraut, 2002). Although there are more avenues to "staying connected," McPherson, Smith-Lovin, and Brachears (2006) reported that since the mid-1980s, having less number of confidants, reported by Americans, reflected important social changes in America. This plethora of technology helps maintain preexisting social connections, according to Ramirez and Broneck (2009).

Although Humphreys (2008) described this generation of users as being accustomed to being in "perpetual contact" with others in their social networks, other researchers have contended that mobile phone used for this purpose may be discouraging face-to-face communication for many users. Social network sites such as Facebook have designed software suitable for its members to have access to their account and receive updates from their network, through their cellular phones, while away from the computer. Until 2005, there was Dodgeball, a form of micro-CMC, which was a networking system used to track friends in an urban area with the intention of coordinating meetings, or

checking in to see where people of interest were hanging out (Humphreys, 2008). Unfortunately, it was only accessible in 22 different urban areas. Google purchased it and renamed it Google Latitude (Humphreys, 2008).

The Internet is seen as primarily a social medium with no time barriers (Kraut et al., 1998); it is ideal for communication and has the potential to break barriers of race, language, nationality, and ideology (Postmes, Spears, & Lea, 2002). The online environment creates a medium in which any individual are less visible and possibly even insignificant (Sproull & Kresler, 1991). For some individuals, because the presence of the person whom an individual is communicating with is less visible or the visibility is quite different from when in a face-to-face interaction CMC is depersonalized (Short, Williams, & Christie, 1976). It is thought that this traditional assumption weakens the social influences present in face-to-face communications. However, Postmes et al. (1998), posit that the anonymity that CMC provides actually has created less differentiation between groups and an increase in the feeling of equality with other users.

Rogers's work with individuals who are discovering their "real self" was the basis of McKenna and Bargh (1998) contending that when focusing on self-related needs, they seek other ways to express themselves, and often Internet use is the answer. Further, McKenna and Bargh suggested that mediation occurs between the ability to build meaningful and close relationships online and by the "real self" being expressed to others when communicating online instead of offline (Amichai-Hamburger, 2002). In fact, Amichai-Hamburger et al. (2002) predicted that individuals who are considered introverted or neurotic due to their social difficulties would locate their "real me" on the

Internet while extroverted individuals with no neuroticism would gain the same through traditional social interactions. Communicating using asynchronous technology has its advantages to the individual with low SSE. Many social network sites give users the ability to build a profile with information about themselves and photographs to share with users in their network, or if so desired, all users on the site. This "self-presentation" gives the user a sense of control so that other people in their network are seeing them as the user presents their selves (Gonzales & Hancock, 2008).

Researchers have suggested that CMC can be detrimental to personal relationships, yet there is evidence to the contrary. Depending on the individual traits, environment, and skills of the user, and what method of CMC they have access to, CMC may be a saving grace for many socially anxious, isolated, lonely, or depressed adolescents. Close friends tend to prefer more personal IM or texting while many teens who use chat and social network sites, are seeking a less intimate forum to overcome social skills deficits, thus practicing communication with peers while experiencing decreased anxiety (Valkenburg & Peter, 2007a). These innovative communication options are available to adolescents so that they may improve their social skills or expand their social network, are not without challenges.

Emotional Stability: Social Anxiety and Depression

One variable often examined as a correlate to Internet use and frequency of use is emotional stability (Hardie & Tee, 2007). Neuroticism and emotional instability have features that are often synonymous with each other (Hardie & Tee, 2007; Eysenck & Eysenck, 1975). Loneliness, social isolation, social anxiety, and depression are hallmarks

of emotional instability (Aleem, 2005). Assessment or psychological evaluation may be used to measure emotional stability; it is also recognized in behaviors such as avoidance or anxiety related to social situations or interactions (Caplan, 2007). Relevant to this study is how emotional stability may affect the possibility of establishing a new friendship or nurturing and maintaining current friendships (LaRose, Eastin, & Gregg, 2001). Some research suggests that CMC may help reduce isolation, loneliness, and maybe depression or social anxiety in users, even when weak emotional stability is present (Murfin, 1994). Others have suggested that CMC, when overused, may actually enhance isolation or depression due to the reduction in face-to-face or physical proximity (Caplan, 2007).

Hamburger and Ben-Artzi (2000) found that differential patterns of Internet use emerged for men and women with different levels of extraversion and neuroticism. Additionally, they found that lonely women were attracted to the Internet; in contrast, Kraut et al. (1998) contended that the Internet is the cause of loneliness. Amichai-Hamburger and Ben-Artzi (2003) emphasized the importance of research moving forward and not dismissing Internet use as an unhealthy intrusion but a potential enhancement to wellbeing for its users when used properly.

Social anxiety. Correlations made with social anxiety and shyness result in them interchangeably used by some psychologists (Morohan-Martin & Schumaker, 2003). The severe degrees of anxiety are at clinical levels indicating social phobia or avoidant personality disorder *(DSM-IV-TR*, 2000). Socially anxious individuals tend to have poor social skills, less social support, and more difficulty in forming and maintaining

satisfying social relationships (Leary & Kowalski, 1995). In addition, individuals with social anxiety tend to have more difficulty expressing themselves, partly due to their preoccupation with their perceived social deficits, so they tend to reduce time socially interacting with others. Paradoxically, the socially anxious person seems to be drawn to the Internet for the socially interactive features. The socially anxious individual tends to spend more time in chat rooms than extroverted individuals, who may spend more time IM-ing friends (Anolli, Villani, & Riva, 2005). The socially anxious person is also likely to form intense, intimate friendships with those whom they meet on the Internet (Anolli, 2005; McKenna & Bargh, 1999). Introverts who have higher levels of Internet use have lower levels of a sense of personal wellbeing; in extroverts, the results are inversed (Kraut et al., 2002).

Depression. Van den Eijnden, Vermulst, Spijkerman, and Engels (2008) examined psychological wellbeing among teens who use CMC and Internet. The authors suggested that close online relationships with people whom the individual meet online are related to feelings of depression, and teens who excessively use IM tend to have increased depressive symptoms, supporting the social displacement hypothesis. In addition, online communication with people whom the individual has no close affiliation with, as in public chat rooms, seems to be related to loneliness and social anxiety (Gross, Juvonen, & Gable, 2002). Bessiere et al. (2008) found that online communication among adults was related to increased depression symptoms only when the communication was directed at meeting new people, and not merely communicating with existing friends and family. Socially isolated teens who rely on Internet communication for social support

may experience more depressive symptoms because social support is more difficult to find through people met online, with whom they only have weak ties (LaRose, Eastin, & Gregg, 2001). When communication online is between those who are the individual's existing friends and not strangers, there is support for the stimulation hypothesis, because the individuals feel closer to their existing friends when communicating with them both online and face-to-face (Valkenburg & Peter, 2007a).

Loneliness. Kraut et al. (1998) found that Internet use led to loneliness. Amichai-Hamburger (2002) noted, however, that the Kraut et al. study did not take into account the many different types of personalities for those using the Internet. The population of users is not uniform, and the users still find a way to keep their own personal preferences in mind. Therefore, user wellbeing will not be uniform.

Two constructs of personality have been identified as related to loneliness, extroversion and neuroticism (Hojat, 1982; Russell, Peplau, & Cutrona, 1980). Extroverts are typically seen as more outgoing, and social and seek company more often than do introverts. The introverted individual is generally seen as distant, quiet, even unfriendly or uninvolved, preferring to be in his or her own company (Amichai-Hamburger & Ben-Artzi, 2003). It has been found that extroversion and neuroticism influence Internet use (Hamburger & Ben-Artzi, 2000). Amichai-Hamburger and Ben-Artzi (2003) questioned 89 participants in a study pertaining to participant Internet use and any feelings of loneliness, extroversion, or neuroticism (p. 71). They compared two models, one, based on (Kraut et al. (1998) that suggests Internet use leads to loneliness, and an alternative model that supposes that people who already feel lonely are the people who tend to spend

more time on the Internet. A satisfactory goodness of fit was obtained for the alternative model (Amichai-Hamburger & Ben-Artzi, 2002).

Social isolation. Teenagers sometimes disconnect from their previous social contacts and friends, as the Internet becomes the main social outlet, (Amichai-Hamburger, 2002). Kraut et al. (1998) found loneliness and heavy Internet use related. Brenner (1997) suggested that heavy use leads to addiction and actually interferes with other activities, leading to social isolation (Stoll, 1995; Turkle, 1996). The Kraut et al. studied (1998) the participants who were recent high school graduates, and at a point in their lives when their social contacts decline naturally, so the study received criticism (Shapiro, 1999). Whether relationship to use was friendship connections, information seeking, or shopping, Hamburger and Ben-Artzi (2000) objected to the omission of the vast range of reasons a participant would make use of the Internet. Kraut, et al. (1998) introduced Internet users as a monochromatic group, with the same reasons or needs that Internet use seems to fulfill. The criticism is that they left out personality as a factor, and it needs to be a consideration when examining the impact that Internet has on its many different users.

Ostracism. Ostracism, the act of ignoring or excluding another, is powerful and ubiquitous (Williams et al., 2000; Gruter & Masters, 1986; Williams, 1997). It is used by animals for regulating contact with noncontributing members of their pack (Williams et al., 2000), by humans in primitive and modern cultures, schools, military academies, tribes, workplace, religious groups, and in interpersonal relationships (Williams et al., 2000). Ostracism occurs throughout life, in young childhood during play (Barner-Barry,

1986), and with adolescents during conflict (especially girls) (R. B. Cairns, B. D. Cairns, Neckerman, & Ferguson, 1989). Adults also experience ostracism as a target and an instigator, many times through the silent treatment by or on a loved one (Faulkner, K. Williams, Sherman, & E. Williams, 1997). When ignored, the elderly report, that they have a feeling of loneliness , what they perceive by society, family members, and colleagues as ignoring them. These feelings show correlations with experiencing lower life satisfaction in the elderly (Madey & Williams, 1999). Sweeting and Gilhooly (1992) discussed the phenomenon of elderly patients who are ill and dying, receiving fewer contacts with loved ones and health care professionals, a semantic and metaphoric link called “social death” (Sudnow, 1967; Sweeting & Gilhooly, 1997). When studying the effects of being ignored over the Internet, Williams et al. (2000) found that ostracism seemed to keep the group cohesive, and more likely to survive, so it was viewed by the source as having an evolutionary function. However, for the target, ostracism was devastating, and seemed to force them to join another group or die. Typically, the sources of ostracism are in a less positive light by their targets (Geller, Goodstein, Silver, & Sternberg 1974; Pepitone & Wilpizeski, 1960); however, whenever the target was able to get back in with the source, they used the opportunity (Snoek, 1962; Williams & Sommer, 1997).

With the type of constant interaction that CMC offers, and the increasing convenience in communicating with others via CMC, opportunities for problems in relations between individuals can be created (Kraut et al., 1998, Cumming, Sproull, & Keisler, 2002). In face-to-face interaction opportunities, ostracism manifests through eye

contact avoidance or verbal unresponsiveness. It demonstrates online by unresponsiveness in an online chat room (Williams et al., 2000), unanswered emails or comments and friend requests made on social network sites. The powerful effect of ostracism on mood and social satisfaction leads to frustration, (Giller, Goodstein, Silver, & Sternberg, 1974), reduced sense of social belonging and control (Williams et al., 1998) negative self-appraisal (Geller et al., 1974; Williams & Sommer, 1997), and even anger (Geller et al., 1974; Twenge, Baumeister Tice, & Stucke, e2001).

Kraut et al. (1998) reported that Internet users became depressed and lonely after the first couple of years of use, and since Internet use requires time intensive social activity, it may take users away from more valuable activities. With Internet use being different from television viewing, which is a passive nonsocial activity, users are more prone to feeling lonely with a lower sense of belonging. Rintel and Pittman (1997) added that the harmful effect of ostracism is made worse when an Internet user believes her or she is being ignored, a phenomenon called cyberostracism (Williams et al., 2000).

In a study using the Internet ostracism paradigm, Williams et al. (2000) found similarities to three social psychology studies: (a) Asch's 1956 conformity study (i.e., demonstrating conformity stemming from a person's desire to gain approval and avoid disapproval), (b) Tajfel's 1970 minimal group (i.e., proposing that people have an innate tendency to categorize themselves into one or more in-groups), and (c) Milgram's 1974 obedience paradigm studies (i.e., , demonstrating the power of situational forces on behavior). The researchers suggested that even in baseline conditions, participants reacted to a minimal ostracism paradigm. The participants were so sensitive to the conditions of

being ignored or rejected online that they showed negative reactions (Williams et al., 2000); concluding that this form of ostracism may likely be a robust form of social influence (i.e., the persuasive effect individuals have on one another), as in the classic studies from Asch, Tajfel, and Milgram. In another study (Williams & Zadro, 1999), an interviewed participant shared that her self-esteem plummeted to its lowest when she was continuously given the silent treatment from a person she shared a chat room with over the Internet (Willliams et al., 2000). Continued Internet usage under these types of conditions may bring support to Kraut et al. (1998) argument that feelings of depression and loneliness are outcomes. Whether one believes that ostracism exists or is real, it is important to note that the Internet is not free from being a place to feel ostracized by one's friends.

Williams et al. (2002) investigated differences in types of ostracism (i.e., social and cyber). Although Internet provides a convenient opportunity to interact with friends, it provides both satisfying social encounters as well as those that pose problems with the way people relate to each other through cyberostracism (Williams et al., 2000). Williams et al. (2002) investigated the effects of cyberostracism compared to social ostracism by examining an Internet game between strangers. They found that although the games were meaningless and anonymous, they still caused negative feelings and attempts to improve exclusionary status by those ostracized participants through the game. In another study, they examined cyberostracism in a chat room where participants chatted being in either the in-group or the out-group. Additionally, they studied participants randomly assigned to a face-to-face encounter or a chat room where in the discussion, the other members in

the chat room disagreed with the participant and either included or ostracized them (Williams et al., 2002). Through comparisons with four studies, Williams et al. (2002) found that ostracized participants were as likely to have negative feelings of ostracism whether the person who ostracized them was a friend or a stranger or in the same social group with similar or dissimilar attitudes from the participant. The research results suggest that when situations are alike, cyberostracism has a different effect than social ostracism. The researchers concluded that when an ostracized individual is in a face-to-face situation; the individual has a jeopardized sense of self-esteem and control whereas less affected were self-esteem and control when individuals experienced cyberostracism in a chat room discussion (Williams et al., 2002).

Rintel and Pittman (1997) posited that there might be a great deal of uncertainty and discomfort when there is ostracism within a chat room. Users may interpret silence in the chat room, as hostility . Williams et al. (2000) demonstrated in an experiment using an online game that cyberostracism affects the target adversely by causing lower levels of self-esteem, meaningful existence, belonging, and control. Even when explanations for the cyberostracism were given the feelings persisted. Ostracism in an online chat room also resulted in negative reactions, including lower moods, levels of belonging, control, meaningful existence, and self-esteem.

Williams et al. (2003) found that although face-to-face ostracism is similar to cyberostracism, the ostracized individuals, who in a face-to-face interaction feel greater levels of threat to sense of control and self-esteem than those ostracized in a chat room discussion. The research suggests that, although the assumption that anonymity protects

individuals from the perils of face-to-face ostracism, the protection is limited (Williams et al., 2000). Experiencing a sense of belonging and meaningful existence by users, who are sensitive to ostracism, occurs when “virtual bravado” (p. 77) helps buffer attacks to self-esteem and control. Feelings of depression and helplessness appear buffered as well (Williams et al., 2000), although Kraut et al. (1998) contended that, with prolonged and continued Internet use, loneliness, and depression are a possible outcome.

Summary of Emotional Stability

For much of the early research on CMC, suggestions were that social isolation and anxiety, depression, and loneliness were outcomes of CMC use (Kraut et al., 1998). Studies that are more recent indicated the need to reconsider this initial stance. It appears that CMC use enhances already established friendships and gives the users who experience loneliness and social anxiety, the courage to use CMC to his or her advantage by providing opportunity, security, and accessibility to make new friends, and maintain friendships already established. However, it is unclear whether CMC duration impacts SSE, social anxiety, or depression. Social self-efficacy is necessary in relationship maintenance because when an individual believes they are competent in establishing a friendship network, they are more likely to initiate and sustain friendships and take advantage of the opportunities that foster the network. Moreover, higher levels of social anxiety and depression may impede the ability to initiate and sustain friendships or take advantage of the opportunities that foster the network.

Problematic Internet Use

Caplan (2003) introduced a model that suggests lonely and depressed people prefer to use online social sites to interact with others; however, negative outcomes associated with their use may become problematic (Caplan, 2003). Pawlik-Kienlen suggested several reasons why Internet users lurk in chat rooms: (a) The answer to whatever question that is posed is obvious; (b) fear of being teased, humiliated, or ridiculed; (c) lack of self-confidence or self-esteem causes the user to hold back on sharing his or her opinion or knowledge; (d) lurking may be a kind of voyeurism activity to some users, where they enjoy watching other people; various other reasons, such as, (e) overbearing people in who are off-putting in the chat room; (f) past disappointments or bad experiences; and (g) concern over grammar or spelling mistakes. CMC users who may be affected lack necessary skills to participate in this communication medium in ways that lead to low self-confidence, low SE, and deficits in relationship building and maintenance (Pawlik-Kienlen, 2007).

Caplan (2007) argued that there are cognitive predictors of negative outcomes arising from Internet use revealed in previous studies (Caplan, 2002; Morahan-Martin & Schumacher, 2003; Amichai-Hamburger & Ben-Artzi, 2003). The model of problematic Internet use (Caplan, 2002) maintains that an individual's psychological wellbeing and beliefs about interpersonal communication are the cognitive predictors. Further, Caplan found that loneliness and having a preference to online social interactions were not related to problematic Internet use; however, social anxiety was found to be the confounding variable in the association between loneliness and preference for online

interaction. Deniz (2010) examined the association between loneliness and excessive Internet use in adolescents and found that students who reported more hours of engagement on the Internet had higher levels of loneliness when compared to the average user. Deniz asserted that Internet addiction starts with adolescents at a younger age than drug addiction; the group between 12 and 18 years of age group is at most risk. The heavy increase in use by users between 16 and 24 cause many problems for the individual.

The forms of CMC that individuals prefer to use are as diverse as the user. Based on his or her motives, individual skills, and outcomes of use, the individual user will choose the communication method that best fits his or her situation or limitations. The level of SSE an individual has when effectively using CMC as a tool to establish and maintain friendships may be affected by factors such as, the user's social anxiety and depression, or the type of restrictions or monitoring the individual user has to overcome if they want to use CMC.

Monitoring or Restricting Computer Use

CMC monitoring. An Internet environment that takes on some of the same dynamics as communication interactions between teens offline is the chat room. The differences between monitored chat room use and unmonitored chat room use among teenagers may lie in the demographics of the teens (Pew, 2007). Teens who are drawn to monitored chats are likely to have more protective parents, may be more vulnerable (e.g. younger age, female), and may have parents are more willing to pay a subscription fee (Pew, 2007).

Subrahmanyan, Amakel, and Greenfield (2006) introduced a frequently used theoretical model for conceptualizing the role of media and its content affecting children's attitudes, thoughts, and behaviors. The research findings supported the idea that a stable identity includes an individual's self-definition as well as the personal values, moral beliefs, and the roles and relationships they develop, by examining personal identity and sexuality as key adolescent issues. Subrahmanyan, Amakel, and Greenfield (2006) discussed online identity in online teen chat rooms. Over 290 of the 583 participants used identifying information about themselves. Most frequently, gender was disclosed, what the authors state as participants compensating for the chat environments, by revealing information about themselves that would be obvious, had the meeting been a face-to-face conversation. Sexual themes and bad language constituted only 8% of the sample; however, in "monitored" chat rooms where a host enforced basic behavior rules, there was much less explicit or vulgar language. The differences, according to the researchers, are due to the monitoring process and the types of populations that frequent each. Subrahmanyan et al. (2006) examined unmonitored chat rooms during the same time interval they examined a similar monitored room. They coded utterances and nicknames in order to determine if the conversation in the two chat rooms focused on identity presentation and sexual exploration. In addition, they coded nicknames to access identity information to reveal gender and sexuality. The research indicated a majority of the teens declaring identity (55%) while nearly half (28%) produced sexual utterances. Most of the related differences found in the two chat rooms were to having a monitor. The monitors enforcing the rules of the service provider seemed to deter the use of

obscene language and degrading sexuality, however, did not seem to deter youth from using their identity in the encounter.

CMC restriction. Complete control of CMC use in a restricted environment is somewhat like monitored use as the user may not have the freedom to manage his or her own language or use patterns. However, restricted use does not automatically include monitoring by a mediator. Restricted use for the sake of this study means that the user may have restrictions such as total time they are permitted to use the communication medium, certain hours of permitted use, or even certain types of CMC the individual is permitted to use. A person in authority, such as a parent, teacher or educational institution, employer, or environmental protocols, puts these restrictions into effect.

Selwyn, Potter, and Cranmer (2009) suggested that restrictions in educational settings, while intended to enhance the educational experience, limit the enjoyment aspect of CMC during the school day. The researchers suggested a need to explore alternative strategies for using ICT in schools by drawing on the best elements of the out of school experience of CMC. Encouraging a more enjoyable use in school may boost the influence that modern technology has on the educational experience. Arrizaalango-Crespo, Aierbe-Barandiaran, and Medrano-Samamiego (2010) examined computer use and parental mediation. While the majority of the individuals they sampled used the Internet while unrestricted by adults, the average use was between 1 and 3 hours per week. Parents saw their children's use of computer as educational (e.g., used for homework or research) while their children saw it differently as they reported using computer for means to communicate with friends (e.g., instant messaging), and

entertainment (e.g., online games). According to Livingstone (2009), the manner that parents control their children's Internet activities are through filtering and monitoring software that can restrict certain content or hours of use, and by parental mediation strategies that may include reviewing the sites their children have visited, talking to their children about their proposed use, and setting guidelines of use. Pew (2007) found that parents regulated teen content more than time using the Internet, video games, and television watching. In addition, the parents who used Internet frequently had teens that also frequently used the Internet. Parents and teens owned the same number of devices; however, they did not always own the same devices. Over 68% of parents surveyed (Pew, 2007) said that they have rules about what Internet sites their teen can or cannot visit, as well as the type of information they share with people they talk to on the Internet. Parents also make restrictions on the amount of time their teen can spend with media, but time is not controlled as much as content. Most parents say that computer use is a good thing (i.e., 59%), some said that it was not good (i.e., 7%); however, over time (between 2004 and 2007), more parents became neutral (i.e., 25% in 2004 to 30% in 2007) about how use of media affects their teen positively or negatively (Pew, 2007). As the teens got older, restrictions on CMC use seemed to decrease (Pew, 2007).

Summary of Factors Associated with CMC

Monitoring or restricting computer use characterizes the degree those in authority restrict the individual's CMC use. Parents may monitor use of CMC during hours at home and schools may monitor use during the school day. Types of restricting may include permissible websites (i.e., content), cell phone use for texting (i.e., blocking

users), and time of the day or hours of use (i.e., not during school, after dinner, or not during certain hours). These restrictions and use of monitoring may affect CMC because monitoring and restricting lowers the amount of user access, naturally resulting in the user not being able to connect with friends as frequently. Additionally, the user may be forced to continue using only face-to-face interactions to enhance or maintain his or her relationships (i.e., "forced outside," per se). Internet overuse is a phenomenon that suggests additional risk of isolation; however, access to friends – present and future may empower the user where relationships and relational SSE are concerned.

Methodology Used in Existing Literature

Researchers have examined CMC, with regard to friendships, strengthening of ties, social anxiety and depression, and SSE. The methods that researchers have employed have ranged from quantitative studies to qualitative methods; however, they used several instruments commonly used to measure SSE, social anxiety, and depression.

Relationships

Valkenburg and Peter (2007b) found that closeness of friendships was positively associated with online communication. The researchers employed survey questionnaires to obtain demographic information and specific inquiries regarding frequency, rate, and intensity of online communication used by the participants, and whether the participants communicated with strangers or only family and friends. To gather information specific to friendships and outcomes of online communication, researchers administered the UCLA Loneliness Scale (Russell, 1996), The Social Anxiety Scale for Adolescents

(LaGreca & Lopez, 1998), and the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1987).

In another study, Valkenburg and Peter (2007a) found the type of online communication has an effect on adolescent wellbeing. The researchers employed survey questionnaires regarding chat, IM, and the frequency of use, as well as items taken from Buhrmester's Network of Relationship Inventory (BNRI, 1990). They used items from the Companionship subscale of the BNRI to assess time spent with existing friends and items taken from the Relationship Satisfaction, Approval, and Support subscales of the BNRI to assess the quality of existing friendships. They used a separate 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Guffin, 1985) to measure wellbeing. The data suggest a positive relationship between the amount of time adolescents use IM to communicate is positively related to time spent with existing friends. The quality of those friendships positively predicted wellbeing and mediated between time spent using IM and wellbeing. Time spent with friends mediated the effect of time spent with IM on the quality of the friendships, not for the time spent in public chat rooms (Valkenburg & Peter, 2007a). These findings are important to help distinguish whether the use of IM contributes to adolescents' wellbeing because the IM use is with close existing friends or whether online communication, such as public chat rooms with anyone contributes to the adolescents' wellbeing. This study used cross-sectional data to test the hypotheses. Despite the study being theory driven, a longitudinal design would better distinguish covariance from causation when examining longitudinal relationships

between the quality of existing friendships and online communication (Valkenburg & Peter, 2007b).

Ramirez and Brondeck (2009) used a quantitative survey design to explore the role of IM in relational maintenance, and how IM complements traditional forms of communication in sustaining relationship involvement. A brief questionnaire was administered to gather demographic information and information regarding IM use. The Iowa Communication Record was also used to measure communication quality, value of interaction, change resulting from the interaction, and control of the interaction. Although this study narrowed the scope of CMC to IM, it has limited generalizability because the sample was of students from a university class and not randomly selected from the population at large. The presumption is that the participants ranged in age, and are more educated and technologically astute than the typical population of adolescents.

Online Relationships

Online relationships are important to examine when studying SSE, social anxiety, and depression, when CMC duration is a factor. McKenna and Bargh (2000) demonstrated several methods in studying social interactions and Internet psychology. These researchers conducted surveys within newsgroups, interviewed people "live" in chat rooms, analyzed available archival records from newsgroup posts, and directed qualitative research using extensive interviews and case history. They also used laboratory experiments, but recommend using the meta-methodological strategy of *triangulation*, where a variety of approaches were used in testing any hypotheses concerning social and psychological phenomena on the Internet. The recommendation to

use meta-methodological strategies is given due to the researchers' view that problems may occur with a sample in an Internet survey because the sample is gathered through self-selection. Confounds would be ruled out if random selection and assignment used in laboratory experiments produced converging evidence with the survey data (p. 69).

Ishii (2010) examined online relationships and conflict, using self-report survey data. Ishii used an online survey with a convenience sample of 159 students. Rahim's Conflict Management Scale was modified by using questions relevant to conflict-management style for this online study, and Maxwell's Close Relationship Questionnaire was used to address commitment and intent. Although the measures were valuable in predicting strength of online friendships, the sample was of university students, whereas this study is examining adolescent friendships. Additionally, these measures examined conflict management style in close Internet relationships where the participants have not yet met face-to-face.

Desjarlais and Willoughby (2010) conducted a longitudinal study concerning friendship quality and computer use with friends. The researchers administered a self-report questionnaire seeking demographic information regarding parental educational level and the number of computers in the home. In addition, questions regarding using computers with a friend in person or with a friend via the Internet and/or online chatting and involvement in organized sports were in the questionnaire. Friendship quality assessment used questions adapted from Armsden and Greenburg's (1987) Inventory of Parent and Peer Attachment; social anxiety symptoms were assessed using Ginsburg, LaGreca, and Silverman's (1998) Social Anxiety Scale. The researchers found small

improvements in friendship quality whether either participants use a computer with friends in person or online by the time the participants reached Grade 12. Although small, the improvements may have important compounding influence in relationships beyond high school.

Social Self-Efficacy

Connolly (1989) examined SSE and developed a SSE scale for adolescents, which is psychometrically robust. The scale (Adolescent Social Self-Efficacy Scale) measured adolescent SSE and the relationship of SSE to self-concept, social adjustment, and mental health. The study used three samples from a large suburban high school, a small suburban high school, and residents of a hospital-based psychiatric treatment facility serving mostly white and lower-middle to middle-class adolescents. Although they used the samples in validating the SSE instrument, they may generalize to a smaller sample.

Bilgin and Akkapulu (2007) used various instruments to find significant predictors to measure SSE. The researchers used: (a) the Social Self-Efficacy Scale Expectation Scale for Adolescents (Bilgin, 1999); (b) the Inventory of Peer Attachment (Hortucsu & Oral, 1991); (c) the Interpersonal Relationship Scale (Sahin, Durak, & Yusak, 1994); (d) the Problem Solving Inventory (Sahin& Sahin, 1993); (e) Rosenbaum's Learned Resourcefulness Schedule (1980); (f) the Perceived Marital Adjustment Questionnaire (Ahhpulu, 2005); and (g) the Inventory of Parent Attachment (Hortucsu & Oral, 1991) to determine what was related to SSE. The results of these analyses suggested that learned resourcefulness, problem-solving skills, perceived marital adjustment, the level of peer attachment, the mother's nourishing interpersonal relations,

and parental attachment levels were all related to SSE (Bilgin & Akkapulu, 2007). The results provided the methodological literature with measures that predict SSE; however, the researchers used volunteer high school students and their mothers to complete the various assessments; including fathers and teachers may be more enlightening, especially when assessing marital and attachment variables. Additionally, requiring high-school student to complete a battery such as those used in this study may be difficult to execute in a reasonable amount of time for time sensitive research studies or examining groups with little tolerance to completing so many assessments.

Coleman (2003) studied parent-child attachment, SSE, and peer relationships. The sample consisting of 67 middle-school adolescents completed a demographic questionnaire designed to gain information regarding age, gender, and family structure, including number of siblings (p. 354). Armsten and Greenberg's (1987) Inventory of Parent and Peer Attachment was used to assess the participant's view of degree of "mutual trust, quality of communication and the extent of anger and alienation within the context of current friendships" (pp. 354-355). Participants were administered The Social Self-Efficacy subscale of the Children's Self-Efficacy Scale (Bandura et al., 1996) to assess beliefs in their own SSE, with respect to interpersonal functioning. Finally, addressing peer victimization they used a 4-item scale developed by G. W. Ladd and B. Ladd (1998). The data on parent-child attachment and quality of friendship was based on only the participant's perspective, which may be helpful in exploring children's SSE beliefs as process mechanisms linking parental and peer attachment with peer victimization. However, it may not be relevant to other dimensions of SSE, such as

giving and receiving help, performance in public situations, or social assertiveness (Ford, 1982). Additionally, the sample included fewer than 70 participants, making the statistical power low (Coleman, 2003).

Emotional Stability and Internet Use

Sanders et al. (2000) investigated levels of Internet use and its association to adolescent depression, parent and peer relationships, and social isolation. The authors administered a 181-item questionnaire to 89 high school seniors. The level of Internet use was determined by asking questions about how many hours a day the participant spent on the Internet. Determining quality of relationships with parents and friend was by using the Intimacy Scale (Blyth & Foster-Clark, 1987) and using the Center for Epidemiological Studies – Depression Scale, to measure depression (Radloff, 1991). The results indicated that high frequency Internet use relates to weaker social ties and low-frequency users reported a significantly closer relationship with mothers and friends. However, these results only indicate the presence of a relationship, not directionality within that relationship; it was not possible to determine whether the participants with weaker relationships gravitated to the Internet, or whether high levels of Internet activity weakened the relationships. Adolescent depression was not determined to relate significantly to level of Internet use. The authors recommend further study with a wider range of social and psychological factors assessed with regard to Internet use.

Moody (2001) examined Weiss's bimodal theory of loneliness by looking for an association with Internet use. Moody used surveys to measure the amount of Internet use and frequency of CMC, the Social and Emotional Loneliness Scale to measure social and

emotional loneliness, and the Social Anxiety Subscale from the Self Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) to measure the individual's discomfort in the presence of others. Moody (2001) used questions that targeted the size of participant's social network and Internet use frequency to compare with social and emotional loneliness scores. Moody found a correlation between high-Internet use to low social loneliness, suggesting that Internet used to establish and maintain connections with an individual's immediate social group, or distant family and far-away friends is positive (Moody, 2001). However, even though the report of a normal level of social loneliness scores, high-Internet use also correlated with high emotional loneliness, and suggests that high-Internet use may contribute to emotional difficulty in the form of loneliness. Since the Internet used as a communication tool as well as a means of gathering information and shopping, the amount of Internet use may not be the best measure to explore the frequency of CMC and loneliness as correlates. The dichotomy of social and emotional loneliness and the conflicting evidence found in Moody's study may reflect the unique sample used (i.e., first- and second-year college students away from home for the first time), a detachment from the individual's family associated with higher emotional loneliness scores, and the highly social nature of college associated with lower social loneliness scores.

Ammichai-Hamburger and Ben-Artzi (2003) examined loneliness and Internet use. These researchers, in a previous study (2000) found that personality characteristics influenced Internet use (i.e., Extroversion and Neuroticism); however, the patterns found in the data from the male and female participants were different. In the researchers 2003

study, they analyzed data from the men and women separately and together as the entire sample. Using the Internet-Services Scale (Hamburger & Ben-Artzi, 2000) administered to 89 participants; the scale investigates whether, when using the Internet, the user is seeking information related to work or studies; seeking general information; participating in discussion groups, games, or chats; downloading software; or shopping, seeking news, or randomly searching to find people. Extraversion scores were differentially related, for both men and women participants, to the analysis. When the data were analyzed from the men and women separately, there was a distinct difference in the outcomes (Hamburger & Ben-Artzi, 2000). They administered The Extroversion Neuroticism scales from the Eysenck Personality Inventory (Eysenck & Eysenck, 1975) . The scales consisted of questions related to feelings and behavior typical to extroversion and neuroticism. The extroversion scale assesses sociability and stimulation seeking or impulsivity. The neuroticism scale assesses tendency toward anxiety, distress, and emotional liability. They also used The UCLA Loneliness Scale in this research. This scale contains positive and negative statements about the individual's social relations. When they performed correlations, the findings revealed that, for males, neuroticism positively related to extraversion, but, for women, it linked to loneliness. The results indicated that Internet services not related to loneliness, neuroticism, or extroversion for men, but for women, Internet services and neuroticism significantly relate to loneliness. Finally, according to Hamburger and Ben-Artzi, the data suggested the Internet does not cause women to be lonely; rather, lonely women are attracted to the Internet. Therefore, using the Internet services is a result of, not a cause for, the increased loneliness of neurotic women. The

distinction of using Internet social services because of loneliness or loneliness occurring because of Internet use may be important in research when looking for relationships between Internet use and social anxiety and depression. It is important to note that these studies were done using adult male and female participants, which may produce quite different outcomes than with adolescent boys and girls.

Summary of Methodology Used in Existing Literature

The existing literature shows a plethora of methods used to measure CMC duration, SSE, social anxiety, and depression. Most commonly used is the survey design, used in collecting data for the studies reviewed here. The variable-specific measures such as the UCLA Loneliness Scale, the Inventory of Parent and Peer Attachment, the Social Anxiety Scale, and the Beck Depression Inventory-II appear to be the most frequently used in examining relationships, CMC use, social anxiety, and depression. The relationship between CMC duration, social anxiety, and depression,, established in research; however, the bulk of research addresses adult CMC use. Previous research on CMC duration and the strength of relationships with adolescent SSE, social anxiety, or depression is lacking.

Chapter Summary of Literature Review

This review examined research related to computer-mediated communication and social self-efficacy, social anxiety, and depression (i.e., emotional stability). The study of adolescent social self-efficacy in relationships, factors affecting social self-efficacy and adolescent use of computer-mediated communication duration are important to examine as American adolescents are becoming dependent on technology to keep them connected

(Pew, 2009). Understanding these factors are important, given researchers have suggested that CMC duration can lead to detrimental outcomes (Caplan, 2003, 2007; Deniz, 2010).

The connection between CMC and SSE, social anxiety, and depression is complicated, and the research literature has mixed results related to social anxiety and depression, relationship strength, and restricted or monitored use. The body of evidence supports the presumption that adolescent use of CMC strengthens his or her existing relationships (Valkenburg & Peter, 2007). CMC serves as another mode of communication for those individuals who already have greater levels of SSE, compared to the isolated or depressed individuals, who may use CMC as a safe, nonthreatening means to communicate or make new friends (Hampton, 2002; Hampton & Wellman, 2003). In this approach, possibly, CMC duration affects social anxiety and depression, which adolescents using CMC demonstrate, depending on the level of social anxiety and depression experienced by the individual. Authority figures and stakeholders may be supportive and innovative in their approach to adolescent use of technology for communication and relationship building once they have more information and understand the phenomenon of adolescent CMC use. Increasing the understanding of how factors impact the relationship between CMC duration and SSE, social anxiety, and depression provides reasonable expectations for adolescent use of CMC. Further description of the research methods are in Chapter 3.

Chapter 3: Methodology

Introduction

The purpose of this quantitative study was to explore the impact of CMC duration on adolescent social self-efficacy, social anxiety, and depression I describe in this chapter. The research design and approach includes justification for using the design in researching the problem in the study. Justified within the sampling frame used is the setting and sample, including a description of the population from which the sample is drawn. I also discussed instrumentation and materials, including a description of the data collection tools used for each variable in this study. The data collection and analysis section explain the analyses used in the study, including the data collection processes, the scales for each variable, and the hypothesis for each research question in the study. In addition, I discuss threats to both internal and external validity. Because this study uses human participants, I describe the procedures used to protect their rights, and other ethical considerations are discussed. Finally, I disclose plans for disseminating the findings in this study.

Research Design

I used a quantitative cross-sectional survey design for this study. In this type of design, I collect data at one point in time from a sample selected to represent a larger population (Mitchell & Jolley, 2004). A survey was ideal for this study because I gathered data on demographics, social anxiety, depression, adolescent SSE, and duration of CMC use from easily administered survey instruments having good reliability and validity (Mitchell & Jolley, 2004). Using survey inventories allowed me to gather

information from a large group of individuals in a minimal amount of time while maintaining the participants' confidentiality while examining the variables (Mitchell & Jolley, 2004).

Regression is an extension of correlation and is a statistical procedure that allows for the prediction of the score on one variable from the score on another variable. Regression procedures do not establish causal relationships, except where the design is experimental; therefore, I did not presume to suggest that one variable causes another; however, it serves to justify that there are relationships between the variables (George & Mallery, 2006).

The predicted score is the independent variable or criterion (Mitchell & Jolley, 2004). In this study, computer-mediated communication use duration was the predictor (independent variable), CMC restrictions were the moderator independent variable (interaction variable), and social self-efficacy, social anxiety, and depression were the dependent variables.

Data gathered from measures that describe the criterions (i.e., SSE, social anxiety, and depression) resulted in continuous data. Data that describe the predictor, CMC duration, and CMC restrictions obtained by responses on the demographic questionnaire, represented continuous data. Using interval scales of measurement was helpful, allowing for a more powerful statistical test (Jaccard & Becker, 2002).

Interval scales provide information on the magnitude of the differences between the variables measured on a dimension (Mitchell & Jolley, 2004). In this study, I wanted to know if the CMC duration had a significant relationship with adolescent SSE, if that

relationship is moderated by CMC restrictions, and if CMC duration affects adolescent SSE, social anxiety, and depression. Measuring CMC involved a ratio scale and was defined as the self-reported number of minutes per week of non-school-related time the student used computer-mediated communication. The CMC restrictions defined as the self-reported types of monitors or restrictions the adolescent experiences and measured with a ratio scale. To measure SSE I used an interval scale that provides information about the magnitude of SSE data contributing to a high or low score. Likewise, measuring depression and anxiety identified emotional stability on an interval scale and provided information about the magnitude of ES data in terms of a high or low score.

Justified through the literature review presented in Chapter 2 is the design. Researchers have examined the independent and dependent variables using survey designs (e.g., Bilgin & Akkapulu, 2007; Driener et al., 1985; Ramirez & Brondeck, 2009; Valkenburg & Peter, 2007a). There has been debate about the relationship between CMC and emotional stability (Harman, Hansen, Cochran, & Lindsey, 2005; Kraut et al., 1998), as has the relationship between CMC and relationship (i.e., friendship) maintenance (McKenna et al., 2002; Kraut et al., 1998, 2002). However, much of existing research had examined only adults' social anxiety and depression, and relationships associated with CMC. Researchers have attempted to explain how adolescent relationships are in danger of weakening due to less face-to face contact and the emergence of more time using CMC, but there was scant research exploring a relationship between CMC and ES or CMC and SSE. This study examined the relationship between CMC and social self-efficacy, social anxiety, and depression (i.e., emotional stability).

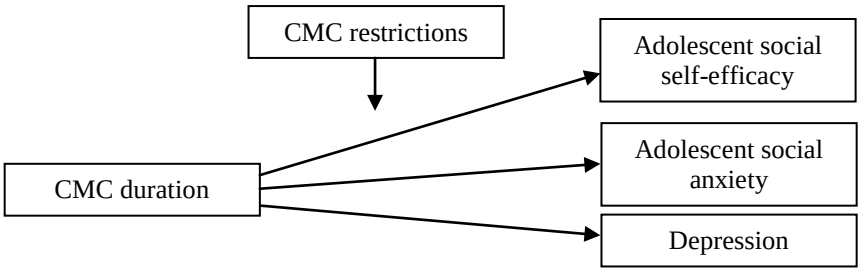

Figure 2. The overall model of this study hypothesized that CMC duration will impact adolescent social self-efficacy, social anxiety, and depression. A significant relationship between CMC duration and adolescent SSE would suggest CMC restrictions moderate that relationship.

Methodology

Population

The population of interest was a sample of adolescents age 11-19 from Faith Academy of Bellville, a private school that draws from the three public schools in Austin County, TX. Austin County is in south-central Texas, west of Houston. According to the U. S. Census Bureau (2010), the county and school demographics are similar to the rest of the state of Texas in respect to gender, median age, educational levels, ethnicities, and income/poverty levels.

The estimated population of Texas, taken from the 2010 census, is 25,145,561 persons. Females make up 50.4% of the state population. The median age for individuals who live in Texas is 34.6 years old for females and 32.6 years of age for males (U.S. Census Bureau, 2010). When compared to census figures of less than 10% percent in person age groups (i.e., < 5 years, < 18 years, > 65 years), persons per household (2.93),

and educational levels. Although Austin County has a slightly higher rate of high school graduates 25 years and older (80.8%) than the state percentages (79.3%), Austin County lies below the state in persons age 25 or higher (16.6%) than the state percentages (25.4%) with at least a bachelor's degree (U.S. Census Bureau, 2010). In terms of ethnicity, Austin County has 23.4% persons of Hispanic or Latino origin compared to the state's 37.6%. Additionally, Austin County's population has 65.7% of White persons not Hispanic compared to the state's 45.3% (U.S. Census Bureau, 2010). Austin County's median household income is $50,558, with persons below the poverty level at 11.0% while the state's median income is $48,286, with 17.1% below poverty level (U.S. Census Bureau, 2010). Austin County has three public school districts. The ethnic demographic data from each district's secondary schools, according to usaschoolinfo.com (2013), reported as seen in Table 2. Faith Academy of Bellville has 193 enrolled students, according to information available on the school's website (faithacademybellville.org).

Sampling and Sampling Procedures

The sample for this study is using 11 – 19 year olds taken from the Faith Academy of Bellville secondary schools located in Bellville, TX, in Austin County. I chose this school because it draws from all of Austin and contiguous counties, demographics, and in the closest proximity to me. Rather than using a random sample, I drew a convenience sample from the student population until the required sample was reached (Mitchell & Jolley, 2004). The disadvantage with this type of sampling is that it is unknown the degree to which the sample differs from the population as with random sampling (Mitchell & Jolley, 2004).

Table 2

Ethnicity of Students in Select Austin County Public Secondary Schools

Ethnicity	Faith Academy	Bellville ISD	Brazos ISD	Sealy ISD
White	82.0	66.5	48.5	46.5
Hispanic	5.3	21.0	40.0	41.0
Black	0.7	13.0	12.5	13.5
Asian	0.0	0.0	0.5	0.5
Amer. Indian	0.0	0.5	0.0	0.0
Other	0.0	0.5	2.0	0.5

Note. Numbers reflect percentages of student body in each school.

The procedure for drawing the samples consisted of my meeting with the administrator who had the authority to discuss the study and procedures for accessing qualified students for the sample. I attained permission to approach their students (see Appendix D), and the sampling procedure followed. Had permission not been secured to take a sample from Faith Academy or the sample size for sampling ad not been met, permission to conduct the study at three other schools would have been sought until a sample size recommended by the power analysis was secured.

I provided the school authorities with a packet consisting of the letter of introduction to the study (Appendix A) that was sent home to all parents of students in grades 6-12 along with the consent (Appendix B), assent (Appendix C), survey forms (Appendices E-H), and a list of mental health resources (Appendix M). The packet also

included a self-addressed stamped envelope for the participants to anonymously return the surveys to me.

Student participants had to meet four criteria to be included in the study. On the demographic questionnaire are the inclusion and exclusion criteria. The participants indicated if they live in Austin County and if they were between the ages of 11 and 19. In addition, they needed to be able to read English and the instruments used in the study. To confirm approximate reading levels, the demographic questionnaire included an item addressing the type of classes in which the student enrolled. Based on his or her own report about school placement in at least regular academic classes, any participant who could not give informed consent, or who was cognitively impaired, was excluded from the study.

Sample Size

I needed to calculate the sample size *(N),* which involved considering statistical power (beta - β), significance criterion (alpha - α), and effect size (f^2) (Cohen, 1992).-The power of a significance test is equal to a long-term probability of rejecting the null hypothesis (H_0) given a certain effect size, α, and *N* (Cohen, 1992). When the effect size is not equal to zero, the H_0 is false, and the failure to reject it, therefore, results in error (Cohen, 1992). A Type II error (i.e., failing to reject the null hypothesis when it is false, resulting in failing to find a relationship when there is one), and for any given effect size, α, and N, making the probability of the Type II error occurring as (β) (Cohen, 1992; Mitchell & Jolley, 2004). Therefore, power is 1- β or the probability of correctly rejecting a false H_0 (Cohen, 1992). Cohen (1992) suggests setting power at .80 (β= .20), which is

typically used in general research. Using a value any smaller than .80 encounters an increased risk of Type II error and a power value larger than .80 would result in needing a sample size potentially too large for me to gather (Cohen, 1988).

Cohen (1992) suggested that to avoid the risk of committing a Type I error (i.e., rejecting a null hypothesis when it is true or declaring a statistically significant difference when findings are really due to chance) (Mitchell & Jolley, 2004), an alpha of .05 is used in most studies. When used with the typical significance criterion (α) of .05, a power of .80 will result in a 1:4 risk of Type I or II errors (Mitchell & Jolley, 2004).- A power analysis showed that for a medium effect size .15, at α level = 0.05, and power = 0.80 using the G*POWER 3.1 power analysis program, an estimated minimum sample size of approximately 55 is required (Faul, et. al., 2007). Cohen (1988) suggested that a medium effect size is standard in the social science research and that rarely larger effect sizes obtained.

Procedures for Recruitment, Participation, and Data Collection

Sampling Sites

The Demographic Questionnaire screened students for meeting inclusion criteria using the questions about age, class type, and residence. Once I obtained permission from the local high school to administer the surveys, packets were delivered to the school and the school distributed them to students. The students completed the surveys in the their homes, as that would ensure confidentiality while increasing the validity of the data collected (Cohen & Swerdlik, 2004). The participants were informed that the surveys had been sent home from school to their parents and should be completed and returned as

soon as possible to me My phone number and email address were included in the packets. Participants who returned packets were determined as indicating interest and desire to participate in the study (Appendices B-C, E-H).

Recruitment occurred by contacting Faith Academy of Bellville in Austin County, TX. I chose Faith Academy so that a representation of the youth in this rural area could be sampled in an efficient and timely manner. Since the county and its schools are small in comparison to schools in an urban area, it seemed reasonable that if needed, any of the other local schools in Austin County may be included in the study if I could not collect the required sample size with only Faith Academy. It was likely that in order to reach the necessary sample size more than one of the schools in Austin County could have been included. The site authorities would have been given letters of cooperation to be signed (Appendix D), and packets identical to the ones described as being sent home to Faith Academy students would have been given to all age eligible youth to take home to their parents (Appendices A, B, C, E-H, and M). My name, telephone number, and email address would have been included in the information letter so that interested students and their parents may contact me with any questions they have. There would have been no coercion with students. When they take the packets home to their parents, they know that their participation was voluntary and whether or not they participated, it would not jeopardize their student status. All participants lived in Austin County, were between the ages of 11 and 19 years old, and were able to read in English and at the grade level necessary to read the surveys.

Data Collection Procedure

Data collection began once I obtained approval from the Walden University IRB (# 03-18-14-0107126). Participation in this study was voluntary. When the data collection began, I gave a packet containing the surveys for each of the potential participants to the school for distribution. On the returned packets, identifier codes were written to replace any names that would reveal the identity of the participant The instruments given to each participant had instructions not to write their names anywhere on the surveys. This insured that they remain anonymous participants, and their responses remain confidential.

I put the tests that were given to each participant in the same order and in the same manner. I used four instruments for the data collection. These instruments include The Adolescent Social Self-Efficacy Scale (S-EFF) (Appendix E), The Social Anxiety Scale for Adolescents (SAS-A) (Appendix F), The Beck Depression Inventory II (BDI-II) (Appendix G), and the Demographic Questionnaire (DQ) (Appendix H). The instruments chosen for this study were appropriate for the age range of the sample. I made every attempt to screen out individuals who did not have reading level to complete the surveys. I requested and received permission to use the BDI-II from Pearson Education, Inc., Jennifer Connolly at York University, ON, to use the S-EFF, the SAS-A from Annette La Greca, University of Miami. (See Appendix sections F-I.). Because administering the demographic form last reduces uneasiness or distrust and increases the participant's truthfulness (Mitchell & Jolley, 2004), the demographic questionnaire was last in the

packet with the instructions (Appendix H). I estimated that the surveys could be completed within 1 hour.

All participants were offered the chance to attend a group debriefing at the school after the sample of completed surveys was collected, complying with APA's (2002) code of ethics. Debriefing explains in more detail the purpose of the study (Mitchell & Jolley, 2004). (A copy of the debriefing instructions appears in Appendix I.) The debriefing also gave the participants a chance to ask any questions or clarify any misunderstandings about the study (APA, 2002). A telephone list of various mental health hotlines was included in the packet distributed to all of the participants to assist them in the unlikely event they find the need for mental health counseling or treatment (Appendix M). All raw data collected from the participants will be maintained in the in a secure file in my office. I maintain confidentiality and security by storing consent forms separately (Mitchell & Jolley, 2004).

Instrumentation and Operationalization of Constructs

Adolescent Social Self-Efficacy Scale (S-EFF)

The S-EFF is a scale measuring adolescents' social self-efficacy, developed using three samples of adolescents (i.e., large urban high school, small suburban high school, and emotionally disturbed adolescents residing in a hospital based treatment facility) (Connolly, 1989). Communication regarding permission from the publisher/developer to use this instrument is included in the Appendix section (Appendix J).

I used the 25-item S-EFF to assess adolescent social self-efficacy as the dependent variable in this study. This scale was devised based on real-life situations that

are of concern to teenagers (as cited in Connolly, 1989; Ford, 1982; Furnham & Argyle, 1981) and relevant to the adolescent age group (Wheeler & Ladd, 1982). The participants rate the 25 questions using a 7-point rating scale ranging from “Impossible to do” to “extremely easy to do,” with the total score ranging from 25 to 175 (Connolly, 1989). A higher score indicates the subject believes that he or she is capable of functioning in social situations with ease.

The S-EFF is a psychometrically robust instrument according to the results of the research in developing the instrument, suggesting that the S-EFF was resistant to errors in the results (Connolly, 1989). With the sample tested, the S-EFF was reliable across a 2-week period and the social self-efficacy construct internally homogeneous across the three samples tested, supporting internal consistency (Connolly, 1989). To test for internal consistency, exposed the participants’ scores to analysis of scale homogeneity, including item-total correlations, alpha coefficients, and factor analysis; each sample analyzed separately (Connolly, 1989). The item-total correlations were significant, suggesting internal consistency, and positive for all of the three sample groups ranging from .25 to .76; supporting internal consistency. Alpha coefficient of internal consistency for each sample ranged from .90 to .95. Principle component factor analyses were computed on the individual item responses, and for each sample a single-factor solution represented the results quite consistently. However, when a two-factor solution was computed it typically included loadings on items that were addressing social assertiveness and was not consistent across the three samples. These findings suggest that self-efficacy in the dimension of social assertiveness is distinct from self-efficacy in other

social behaviors (Connolly, 1989). To test for test-retest reliability, a Pearson correlation coefficient was calculated for sample group 1, between the first and second administrations (2 weeks apart), and a value of $r(85)= .84$, $p <.001$ was obtained. Correlations were computed separately for males and females in Sample 1. Males obtained an $r(40)= .81$, $p < .001$) and females obtained $r(47)= .86$, $p < .001$), indicating that the scale was reliable for both genders (Connolly, 1989).

The validity of the SSE construct, comparing it to self-concept and social adjustment. The construct validity of the social self-efficacy, computed using Pearson correlations between SSE, the four Perceived Competence Scale scores (e.g., Social Acceptance, Self-Worth, Cognitive and Physical Competencies) and the Self-Esteem Inventory total score. *T* tests for correlated samples tested the significance of the difference between the correlations. The results supported significant and positive intercorrelations in this research (Connolly, 1989). Social self-efficacy significantly correlated with components of self-concept, social adjustment ratings, social engagement, and social competence, which support the construct validity of the social self-efficacy construct (Connolly, 1989). The S-EFF measure was normed using three samples of adolescents ranging from 13 to 19 years old attending school in 1) large suburban school, 2) small suburban school, and 3) emotionally disturbed adolescents from an inpatient facility (Connolly, 1989).

The Social Anxiety Scale for Adolescents (SAS - A)

I used The Social Anxiety Scale for Adolescents (SAS-A) to assess social anxiety. Communication regarding permission from the publisher/developer to use this instrument is included in Appendix K.

The SAS-A is a modified version of the Social Anxiety Scale for Children – Revised (SASC-R) for use with adolescents (La Greca & Lopez, 1998). The revisions included changing word use to be more consistent with adolescents' use and understanding of the terms (e.g., "other kids" changed to "peers," "others," or "people"; "playing with" changed to "doing things with") such as "I only talk to people I know really well" (La Greca & Lopez, 1998). Based on factor analysis studies, three particular subscales were identified: fear of negative evaluation (FNE), which reflects fears worries or concerns about receiving a negative appraisal from peers and social avoidance and distress (SAD). Permission to use the SAS-A in this study is included in the Appendix section.

Participants rate questions on a 5-point scale ranging from 1-5 (1= not at all, 5= all the time). Scores obtained by summing the responses from each question within each subscale. These scores will range from 8 to 40 for FNE, 6 to 30 for SAD-new, and 4 to 20 for SAD-general. The total scores will range from 18 to 90 (La Greca & Lopez, 1998). Higher scores indicate increased fear of negative evaluation from peers, and more social avoidance and distress in new situations (La Greca & Lopez, 1998).

The SASC-R has had satisfactory psychometric support (La Greca & Lopez, 1998; La Greca & Stone, 1993). There was a good fit between the 3-factor model of

social anxiety and children's responses, revealed by confirmatory factor analysis (La Greca & Stone, 1993), which summarizes any discrepancies between the responses and expectations from the 3-factor model. Since the modified SAS-A has an identical format to the SASC-R, indications are that the measure has good internal consistency. Since the two tests share the same psychometric qualities, using the measure to explore adolescent social anxiety in this study seems reasonable. Internal consistencies for the subscales on the SAS-A were higher than those computed for the SACS-R, and ranged from .76 to .91. Results showed that the SAD-general yielded the .76 score, the SAD-new received a score of .83, and the FNE a .91 score on internal consistency (La Greca & Lopez, 1998). Interscale correlations show that the subscales for the SAS-A were significantly interrelated; however, distinct (La Greca & Lopez, 1998). FNE and SAD-general yielded a .52 correlation, SAD-general and SAD-new yielded .55, and FNE and SAD-new yielded a .67, with $p < .001$ on all scales. This indicates that the measure is psychometrically consistent throughout their study. Construct validity was supported by comparing patterns of relationships between the SACS-R subscales with the children's self-appraisals and his or her peer-rated sociometric status, indicating that a child's self-appraisal was similar in comparison to their peer's view of them (La Greca & Stone, 1993). The SAS-A was normed on a sample of 250 high school students with a similar ethnic makeup as the adolescents in this study; however, these students are from a metropolitan area, and in this study, area is rural, and contiguous to a large metropolitan area. This measure is appropriate to use in the current study based on these similarities.

The Beck Depression Inventory-II (BDI-II)

I used The Beck Depression Inventory-II (Beck, Steer & Brown, 1996) to assess depression as part of the ES construct. Communication regarding permission from the publisher/developer to use this instrument is included in Appendix L.

The BDI-II is one of the most frequently used instruments in screening for depression by clinicians (Arbisi, 2004; Farmer, 2004). It is a revised edition of the BDI-I, originally published in 1961. The BDI-II is a self-administered, 21-item assessment that utilizes four statements that correspond to the *DSM–IV-TR* (2000) criteria for depression and describes conditions for which the participant may have felt over the past 2 weeks including his or her current state (Beck, Steer, & Brown, 1996). Permission from the publisher to use the BDI-II in this study is included in the Appendix section M.

I summed the participants' responses and compared them to a severity index for results in 21 areas. Each area includes the four descriptive statements answered by the participant. Osman, Barrios, Gutierrez, Williams, and Bailey (2008) examined factor structure and psychometric properties on a sample of nonclinical high school students. The sample, including 210 boys and 204 girls recruited from two Midwest high schools, Grades 9-12, used in norming this measure. The authors used correlation analysis to investigate the relationship between the BDI-II scores, and four validation self-report instruments with their sample of high school students. Correlation between the BDI-II and the BDI-IA was calculated and found to be high *(n* = 101, *r* = .93), suggesting there are similar patterns of scores between the two measures (Beck, Steer & Brown, 1996).

Participants choose statements that best describe their current performance in terms of cognitive-depressive and somatic-affective symptoms. A value of zero to three is assigned to each response. A total score for each participant is calculated by together adding the individual scores from each response. The BDI-II manual provides suggested guidelines and cut scores used for interpretation and placement of scores into a range of depression severity (0-63). The cut off scoring guidelines suggests 0-13 as minimal, 14-19 as mild, 20-28 as moderate, and 29-63, as severe depression (Osman et al., 2008).

The BDI-II in use with nonclinical adolescents appears to have sound psychometric properties. The reliability estimates show a Cronbach's alpha (1951) of .92 for the sample of 210 boys and 204 girls Osman, et al. (2008) examined, which demonstrates internal consistency. The total scores correlated significantly with scores on self-report measures of hopelessness *(r* = .63), anxiety *(r* = .53), and suicidal behaviors *(r* = .57), which supports construct validity for the BDI-II (Osman et al., 2008). The current study of adolescent boys and girls ages 12-19 years old is similar to the sample used to validate the BDI-II; therefore, the current study's sample was appropriate for using this measure.

Demographic Questionnaire

A demographic questionnaire was designed to document participants' age, gender, county of residence, grade/level of classes enrolled, ethnicity, parents' marital status, types of CMC they use, the duration and frequency they used CMC, if their CMC use was restricted by parents, and if they had ever been bullied or ignored/ostracized using CMC. Demographic information sought, based on information needed for this

study and previous adolescent and CMC research conducted (Ammichai-Hamburger & Ben-Artzi, 2003; Coleman, 2003; Connolly, 1989; Desjarlais & Willoughby, 2010; Pew Internet & American Life Project, 2009; Valkenburg & Peter, 2007b).

Two demographic questions were the measures of CMC duration and CMC monitoring and restrictions for the regression analyses. For CMC duration, the hours listed was converted to minutes. A total score was the number of minutes per week spent using CMC for non-school purposes. Operationalization of weekly time spent using CMC, supported for children over nine years of age (Van der Voort & Vooijs, 1990). Thus, CMC, operationally defined as the number of minutes per week using CMC and was an independent variable (predictor) in the regression analyses.

The question is as follows:

Listed below are the days of the week. In the blank next to each day, indicate how long (in minutes or hours) you usually use CMC for non-school purposes. Please be as accurate as you can.

	Minutes	Hours
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____
Saturday	_____	_____
Sunday	_____	_____
Total (TM):	_____	

For CMC restrictions, the types of monitoring and restricting listed, converted to number of events. A total score was the number of events checked that represent how many different kinds of monitors or restrictions the adolescent experiences.

There is support for the operationalizing of monitoring or restricting of CMC duration for duration by teens that use CMC with parental intervention (Livingstone, 2009). Thus, monitoring and restricting CMC use is operationally defined as the number of events self-reported as monitors or restrictions by parents and was a moderator variable in the regression analyses.

The question is as follows:

Do authority figures (e.g., parents, teachers) restrict or monitor your CMC use? If yes to question #10: Indicate how your CMC use is restricted or monitored:

☐ NA (Not Applicable)

☐ Restrict my time using CMC (i.e. I can only use during certain times)

☐ Restrict where I can use CMC (i.e. I can't use in school, church, family time)

☐ Monitor the sites I can visit or the apps I can use (i.e. can't use adult sites, only certain or no social networking sites, can only befriend people I know face-to-face)

☐ Other (Please explain)_____

Data Analysis

Responses to individual items were measured using descriptive statistics (means, standard deviations, frequencies, and percentages).

Data Entry and Cleaning

Once I collected the data , each participant was assigned a unique ID number and the paper, and pencil item-by-item responses to all of the items was put into an Excel file and then entered into SPSS. The SPSS file then I checked for accuracy by obtaining the frequencies and means on each of the individual items and examined to assure that the values were within the possible ranges for each of the items. If cases were where they

were out of range values, I checked the file for data entry errors and corrected (Tabachnick & Fidell, 2000). Then I screened the item-by-item responses for missing responses. If there were missing responses to an item I would replaced it with the group mean for the item based on those participants who did respond (Tabachnick & Fidell, 2000). Thus, the SPSS file was a replica of the responses for each participant after being examined for accuracy and taking into missing responses to individual items.

Instrument Scoring

I used Statistical Package for the Social Sciences to obtain the scores on the S-EFF, SAS-A, and BDI-II scales following the scoring instructions provided for each of the measures. The CMC score was calculated by hand using the minutes/hours listed for each of the weekdays by each of the participants. The total score was the number of minutes per week using CMC for non-school purposes. The CMC restrictions score was calculated by hand using the self-reported number of events indicated on the survey item. I took these scores from the Excel file and entered into the SPSS file associated with the participant's ID number.

Data Screening

The S-EFF, SAS-A, BDI-II, CMC restrictions, and CMS duration scores were screened for outliers that may unduly distort the statistical results. *Z* scores were used in order to identify potential outliers . *Z* scores are raw scores that have been standardized to a scale where 0 is the mean with an *SD* of 1. I defined an outlier as a *z* score in excess of +/- 3.29 (Tabachnick & Fidell, 2000). Thus, a potential outlier would be an individual whose score was more than 3 *SDs* deviations above or below the mean.

Table 3

Scale and Measures of All Variables in the Study

Variable	Type	Measured with	Scale	Description
Social Self-Efficacy	DV	Adolescent social self-efficacy scale	Interval	Mean& SD
Emotional Stability: (social anxiety/ depression)	DV DV	Social Anxiety Scale for Adolescents and BDI-II	Interval Interval	Mean& SD Mean & SD
CMC Duration	IV	Demographic Questionnaire (DQ)	Ratio	Mean & SD
CMC type of use	Descr.	DQ	Nominal	Freq. Dist.
Age (actual) Gender School Level County of Residence	Descr. Descr. Descr. Descr.	DQ DQ DQ DQ	Interval Nominal Nominal Nominal	Freq. Dist. Freq. Dist. Freq. Dist. Freq. Dist.
CMC Use Monitored/restricted	Descr.	DQ	Ratio	Freq. Dist.

To reduce their impact, I can work with an outlier. One option is to remove the individual(s) from the analysis (Tabachnick & Fidell, 2000). However, this would reduce the *N*, which may be undesirable if the sample size is an issue. Another option is to transform the scores through log or square root transformations of all the scores on the particular variable (Tabachnick & Fidell, 2000). Although transformation is useful, the descriptive statistics are then less informative (and confusing) because they are a log or square root value. A third option is to change the score(s) so that are deviant but not as deviant as they were. I can accomplish this by changing the extreme raw score to one larger (or smaller) than the next extreme score in the distribution (Tabachnick & Fidell,

2000). As described above, I identified two outliers as part of the scoring and screening of the data done before running the regression analyses. The outliers were CMC extreme scores that I rescored by changing the scores to one higher than the next highest score thus reducing their impact as suggested by Tabachnick and Fidell (2000). Data screening resulted in an SPSS file that I used for each of the analyses.

Preliminary Analyses

I obtained reliabilities (Cronbach's alpha) for each scale found for the S-EFF, SAS-A, and BDI-II measures. Reliability for the CMC duration and CMC restriction scales was not possible because the score, based on only two items is not enough. The means and standard deviations were determined for the continuous measures, as was the frequencies and percents for the categorical variables. Then I presented the reliabilities and descriptive statistics and interpreted in the appropriate sections when presenting the results (See Table 2 above).

Assumptions Testing

One assumption that underlies regression is the assumption of normality (Cohen, et. al., 2003). A normal distribution is symmetric and bell-shaped. The greater a set of data deviates from this assumption the more likely it is non-normal. Any one of the approaches for dealing with outliers described above will also tend to normalize a distribution (Cohen, et. al., 2003). In severe cases of non-normality, the transformation of scores is generally the most successful. As such, although changing deviant scores is one way of treating outliers, I would use transformation(s) in the event non-normality is severe (Cohen, et. al., 2003).

The *linearity* assumption assumes a straight line between two measures. Through observation of bivariate scatterplots, I would make approximate assessment linearity. When there tends to be normal distribution for both variables, the linearity assumption, generally met, and the plot is oval-shaped. I would identify nonlinearity if the plot is not oval-shaped. A more sensitive procedure is to examine a residual plot that involves plotting residuals against predicted values. A residual is the difference between the actual value of the dependent variable and its predicted value. Nonlinearity is indicated when the majority of residuals are above the zero line on some predicted values and below the line at other predicted values. If I identify nonlinearity, and the variables have not gone through outlier screening or transformation(s) to establish normality, one or more transformations can be done to increase linearity in addition to dealing with the possible outliers (Mitchell & Jolley, 2004).

A third assumption is *homogeneity of variance*. The assumption is that the variability in scores for one continuous measure is about the same for all values of another continuous measure (Cohen et. al., 2003). It is more likely that the homogeneity assumption is met when the measures are normally distributed. Violation of the homogeneity assumption is not overly serious however; the analysis is weakened (Cohen, et. al., 2003) and should be taken into account when interpreting the results of an analysis.

Main Analysis

Once the data satisfactorily met the requirements for screening and cleaning the data, I conducted one correlation and four regression analyses . I used the .05 level of

probability to interpret the results in respect to rejecting or not rejecting the null hypotheses. For convenience, I have repeated the research questions (RQs) and hypotheses from Chapter 1.

Research Question 1

What is the strength and nature of the relationship between computer-mediated communication duration and social self-efficacy in adolescents?

H_o1: The number of hours spent per week on computer-mediated communication does not predict social self-efficacy, as measured by S-EFF, in adolescents.

H_a1: The number of hours spent per week on computer-mediated communication does predict social self-efficacy, as measured by S-EFF, in adolescents.

Research Question 2

What is the strength and nature of the relationship between computer-mediated communication duration and social anxiety?

H_o2: The number of hours spent per week on computer-mediated communication does not predict social anxiety, as measured by SAS-A, in adolescents.

H_a2: The number of hours spent per week computer-mediated communication does predict social anxiety, as measured by SAS-A, in adolescents.

Research Question 3

What is the strength and nature of the relationship between computer-mediated communication duration and depression in adolescents?

H_o3: The number of hours spent per week on computer-mediated communication does not predict depression as measured by BDI-II, in adolescents.

H_a3: The number of hours spent per week on computer-mediated communication does predict depression, as measured by BDI-II in adolescents.

Research Question 4

Do computer-mediated communication restrictions, as measured by the number of restrictions, moderate the computer-mediated communication–social self-efficacy relationship?

H_o4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy was negative when number of restrictions is high and the relationship between computer-mediated communication duration and social self-efficacy was positive when number of restrictions is low.

H_a4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy was positive when number of restrictions is low and the relationship between computer-mediated communication duration and social self-efficacy was negative when number of restrictions is high.

Threats to Validity

Internal and external validity refer to the confidence one can have about the results of the overall study. Internal validity is concerned with the methodology of the

research design and is generally discussed in terms of experimental research where cause and effect are the primary focus (Mitchell & Jolley, 2004).

In regression studies, such as the current study, where prediction of one variable from another is the main concern, internal validity is not a major issue except for possible misinterpretation of causality (Mitchell & Jolley, 2004). The research questions in this study were meant to emphasize that time spent on CMC may be predictive of the dependent variables, and the research questions were not meant to denote causality. Further, the following two internal validity threats serve as cautions when interpreting results. First, reverse causation is where the dependent variable is the independent variable. For example, in this study, if the results showed that CMC is predictive of social self-efficacy the reverse would also be true. That is, social self-efficacy would predict CMC duration. Reverse causation was not a concern because my interest was in the relationship between CMC and the three dependent variables and not causes.

Second, entirely different variables could have accounted for the variation in both the independent and dependent variables used. This threat could not be eliminated or even understood to any extent in one study with two variables (Mitchell & Jolley, 2004). The self-report measure of CMC duration and CMC restrictions may have weakened the internal validity; only two items (e.g., from DQ) measured CMC duration and CMC restrictions, so its reliability could not be determined. Also, from a validity perspective, minutes per week were assumed a valid measure of CMC and sum of events was assumed a valid measure of CMC restrictions. The procedure for its measurement was derived and adapted from promising research that faced the same dilemmas (Mitchell &

Jolley, 2004). The measurement of CMC has been elusive and a problem in research on this topic. Thus, when interpreting and discussing the results caution is emphasized.

External validity is the extent to which the findings can be generalized beyond the sample used in the study (Mitchell & Jolley, 2004). Caution was used in making inferences about the use of CMC other than to the adolescents that participated. Conceptually, inferences can be made based on the assumption that the adolescents are similar to the ones that participated.

Overall, external validity is substantiated by replications of the research on different samples of adolescents using the same or similar instruments as well as methodologies. Thus, no single study has strong external validity (Mitchell & Jolley, 2004). This study, as with internal validity, adds to the topic's knowledgebase.

Ethical Procedures

Every effort was made to protect the participants from physical or mental discomfort or harm. Supporting this effort, I obtained Walden IRB approval before collecting any data. The participants and their parents were informed of the potential risks in participation in this study. The degree of risk to the participants was considered minimal due to there being no financial gain or social loss resulting from participation, and no health risks expected from the participants in this study (Mitchell & Jolley, 2007).

I gave the participants individual freedom to decline participation or withdraw at any time during the research. The participants were debriefed following the collection of data; they were given information regarding the nature of the study in an attempt to clear any misconceptions that might have come up. A telephone list of various mental health

hotlines was distributed, inserted into the packets that were given to all of the participants and their parents, to assist them in the event they found the need for mental health counseling or treatment (Appendix M). APA guidelines and Walden IRB requirements were followed to maintain highly ethical research (Mitchell & Jolley, 2007). Data from the questionnaires and survey instruments were anonymous. Names of participants cannot be connected to information and scores. Participation in this study was confidential**.** Only I have access to the raw data and results, which are kept in a separate locked cabinet for 5 years and then destroyed.

I considered how to best conduct this research in order to contribute to psychological science while maintaining concern for the dignity and welfare of the participants. I was aware of federal and state regulations and professional standards that govern research with human participants were exercised and complied with APA's Ethical Principles of Psychologists (Mitchell & Jolley, 2007). The participants were informed of how to contact me in the event that following participation in the study the participant experiences stress, or if they had questions or concerns regarding the study. The elements of informed consent included information about who conducted the study, why the participant was chosen, what commitment was expected from each participant, and what benefit, if any, was expected by the participant. Additionally, I offered information about any potential risks and the management. Participants were made aware that their participation was voluntary, confidential, and they were provided an opportunity to ask questions. A copy of the informed consent was given to the participants and I will retain a copy. Following the data collection, the participants were

given an opportunity to ask detailed questions about the study and offered a copy of the completed study to be sent to them.

Summary

I used a survey method to answer the research questions. Sample size was determined by using a power analytic framework (Cohen, 1988; Erdfelder, Faul, & Buchner, 1996). The power analysis revealed that a minimum of 55 participants was required for this study. I contacted the Walden IRB to gain permission to commence with the study, and when permission was secured, data were collected from a convenience sample consisting of adolescents who attend a high school in Austin County, TX. The only participants permitted to take part in the study were whose parents gave informed consent and permission.

Coded packets with each survey grouped in the same successive order were given to each participant on the selected survey date. Participants signed assent forms and their parents signed informed consent and were given information from me about the study and a list of mental health agencies. I will keep the consent forms and raw data in a separately locked cabinet to assure confidentiality. The packets contained the (a) S-EFF, (b) SAS-A, (c) BDI-II, and (d) DQ. Once the data collection was complete, I scheduled a debriefing with the participants.

The sets of analyses conducted on the data were initially data screening and correlation procedures, resulting in descriptive data. Next, I ran regression procedures to test the hypotheses on the data from the two independent variables (including moderator) to the three dependent variables. I present and discuss the findings in Chapter 4 and 5.

Chapter 4: Results

Introduction

The purpose of this study was to explore the impact of CMC duration on adolescent social self-efficacy, social anxiety, and depression. The following four research questions guided the study using correlation and regression as the primary statistics.

RQ1: What is the strength and nature of the relationship between computer-mediated communication duration and social self-efficacy in adolescents?

RQ2: What is the strength and nature of the relationship between computer-mediated communication duration and social anxiety?

RQ3: What is the strength and nature of the relationship between computer-mediated communication duration and depression in adolescents?

RQ4: Do computer-mediated communication restrictions, as measured by the number of restrictions, moderate the computer-mediated communication–social self-efficacy relationship?

The research questions with associated hypotheses are repeated in the section below that provides the results of the main analysis. This chapter summarizes the data collection procedure, describes the preparation of the data for analysis, and provides the results of the analyses.

Data Collection and Management

Data collection began on Thursday, May 1, 2014, and ended on June 30, 2014. On the first day of this study, 100 packets were sent home to parents whose children attended

Faith Academy of Bellville and who were between the ages of 11 and 19. Each packet contained a parent information form, student information form, parent consent form, and student assent form; the S-EFF, SAS-A, BDI-II, and demographic questionnaire; and a mental health professional referral list and a stamped/addressed envelope to return surveys back to me. Of the distributed packets, participants returned 55 of them. Once I collected the data, each packet was assigned an ID number from 1 to 55. I entered the ID number and paper/pencil item-by-item responses into an Excel file. I then converted the Excel file to SPSS, which was used to screen the data, score the instruments, and conduct the statistical analyses. As described in Chapter 3 a power analysis using the software program G*POWER (Erdfelder, Faul, & Buchner, 1996) showed that for a medium effect size of .15 at α level = 0.05, and power = 0.80 a sample size of 55 was required. Initial screening indicated that six of the 55 respondents reported that they did not use CMC and I dropped them from the study. Using the same effect size and α level, a post-hoc power analyses showed a slight drop in power from .80 to .76. Thus, the 49 who did indicate that they used CMC, the analyses were based on.

To address external validity, I compared the general demographics of student population in Austin County with those from Faith Academy of Bellville. When compared to the census demographics taken in 2010, the sample reflects a greater distribution of ethnic groups, making it a closer representation to the students in all Austin County schools but not as widespread as the public schools. Austin County, TX, has three public school districts. The ethnic demographic data from each district's secondary schools, according to usaschoolinfo.com (2013), are in Table 2. Faith

Academy of Bellville has 193 enrolled students (faithacademybellville.org, 2013). Although Austin County schools are largely White, their Hispanic population is much larger in comparison than that of Faith Academy. In terms of White to Hispanic enrollment, two of the schools show an enrollment split between White and Hispanic. Another of the schools is also predominately White; however, their minority enrollment is a much higher percentage than Faith Academy.

Descriptive Statistics

Table 4 provides the demographics for the responses given by the sample of 49 participants. It shows that the greatest number of participants were ages 14-16, in grades 11-12, and predominantly white. Very few participants took classes other than regular classes. Texting and social networking were the most used means of CMC although also commonly used were chat/IM and email. Almost all of the participants started using CMC between the ages of 10-13. Most of the participants had no restrictions in respect to their use of CMC. For those participants that did have restrictions, the restrictions were primarily related to sites and applications that they could use.

Table 4

Demographic Characteristics *(N* = 49)

Characteristic	*n*	%
Age		
11-13	10	20
14-16	22	45
17-19	17	35
Race		
White	37	76
Black	5	10
Other	3	6
Not provided	4	8
Grade		
7-8	11	22
9-10	18	37
11-12	20	41
Type of classes taken		
Regular	48	98
AP or honors	3	6
Resource	0	0
Other	2	4
Type of CMC used		
Texting on cell phone	47	96
Chat/M	20	41
Social network sites/blogging	33	67
Email	26	53
Age when first started use of CMC		
8-9	1	2
10-11	17	49
12-13	26	53
14-15	5	10
CMC use monitored or restricted		
Yes	17	35
No	32	65
Type of restriction		
None	32	65
Time using CMC	8	16
Where CMC can be used	8	16
Monitor sites and apps	15	31
Other	4	8

Note. The *n's* do not always total 49 or percentages of 100 because multiple options could be selected.

Instrument Scoring

I used Statistical Package for the Social Sciences (SPSS) to calculate the scores on the S-EFF, SAS-A, and BDI-II scales following the scoring instructions provided for each of the measures. The CMC duration score was calculated by hand by first determining the total number of minutes per week for each participant based on his or her responses to the item on the survey question that asked for time spent per day, Monday through Sunday, using CMC. For the analysis, the total number of minutes per week was minutes converted to hours per week. The total number of minutes of self-reported CMC use over a 7-day period, divided by the total by 60, resulted in the number of hours per week.

I labeled the score for CMC restrictions as *severity*. Participants could mark four types of restrictions: a) the amount of CMC they could use, b) where they could use CMC , c) Internet sites/applications that could be used, and d) others, as provided. Thus, the participants could mark more than one type of restriction. Participants received one point for each the four categories. The CMS severity score was therefore the number of restrictions and could range from 0 to 4.

Data Analysis

The descriptive statistics for the measures used in the correlation and regression analyses are in Table 5. There was a wide range in CMC duration and considerable variation as evidenced by the standard deviation. The social self-efficacy score could range from 15 through 75 and the participants distribution was as might be expected across the range as indicated by their mean and standard deviation. Social anxiety scores

could range from 22 through 110. Similar to the social self-efficacy scores, social anxiety scores were distributed across the range with the mean and standard deviation being what would be expected for a normal distribution. The CMC severity score could range from 0 through 4. Since 65% of the 49 participants had no restrictions, the mean was less than 1.00. The standard deviation on severity was greater than the mean because the scores ranged from 0 to 4.

Depression scores could range from a low of 0 to a high of 63. The guidelines (Osman et al, 2008) suggested that a score on the BDI-II of 13 or less indicates minimal depression. As expected, as a group, the participants' mean shows minimal depression. However, there was considerable variation within the group as shown by the standard deviation.

Table 5

Descriptive Statistics for the Measures of Interest

Measure	Min	Max	*M*	*SD*
CMC duration	1	91	33.58	27.20
Social self-efficacy	28	72	54.08	9.49
Restriction severity	0	4	.71	1.10
Social anxiety	30	45	58.69	13.53
Depression	0	45	13.16	11.11

Preliminary Analysis

As part of the scoring procedure, I obtained the reliabilities (Cronbach's alpha) for the S-EFF (α = .83), SAS-A (α = .90), and BDI-II (α = .93) scales. The reliabilities were well above the conventional rule that alpha be .70 or greater to be acceptable

(Bernardi, 1994; Cronbach, 1951). Reliability estimates require there be least two or more items on an instrument to measure (Aiken & West, 1991); therefore, since the CMC duration and CMC restriction scores were single item responses by the participants, reliability estimates could not be obtained.

An outlier is an extreme score, either high or low, on a measure that may have a disproportionate affect on the results. Identification of outliers may be during preliminary regression runs by analyzing the residuals, or before the regression analysis. I identified two outliers, as part of the scoring and screening of the data before running the regression analyses. The outliers were CMC extreme scores, which I adjusted by changing the scores to one higher than the next highest score, thus reducing their impact, as suggested by Tabachnick and Fidell (2000). During the preliminary analysis, I screened the S-EFF, SAS-A, BDI-II, and CMS duration scores for outliers. Outliers are, defined as a *z* score in excess of +/- 3.29 (Tabachnick & Fidell, 2000). Two outliers had CMC duration *z* scores of 3.55. A *z* score of 3.55 corresponded to a raw CMC score of 168 hours per week, well over the outlier criterion of 3.29. To reduce the impact of the two outliers, I assigned CMC scores of 91, which was one greater than the next highest score as suggested by Tabachnick and Fidell (2000) as one way of dealing with outliers. There were no outliers on the other instruments.

Statistical Assumptions

Regression was the procedure employed. The assumptions underlying regression address multicollinearity, singularity, normality, linearity, homoscedasticity, and independence of errors (Tabachnick & Fidell, 2000) and are discussed below.

Multicollinearity and Singularity

In regression, multicollinearity happens when two or more predictor variables are too highly correlated. Similarly, singularity occurs when two or more predictor variables are highly correlated because they each measure the same construct making one or more of the variables redundant. In this study, I conducted four simple regression analyses. Three of the analyses employed simple regression where there was only one predictor variable, thus multicollinearity and singularity were not an issue for those three analyses.

The fourth analysis had three predictor variables. The analysis involved regressing social self-efficacy scores on CMC duration, restriction severity, and moderating term that combined CMC duration and severity scores. As part of this analysis, I obtained collinearity statistics in order to assess if multicollinearity or singularity were issues that could influence the results. Tolerance was one of the collinearity statistics labeled. If a tolerance was less than .20 it indicated, that multicollinearity may have been an issue (Tabachnick & Fidell, 2000). The tolerances for CMC duration, CMC restriction severity, and the interaction term were .60, .50, and .41 respectively. Thus, I did not consider multicollinearity an issue (Baguley, 2012).

Normality, Linearity, and Homoscedasticity

I evaluated these three assumptions simultaneously through the analysis of standardized residuals scatterplots (Tabachnick & Fidell, 2000). There were four regression analyses and a scatterplot for each analysis. The residuals are the differences between the actual and predicted dependent variable or criterion scores, thus showing the errors in prediction (Tabachnick & Fidell, 2000). The X-axis shows the standardized

residuals. The assumptions are met if the residuals have a straight line relationship with the predicted scores, are normally distributed about the predicted criterion scores and the shape of the scatterplot is rectangular. The results of the scatterplot analyses showed that the assumptions of normality, linearity, and homoscedasticity were met for each analysis as indicated in Figures 3 through 6.

In observing the scatterplots below (Figures 3, 4, 5, and 6), the assumption of normality is when the plots are scattered approximately equally above and below the line. The plots are rectangular, which indicates that there is an assumption of linearity. The plots would show a curvilinear trend rather than a rectangular one if there were no linearity. If there were no assumption of homoscedasticity met, the plots would spread out in a fan-like shape rather than a rectangular one (Tabachnick & Fidell, 2000).

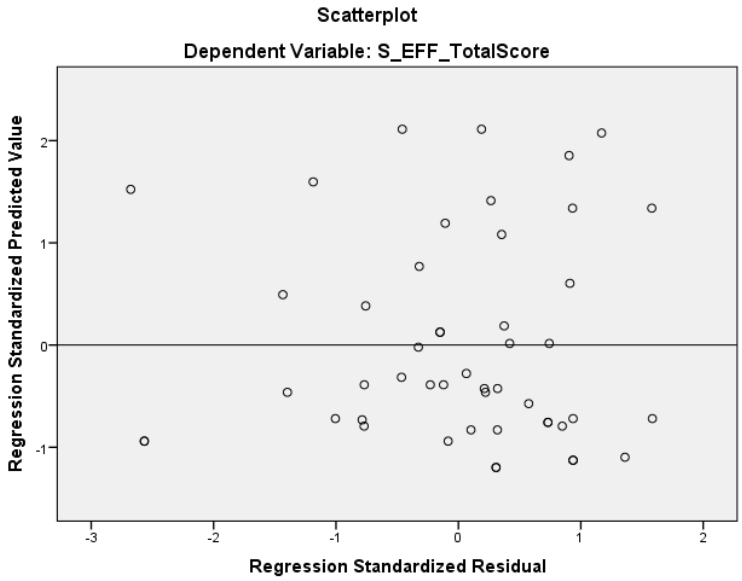

Figure 3. Social self-efficacy as a function of CMC duration

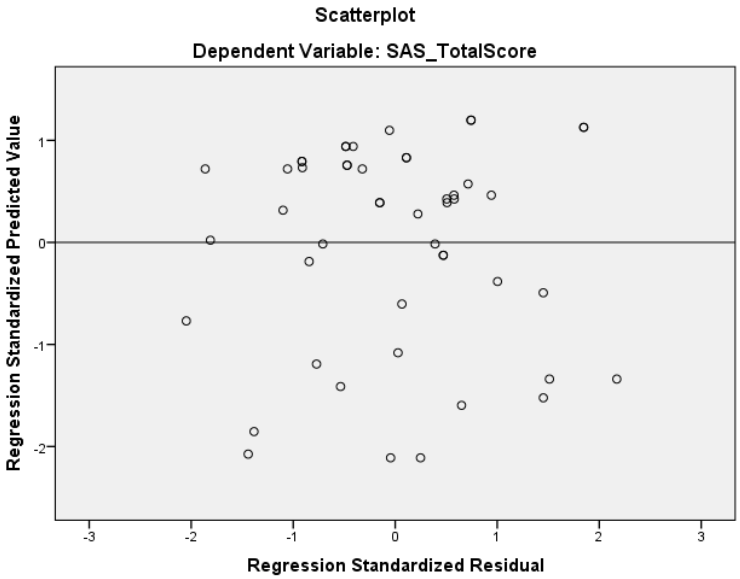

Figure 4. Social anxiety as a function of CMC duration.

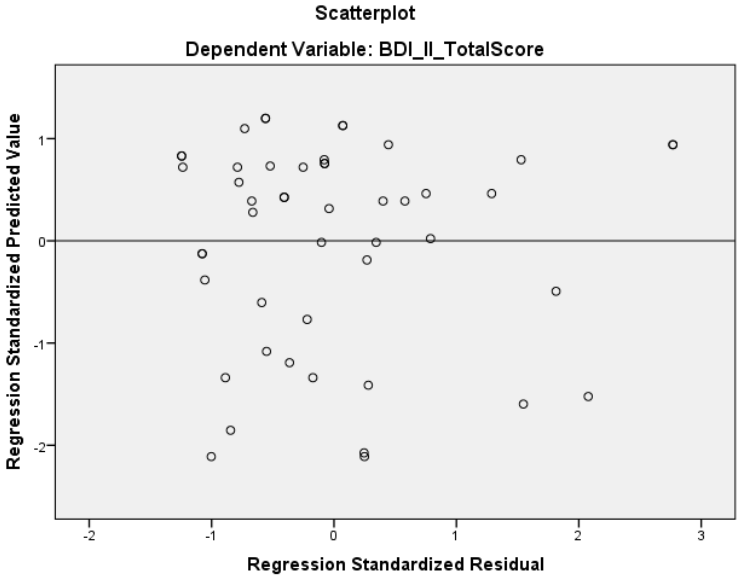

Figure 5. Depression as a function of CMC duration.

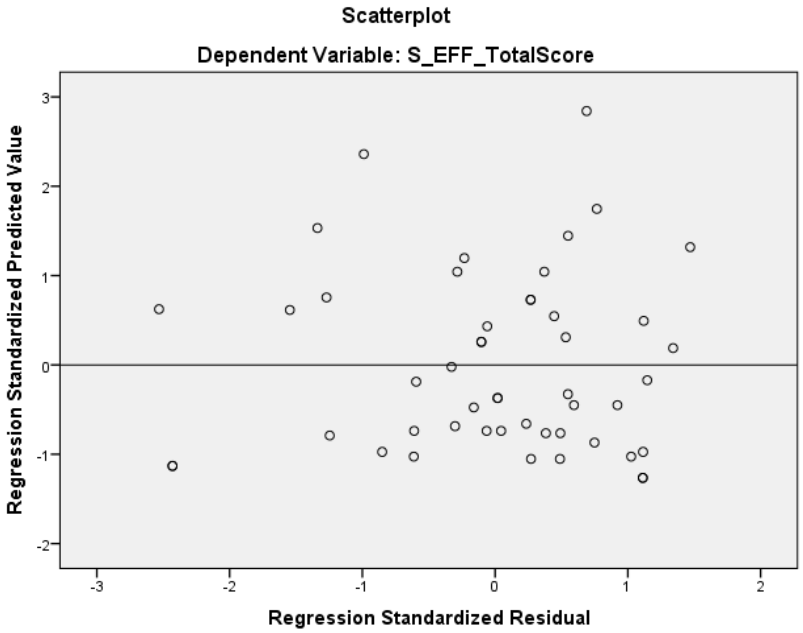

Figure 6. Social self-efficacy as a function of CMC duration, severity, and the interaction between CMC duration and severity.

Independence of Errors

In statistical regression analysis, the assumption of independence of errors is that the residuals or errors in prediction are independent and not serially correlated (Tabachnick & Fidell, 2000). That is, the size of error in one case does not influence the size of the error in the next case. I used the Durbin-Watson statistic to test this assumption as part of the SPSS regression output. The value of the statistic ranges from 0 to 4 where the value of two indicates zero correlation. A general rule is that if the statistic is approximately two the residuals are uncorrelated (Durbin & Watson, 1971). For the four regression analyses conducted in this study, the statistic ranged from 1.96 to 2.44; this indicates that they meet the assumption of independence of errors.

Main Analysis

I employed four simple regression analyses to examine four research questions. The first three were bivariate regression analyses where there was one predictor (independent variable) and one criterion (dependent variable). The fourth analysis used moderated multiple regression where there were three predictors and one criterion. In moderated regression, first entered are individual predictors to determine their relationship with the criterion variable. Then, a third predictor variable (the moderator) is created by obtaining the cross product of the predictor variables and is entered last (Darrow & Kahl, 1982; Tabachnick & Fidell, 2000). The criterion for statistical significance in each analysis is at the .05 level.

Research Question 1

What is the strength and nature of the relationship between computer-mediated communication duration and social self-efficacy in adolescents?

H_o1: The number of hours spent per week on computer-mediated communication does not predict social self-efficacy, as measured by S-EFF, in adolescents.

H_a1: The number of hours spent per week on computer-mediated communication does predict social self-efficacy, as measured by S-EFF, in adolescents.

The correlation between CMC duration and S-EFF was not statistically significant ($r = .26$, $p = .07$). The nature of the relationship was positive in that as the CMC number of hours tended to increase, social self-efficacy also tended to increase. However, the correlation was not strong enough to be statistically significant at the .05 probability level. Thus, the null hypothesis (H_o1) was not rejected and no statistical support for CMC

duration predicting social self-efficacy was found. Table 6 shows the results of the regression analysis; where there is only one predictor, the standardized beta weight (β) is the same as the correlation coefficient, as is the *p* value (Tabachnick & Fidell, 2000).

Table 6

Linear Regression Summary With CMC Duration Predicting Social Self-Efficacy

Variable	*B*	*SE*	β	*t*	*p*
CMC duration	.09	.05	.26	1.83	.07

Research Question 2

What is the strength and nature of the relationship between computer-mediated communication duration and social anxiety?

H_o2: The number of hours spent per week on computer-mediated communication does not predict social anxiety, as measured by SAS-A, in adolescents.

H_a2: The number of hours spent per week computer-mediated communication does predict social anxiety, as measured by SAS-A, in adolescents.

The correlation between CMC duration and SAS-A, at the .05 level, was not statistically significant (r = -.07, p = .62). The nature of the relationship suggested that as CMC duration increased there was a decrease in social anxiety, but the strength of the correlation was weak and near zero. Therefore, the hypothesis that the number of hours per week on computer-mediated communication predicts social anxiety was not supported for these data. The regression results are shown in Table 7.

Table 7

Linear Regression Summary With CMC Duration Predicting Social Anxiety

Variable	*B*	*SE*	*β*	*t*	*p*
CMC duration	-.04	.07	-.07	-.50	.62

Research Question 3

What is the strength and nature of the relationship between computer-mediated communication duration and depression in adolescents?

H_o3: The number of hours spent per week on computer-mediated communication does not predict depression as measured by BDI-II, in adolescents.

H_a3: The number of hours spent per week on computer-mediated communication does predict depression, as measured by BDI-II in adolescents.

Similar to social anxiety, the correlation between CMC duration and the BDI-II was low and not statistically significant (r = -.08, p = .57) Thus, I did not reject the null hypothesis and based on these data there was no support for CMC duration to predict depression (Table 8).

Table 8

Linear Regression Summary With CMC Duration Predicting Depression

Variable	*B*	*SE*	*β*	*t*	*p*
CMC duration	-.03	.06	-.08	-.57	.57

Research Question 4

Do computer-mediated communication restrictions, as measured by the number of restrictions, moderate the computer-mediated communication–social self-efficacy relationship?

H_o4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy was negative when number of restrictions is high and the relationship between computer-mediated communication duration and social self-efficacy was positive when number of restrictions is low.

H_a4: Computer-mediated communication restrictions will moderate the computer-mediated communication duration - social self-efficacy relationship such that the relationship between computer-mediated communication duration and social self-efficacy was positive when number of restrictions is low and the relationship between computer-mediated communication duration and social self-efficacy was negative when number of restrictions is high.

As indicated in the research question, interest was in CMC restrictions as a possible moderator in the relationship between CMC duration and social self-efficacy. Moderated multiple regression was used for this analysis. The objective of moderated regression is to determine if a third variable influences the relation between two variables. That is, if a moderator variable implies conditional relations, then the strength

of the relationship between two variables varies as a function of the third moderator variable (Stone-Romero in Salkind & Rasmaussen, 2007). If so, the third variable is a moderator, or moderates the two variables. This procedure is in steps using sequential multiple regression (Tabachnick & Fidell, 2000). The first step tests the correlation between the criterion and the primary predictor of interest. The second step adds a second predictor considered as the possible moderator. The third step adds a third variable obtained by multiplying the scores on the two predictor variables and is labeled the interaction variable. If the combined correlation after adding the interaction variable as the third step is greater than that of the second step it is interpreted to mean that the second variable tends to moderate the relationship between the primary variable and the criterion variable (Edwards & Lambert, 2007).

The bivariate correlations among the variables used in the moderated regression analysis are in Table 9. The primary relationship of interest was between CMC duration as the predictor of social self-efficacy – the same as in the first research question. However, this research question added CMC restriction severity as a possible moderator variable.

Obtaining the cross product of CMC duration multiplied by the CMC restriction severity scores as described above created the interaction variable (Vogt, 2005).

Although not statistically significant at the .05 level, both CMC duration and CMC restriction severity show similar correlations with social self-efficacy *(r* = .26 and *r* = .21 respectively). The correlation between the interaction variable and social self-efficacy was statistically significant *(r* = .29, *p* < .05).

Table 9

Intercorrelations for CMC Duration, CMC Restriction Severity, and Social Self-Efficacy

Variable	CMC Duration	CMC Restriction Severity	CMC Interaction
Criterion			
Social self-efficacy	.26	.21	.29*
Predictor			
1. CMC duration	—	-.12	.46*
2. CMC restriction severity		—	.57*
3. Interaction			—

* $p < .05$

Step 1 (Table 10) of the moderated regression analysis indicates that CMC duration was not a statistically significant predictor using the .05 level of probability ($t = 1.83$, $p = .07$). This is the same finding as in Research Question 1, where CMC duration was the only predictor. However, in Step 2, when combining CMC restriction severity with CMC duration, the multiple correlation *(R)* increased and was statistically significant *(*$r = .35$, $p = .05$).

Step 3 determined if CMC restriction severity moderated the relationship between CMC duration and social self-efficacy. The multiple correlation essentially did not change in from Step 2 *(*$r = .35$) to Step 3 *(*$r = .36$). This result indicates that CMC restriction severity did not influence the CMC duration and social self-efficacy relationship, and thus, there was no support for the moderator hypothesis. The results of this moderated regression analysis suggests that the CMC duration and CMC restriction severity, when used in combination (Kang & Waller, 2005), may be useful predictors of

social self-efficacy. The regression model represented by Step 2 was statistically significant ($t = 2.07$, $p = .05$). The R^2 of .13 indicates that the model accounted for 13% of the shared variance between the two predictors and the criterion. The f^2 value of .14 indicates a medium effect size (Cohen, 1951). Observation of the standardized beta weights (β) in Step 2 can be compared directly and indicate that CMC duration would have slightly more weight in the prediction equation then would CMC restriction severity ($\beta = .29$ to $\beta = .24$).

Table 10

Moderated Multiple Regression Summary With CMC Duration and Number of Restrictions Predicting Social Self-Efficacy

Variable	*B*	*SE*	β	*t*	*p*	*R*	R^2	f^2
Step 1								
CMC duration	.09	.05	.26	1.83	.07	.26	.07	.08
Step 2								
CMC duration	.10	.05	.29	2.07	.05	.35	.13	.14
Restrictions Severity	2.11	1.20	.24	1.76	.09			
Step 3								
CMC duration	.09	.06	.25	1.41	.17	.36	.13	.15
Restrictions Severity	1.76	1.70	.20	1.03	.31			
CMC duration * Severity	.02	.05	.06	.29	.77			

Summary

I employed three bivariate regression analyses to examine the impact of computer-mediated communication on social self-efficacy, social anxiety, and depression with a sample of adolescents ($N = 49$). I found no statistically significant relationships. A

fourth analysis determined if the severity of computer use restrictions moderated the relationship between computer mediated-communication and social self-efficacy. The results did not support the severity of restrictions as a moderator. However, computer mediated communication and computer use restrictions, when used in combination, may be useful predictors of social self-efficacy. Also to be considered are the statistical results in the context of the sample size. The effect size for CMC duration when used alone in predicting social self-efficacy was in between being small to medium ($f2 = .08$) and was not statistically significant. To be statistically significant a sample size of nearly 100 would have been required. The effect sizes of social anxiety and depression with CMC duration were near zero. Because the interest was in identifying effect sizes of .15 or greater, the sample size of 49 was adequate for this study and did not have a negative effect on the statistical results. Chapter 5 will further discuss and interpret these results.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to examine the impact of computer-mediated communication duration on adolescent social self-efficacy, social anxiety, and depression. Between 2006 and 2011, adolescents aged 12-17 who owned and used cell phones for communication and Internet access rose from 27% to 93% (Lenhart, 2009b). Research suggests that Internet and cell phone overuse may encourage isolation from peers and lower levels of social skills. With societal and family stressors on the rise, many individuals perceive they have insufficient time to spend on friendships; instead, adolescents, as a means for socializations, are increasingly relying on and use CMC technologies (Moody, 2001). It is important to better understand the extent to which CMC duration helps or hinders individuals' confidence that they can form and maintain friendships within the structure of their lifestyle. The available research has inadequately addressed adolescent use of CMC duration, and focused solely on adults' overuse, social isolation, depression, and loneliness related to CMC, not that of adolescents (Bargh & McKenna, 2004; boyd & Ellison, 2007; Kraut, et. al., 1998).

Researchers have examined teen relationship building and maintenance, problematic Internet use, issues related to teen misuse of digital media such as cyberbullying, and parent / authority figure monitoring or restricting CMC use by adolescents (Arrizaalango-Crespo et al., 2010; Gazelle & Druhen, 2009; Livingstone, 2009). Studies more specific to CMC duration and its impact on adolescents are scarce. Further research was needed to: (a) improve the current understanding of the benefits that come from CMC use, (b) explain how CMC may be influencing the young user, (c)

suggest if the fascination with communication technology by the younger generation should be of concern to parents, educators, and community members; and (d) determine if there are ways in which CMC use can be incorporated into the learning environment to enhance students' interests (using technology I the classroom to keep the students interested and make learning more fun). As such, I examined four research questions regarding CMC use duration and the impact it has on adolescent social self-efficacy, social anxiety, and depression.

In Research Question 1, I examined the strength and nature of the relationship between computer-mediated communication duration and social self-efficacy in adolescents. In Research Question 2, I examined the strength and nature of the relationship between computer-mediated communication duration and social anxiety. In Research Question 3, I examined the strength and nature of the relationship between computer-mediated communication duration and depression in adolescents. In Research Question 4, I assessed whether computer-mediated communication restrictions, as measured by the number of restrictions (severity) reported in the demographic questionnaire, moderated the computer-mediated communication - social self-efficacy relationship. In Research Questions 1, 2, and 3, I used simple regression analyses for where CMC duration was the predictor in each analysis. Social self-efficacy (S-EFF) was the criterion in Research Question 1. The criterion in Research Question 2 was social anxiety (SAS-A), and the criterion for Research Question 3 was depression (BDI-II).

Sequential moderated multiple regression was employed for Research Question 4, wherein CMC duration and CMC restriction were the predictors in Steps 1 and 2 in the

sequence of entering predictors. The cross-products of the two duration scores made the interaction term that was entered in Step 3 to determine if CMC restriction moderated the relationship between CMC duration and social self-efficacy.

I measured effect size in addition to statistical significance. The effect size is the proportion of variance explained by the predictor variable divided by the proportion of variance attributed to error (Cohen, 1992). Whereas, if the null hypothesis is not rejected, statistical significance is the probability of obtaining results as extreme as those observed, however, it provides no information about the magnitude of a difference between groups or association between variables. Effect size is independent of statistical significance and is an indicator of the magnitude of a difference or association (Coe, 2002). The American Psychological Association recommends reporting effect size in conjunction with statistical significance regardless of whether a result is statistically significant (APA, 2010).

The results of Research Question 1, which tested the correlation between CMC duration and S-EFF, was not found to be statistically significant at the .05 level ($r = .26$, $p = .07$) While this finding was not significant at the $p = .05$ level, there was a trend toward significance, as this finding was significant at $p < .10$ (Mandel, 2013). The nature of the relationship was positive in that CMC duration tended to increase while social self-efficacy also tended to increase. The correlation was not statistically significant at the .05 level, however the effect size (f^2) was .073. When converted to a percentage, the proportion of .073, interpreted to mean that the magnitude of the association between CMC duration and S-EFF accounted for about 7% of the shared variance (Tabachnick &

Fidell, 2000). Cohen suggested that a small effect size is .02; a medium effect size is about .15. Thus, from an effect size perspective, there is at least some support for using CMC duration as a predictor of social self-efficacy. However, not supported, based on these data, is the hypothesis that the number of hours per week on computer-mediated communication predicts social self-efficacy. In answer to Research Question 2, the correlation between CMC duration and SAS-A was not statistically significant at the .05 level (r = -.07, p = .62). As CMC duration increased, there was a decrease in social anxiety, but the strength of the correlation was nearly zero. Therefore, not supported by these data is the hypothesis that the number of hours per week on computer-mediated communication predicts social anxiety.

In Research Question 3, similar to social anxiety, the correlation between CMC duration and the BDI-II was low and not statistically significant (r = -.08, p = .57) Thus, the null hypothesis was not rejected, and based on these data there was no support for CMC duration to predict depression.

Research Question 4 assessed if CMC duration and CMC restriction severity interacted in predicting social self-efficacy. Typically, if RQ1 were not significant, I would not run the test to confirm moderation. Since there was a trend toward significance (p = 0.07), I ran the test of moderation as a post hoc analysis. There has been some debate about trends in statistical significance (Field, 2005; Hankins, 2013; Mandel, 2013). Although $p < .05$ was chosen as a cutoff for statistical significance, it is an arbitrary choice, and some researchers believe any statistic approaching that value (i.e., between p

= 0.05 and p = 0 .10) should be considered a trend toward significance (Bangalore & Messerli, 2006; Field, 2005; Mandel, 2013).

Although not statistically significant at the .05 level, both CMC duration and CMC restriction severity, individually, showed similar correlations with social self-efficacy (r = .26 and r = .21, respectively). When a cross-product of the two individual variables CMC duration and CMC restriction severity was created, the correlation between the interaction variable and social self-efficacy was statistically significant (r = .29, p < .05). The multiple correlation and regression results showed that when CMC duration and CMC restriction severity were combined as an interaction variable, the multiple correlation was statistically significant (R^2 = .13), with the effect size indicating that about 13% of the variance was shared between the predictors (i.e., CMC duration and CMC restriction severity) and the criterion of social self-efficacy. This percentage of the variance suggests a medium effect size (Cohen, 1992). Therefore, when examining CMC duration and its impact on a criterion, it may be beneficial to combine CMC duration with another predictor of interest to see if a more complicated variable makes the interaction more significant.

No support was found for CMC restriction severity as a moderator between CMC duration and social self-efficacy; therefore, the hypothesis that the number of hours per week on computer-mediated communication, when moderated by CMC restriction severity predicts adolescent social self-efficacy was not supported for this study.

In the following section, I will further interpret the findings and offer the implications and recommendations for social change.

Interpretation of the Findings

The basis for this study comes from three main theoretical frameworks: social cognitive theory's component of (social) self-efficacy (SSE) (Bandura, 1997), social identity theory (Tajfel & Turner, 1986), and developmental theories such as Piaget's cognitive developmental theory and Erikson's psychosocial theory of development. Past research has shown that adolescent social self-efficacy comes about when the adolescent has confidence in his or her ability to function within the realm of his or her social circle, possess the necessary social skills to satisfy his or her own desire to fit in, and develop friendships that are fulfilling. Furthermore, an individual's sense of belonging in the world with a social identity stems from being a member of a group (i.e., social class, family, football team, etc.). The adolescent's cognitive processes work within the social self-framework are better understood when considering the developmental theories proposed by Piaget and Erikson. The theories relate to this research approach because the study explored how CMC use duration can facilitate or impede the individual's perception that he or she is competent in social relationships and if CMC duration impacts the individual's emotional stability relative to social anxiety or depression.

Previous researchers have argued whether use of CMC devices to keep in touch might present some challenges related to an adolescent's perceived self-efficacy in relationship development and maintenance as well as adolescent emotional stability (i.e., social anxiety and depression). In the face of increased CMS use, the prevalence of face-to-face relationships has been decreasing, while the duration of adolescent CMC use is increasing. Social anxiety and depression are also on the rise in adolescents (Derks,

Fischer, & Bos, 2007); therefore, examining adolescents' social self-efficacy, social anxiety, and depression relative to CMC use could provide helpful information (Livingstone, Olafsson, & Staksrud, 2013).

The findings showed there was no significant relationship between the predictors CMC duration and the criterions adolescent social self-efficacy, social anxiety, and depression. Furthermore, the criterion CMC restriction severity tested as a modifier between CMC duration and social self-efficacy showed to be non-significant. Hence, not rejecting Null Hypotheses 1, 2, 3, and 4 were, based on these outcomes. However, in post hoc analyses that paired CMC duration with CMC restriction severity as an interaction variable, the correlation was statistically significant. Moreover, based on this finding, CMC duration may have some use in predicting adolescent social self-efficacy, but not to a large extent when used alone but rather as an interaction variable with CMC restriction severity.

The Relationship Between Computer-Mediated Communication and Adolescent Social Self-Efficacy

In this study, the relationship between CMC duration and adolescent social self-efficacy did not support the hypothesis that there is a statistically significant relationship between CMC duration and social self-efficacy. Social self-efficacy, by definition, would imply that it has an important role in the empowerment of adolescents to communicate using CMC (Schunk & Meece, 2006). However, according to these findings, the duration of CMC use does not significantly affect social self-efficacy. When an individual experiences sufficient self-efficacy, he or she has the necessary confidence to pursue his

or her goals. Having the ability to confidently communicate with others is powerful in giving an individual the feeling that he or she can control the outcomes of his or her relationships (Schunk & Meece, 2006). Although the results suggested the relationship between CMC duration and adolescent social self-efficacy was positive, the prediction that higher rates of CMC duration would significantly correlate with social self-efficacy was not supported by these data. Research recommendations are listed in below.

The Relationship Between Computer-Mediated Communication and Social Anxiety

I examined the duration of CMC use and whether it may predict social anxiety. The analysis resulted in a very small effect size, which indicates a weak relationship between the two variables, giving CMC duration very little predictive power for social anxiety (Cohen, 1992). Moreover, the alternative hypothesis that CMC duration affects adolescent social anxiety was rejected. Socially anxious individuals tend to have poor social skills, less social support, and more difficulty in forming and maintaining satisfying social relationships (Leary & Kowalski, 1995). In addition, individuals with social anxiety tend to have more difficulty expressing themselves, partly due to their pre-occupation with their perceived social deficits, so they tend to reduce time socially interacting with others face-to-face. Paradoxically, the Internet seems to attract socially anxious persons for the socially interactive features it affords them (McKenna & Bargh, 1999). In this study, although as CMC duration increased, social anxiety decreased, there was a weak relationship between them. These findings may, in part, reflect the reality that teens who have low social anxiety use CMC as another means of social interaction rather

than as an alternative to face-to-face communication due to high social anxiety (Valkenburg & Peter, 2007).

The Relationship Between Computer-Mediated Communication and Depression

In this study, results indicated that CMC duration is not a good predictor of depression. The relationship between the two variables was weak; the small effect size gave it little predictive power in terms of statistical significance (Cohen, 1992). Therefore, the hypothesis that CMC duration predicts adolescent depression was not supported. Van den Eijnden et al. (2008) examined psychological wellbeing among teens who use CMC and Internet. The authors suggested that teens who excessively use instant message (IM) and form intense online relationships also tend to have increased depressive symptoms. Additionally, LaRose et al. (2001) reported that in their study with socially isolated teens who rely heavily on Internet communication for social support, increased depressive symptoms result from the difficulty in finding social support from people with whom they only have weak ties. Paradoxically, this study found that there was a weak correlation and no significance in the relationship between CMC duration and adolescent depression. This result may be due to a small sample size and not isolating the data of the teens who showed high scores on the surveys indicating depressive symptoms.

The Relationship Between Computer-Mediated Communication and Restriction Severity As a Moderator

I next examined if CMC restriction severity moderated the relationship between CMC duration and adolescent social self-efficacy. No support was found for CMC

restriction severity as a moderator. However, while both CMC use duration and CMC restrictions were not statistically significantly related to social self-efficacy, (r = .26, p > .05 and r = .21, p > .05 respectively), when combined the multiple correlation was statistically significant *(*R = .35, p < .05). Consequently, in post hoc analyses, I tested the variables, and the cross-product of these two predictor variables was significantly correlated with the criterion variable. This result would likely be due to sample size. If sample size had been larger by even 10 participants, I may have seen a significant result as CMC duration predicting adolescent S-EFF. Although RQ1 was not statistically significant at the p < .05 level, it did show a trend toward significance *(*p = .07)

Restricted use for the sake of this study meant that the user may have had restrictions on their computer use, such as total time they were permitted to use the communication medium, certain hours of permitted use, or even certain types of CMC the individual was permitted to use. A person in authority, such as a parent, teacher or educational institution, employer, or environmental protocols, may have put these restrictions into effect. Since parents tend to monitor the content and Internet sites their teens use more than the duration of use (Arrizaalango-Crespo et al., 2010; Pew, 2007), adolescents may not believe that CMC affects their availability to friends, especially if most of their friends are using the same CMC types. Thus, parental monitoring may explain why there was no statistically significant relationship between duration and restrictions alone with social self-efficacy

Summary

This study examined how the relationships between adolescent social self-efficacy, social anxiety, and depression are affected by CMC duration and CMC restriction severity. Analyses indicated only that CMC duration has a medium size effect on an adolescent's social self-efficacy when combined as an interaction variable with CMC restriction severity. CMC duration has little to no effect on social anxiety or depression, and it is highly unlikely that severity of restrictions on CMC duration has an effect on an adolescent's social self-efficacy at the $p < .05$ level. However, pairing CMC use duration and restriction severity resulted in a stronger effect on adolescent social self-efficacy.

Limitations of the Study

There were several limitations to this study, putting constraints on the generalizability and usefulness of the results. The constraints caused by the method and design that established both external and internal validity made it difficult to draw inferences from the sample group about the population. One limitation may be sample selection. Using a convenience sample can also affect the external validity of the study, making it not generalizable beyond the area it was gathered (i.e., Faith Academy of Bellville in Austin County, TX).

Although the size of the sample was adequate, drawing sample data from each of the schools in Austin County might have been more beneficial to this study. The student population at Faith Academy is a cross-section from the area of interest; however, the respondents may not truly reflect the entire population. Initial screening indicated that

six of the 55 respondents reported they did not use CMC and were dropped from the study. This discrepancy may not have occurred had a larger sample size been collected; however, the sample collected was still within the power analysis recommendation. Additional participants may have made the results significant. In the context of sample size, considering statistical results from the power analysis using the software program G*POWER (Erdfelder et al., 1996) showing that for a medium effect size of .15 (f^2) at α level = 0.05, and power = 0.80 the result was an estimated sample size of 55. The actual sample size obtained was 49. Using the same effect size and α level, a post hoc power analyses showed that the power was .76 and thus lower than originally projected. Using the power from the post hoc power analysis, the obtained effect where CMC duration and CMC restriction severity were used as predictors of social self-efficacy was statistically significant (f^2 = .14); thus, the lower power did not influence that analysis. The effect size for CMC duration when used alone in predicting social self-efficacy was in between being small to medium (f^2 = .08) and was not statistically significant. However, in order to be statistically significant a sample size of nearly 100 would have been required. The effect sizes of social anxiety and depression with CMC duration were near zero. Since interest was in identifying effect sizes of .15 or greater, the sample size of 49 was adequate for this study and did not have a negative effect on the statistical results for effect. However, there was still not a strong enough relationship to make a statistically significant prediction for one variable on the other.

Another limitation may result from the participants not responding honestly to survey questions for fear that their response would not be socially desirable (Mitchell &

Jolley, 2004). Although the participants were assured from the researcher that their responses would be held in strict confidence, there was no identifying information on the survey instruments, and they were encouraged to respond truthfully; since the surveys were done in their homes they may have been afraid their parents would read them. From a methodological perspective, taking the surveys home to ensure privacy did not account for the possible discomfort of the participant in thinking that their parent could look at their answers on the survey. A better method may be to get the parent permission first, and then survey the participants at another location. Additionally, using a web-based survey tool like SurveyMonkey may help to increase the sample size; however, it would have other limitations such as participant honesty and inclusion criteria not being verifiable.

Recommendations

The results of this study indicate that CMC duration may have some impact in predicting social self-efficacy in adolescents, but not a statistically significant amount when used alone. It was found that CMC duration and CMC restriction severity, when used in combination as an interaction variable, might be useful predictors of social self-efficacy.

In a related vein, future research using CMC use duration with other predictors may increase the strength of the prediction. One recommendation would be to put CMC duration with depression to predict social self-efficacy more accurately. Other predictors that may have some value in pairing with CMC duration are age of the adolescent, or grade in school. Separating the ages of the participants to compare results in different age

groups may produce some valuable information. Although I did not collect the gender of the participants, it may have some value in further research. Parents, teachers, and other authority figures may find this information valuable, especially when deciding at what age they allow their child to begin using social media or a cell phone. Continued research examining additional predictors (e.g., depression, age, gender), combined with CMC duration, may increase the strength of the prediction.

Implications for Social Change

This study contributed to the body of quantitative research on the predictor and criterion variables examined here. Taking the limitations into account and allowing for a larger range toward significance with a larger sample, further study will come closer to understanding the impact that CMC duration has on adolescent social self-efficacy, social anxiety, and depression. This will make societal contributions and positive social change implications in some encouraging and motivating ways. First, the information gained from further study can help fill the gap in the research regarding CMC use duration impacting adolescent social self-efficacy, social anxiety, and depression. I have extended the analysis of CMC duration with adolescents and variables that may affect adolescent social self-efficacy, in particular. This study is a beginning step for closer examination of how CMC technology is influencing our youth. Second, studying CMC use by adolescents adds to the research on child and adolescent social development by providing contemporary perspectives on how CMC use spans from adolescent social skill building to communication applications. Understanding the new technology and how it affects child and adolescent social development can be instrumental in keeping this generation

(a) interested in their own education, (b) maintaining secure relationships, and (c) safe from predators. Third, this research provides information that, when applied, can benefit stakeholders in future generations. Stakeholders, be it parent caregivers, educators, or community leaders, take on the responsibility of caring for the next generation by keeping them safe, healthy, and content. The findings have implications for further study of CMC and how duration of use may be effected by restrictions on resulting emotions, beliefs, or behaviors related to the adolescent. This study is a starting point for research concentration in this area not yet provided. Being one step ahead of the developing youth will benefit the future culture of adolescents. In this case, knowledge is power.

Concluding Statements

CMC duration by adolescents is not a good predictor of their social self-efficacy, social anxiety, or depression when studied as a single predictor. Studying adolescents who have restrictions in terms of the severity (i.e., the amount or number of restrictions) and CMC duration combined with another predictor, such as depression, would increase the strength of the predictions. Note should be taken that the effect sizes show a strength of association, although they are not statistically significant. Further research with a larger sample size would shed light on the relationships examined in this study. This study illustrates a need to understand how CMC duration impacts adolescents in ways that affect their emotional development. Further study using gender and age may allow practitioners to predict how an increasing number of communication methods will affect our youth.

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Appendix A: Letter of Introduction

I am currently involved in a research project addressing clinical issues related to adolescent use of computer-mediated communication (i.e. texting, social networking, blogging, etc.) The project will examine the relationship of using this technology to specific emotional and social outcomes. The study is performed as partial fulfillment of the requirements for my Ph.D. degree in psychology at Walden University.

Your participation in this project will provide useful information on this topic. Qualification to participate includes being between the ages of 12 and 19. You will be asked to complete three (3) brief survey instruments and a demographic questionnaire that will take about 30 – 45 minutes.

Participation in this study is strictly voluntary. You may withdraw from the study at any point without penalty. Participation is not associated with any of your class grades. All data collected from this project are confidential and will be used for research purposes only.

Although there are no foreseeable risks to the participant, some of the questions may seem personal. If you feel questions of a personal nature would upset you, please feel free to decline from participation at any point in this project. Thank you for your assistance.

Melaney Davis-McShan

xxxx

xxxx@waldenu.edu

Appendix B: Parent Consent Form for Research

Your child is invited to take part in a research study of the impact that the duration of computer-mediated communication (texting, social networking, chatting online) has on adolescent social self-efficacy, social anxiety, and depression. The researcher is inviting all students from Faith Academy who are 12 to 19 years old to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to allow your child to take part.

A researcher named Melaney McShan, who is a doctoral student at Walden University, is conducting this study.

Background Information:
The purpose of this study is to learn about the impact in the duration of using computer-mediated communication has on adolescent's social self-efficacy, social anxiety, and depression.

Procedures:

- If you agree to allow your child to be in this study, your child will be asked to: Participate by filling out some survey forms that ask questions related to teenagers and how they feel about themselves,
- How often they use computer-mediated communication (i.e. texting, social network sites, blogging, email).
- Personal demographic information (i.e. age, grade, ethnicity).
- The survey should not take more than one hour.
- It will be taken in a classroom setting; however, your name will not be included so it will be confidential.

Here are some sample questions:

- On a scale from 1-5,"It's hard for me to ask others to do things with me" or,
- Which of these are most like you: 0- "I feel the same about myself as ever", 1- "I have lost confidence in myself", 2- "I am disappointed in myself", 3- "I dislike myself."), and
- Listed below are the days of the week. In the blank next to each day, indicate how long (in minutes or hours) you usually use CMC for non-school purposes. Please be as accurate as you can. Minutes Hours
  Monday _____ _____, etc.

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you want your child to be in the study. Of course, your child's decision is also an important factor. After obtaining parent consent, the researcher will explain the study and let each child

decide if they wish to volunteer. No one at Faith Academy will treat you or your child differently if you or your child decides to not be in the study. If you decide to consent now, you or your child can still change your mind later. Any children who feel stressed during the study may stop at any time.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that your child might encounter in daily life, such as: being in this project might make your child tired or stressed, just like when he or she has to fill out forms that ask them questions about themselves. He or she might not like to answer some of the questions, or think they are 'stupid'; but we are hoping this project might help others by giving information to parents and school leaders so they will understand using computer-mediated communication in more settings for the benefit of the students.

Payment:
There isn't any payment or gifts to participate; so, the school will not grade your child. You will get to find out the results of the study so you can understand how your child helped the researchers learn more about adolescents, and especially how important the communication technology is to adolescent development.

Privacy:
Any information your child provides will be kept confidential. The researcher will not use your child's information for any purposes outside of this research project. Also, the researcher will not include your child's name or anything else that could identify your child in any reports of the study. The only time the researcher would need to share your child's name or information would be if the researcher learns about possible harm to your child or someone else. Data will be kept secure by being placed in a locked file away from any identifying information that would risk their privacy. Data will be kept for a period of 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via cell phone # 979-877-8213 or by email melaney.mcshan@waldenu.edu. If you want to talk privately about your child's rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University staff member who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this study is 03-18-14-0107126 and it expires on February 26, 2015.

The researcher will provide an extra copy of this form for you to keep.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my child's involvement in this optional research project. By signing below, I understand that I am agreeing to the terms described above.

Printed Name of Parent _____

Printed Name of Child _____

Date of consent _____

Parent's Signature _____

Researcher's Signature _____

Appendix C: Assent Form For Research

Hello, my name is Melaney McShan and I am doing a research project to learn about the impact of the duration of using computer-mediated communication has on adolescent's social self-efficacy, social anxiety, and depression. I am inviting you to join my project. I am inviting all Faith Academy students ages 12 to 19 to be in the study. I am going to read this form with you. I want you to learn about the project before you decide if you want to be in it.

WHO I AM: I am a student at Walden University. I am working on my doctoral degree in psychology.

ABOUT THE PROJECT:

- If you agree to be in this project, you will be asked to: Participate by filling out some survey forms that ask questions related to teenagers and how they feel about themselves,
- How often they use computer-mediated communication (i.e. texting, social network sites, blogging, email).
- Personal demographic information (i.e. age, grade, ethnicity).
- The survey should not take more than one hour.
- It will be taken in a classroom setting; however, your name will not be included so it will be confidential.

Here are some sample questions:

- On a scale from 1-5,"It's hard for me to ask others to do things with me" or,
- Which of these are most like you: 0- "I feel the same about myself as ever", 1- "I have lost confidence in myself", 2- "I am disappointed in myself", 3- "I dislike myself."), and
- Listed below are the days of the week. In the blank next to each day, indicate how long (in minutes or hours) you usually use CMC for non-school purposes. Please be as accurate as you can.

	Minutes	Hours
Monday	_____	_____, etc.

IT'S YOUR CHOICE:

You don't have to be in this project if you don't want to. If you decide now that you want to join the project, you can still change your mind later. If you want to stop, you can.

Being in this project might make you tired or stressed, just like when you have to fill out forms that ask you questions about yourself. You might not like to answer some of the questions, or think they are 'stupid'; but, we are hoping this project might help others by giving information to parents and school leaders so they will understand using computer-mediated communication in more settings for the benefit of the students

There isn't any payment or gifts to participate; so, your school will not grade you. You will get to find out the results of the study so you can understand how you helped the researchers learn more about adolescents, and especially how important the communication technology is to adolescent development.

PRIVACY:
Everything you tell me during this project will be kept private. That means that no one else will know your name or what answers you gave. The only time I have to tell someone is if I learn about something that could hurt you or someone else.

ASKING QUESTIONS:
You can ask me any questions you want now. If you think of a question later, you or your parents can reach me at my cell phone 979-877-8213. If you or your parents would like to ask my university a question, you can call Dr. Leilani Endicott. Her phone number is 612-312-1210.

I will give you a copy of this form.

Please sign your name below if you want to join this project.

Name of Child _____

Child Signature _____

Date _____

Researcher Signature _____

Appendix D: Letter of Cooperation from a Community Research Partner

xxxxx xxxxxxx xx xxxxx, Administrator
Xxxx xxxxx xx
xxxxxxx xxxx xxxx

September 11, 2013

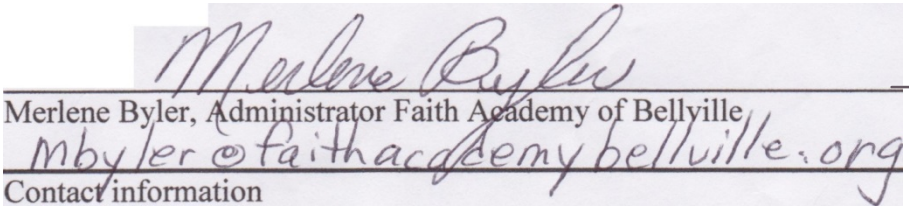
Dear Melaney McShan,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Impact of computer-mediated communication duration on adolescent social self-efficacy, social anxiety, and depression within Faith Academy of Bellville. As part of this study, I authorize you to recruit participants' age 11-19 by letters sent home from the school, administer surveys, and debrief participants following the data collection. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: Distributing letters of introduction to the study to students 11-19 to be sent home to their parents, provide a room for the data collection, and chose a time at our discretion. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting. I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,



Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. The Uniform Electronic Transactions Act regulates electronic signatures. Electronic signatures are only valid when the signer is either: (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verifies any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Appendix E: Social Self-Efficacy Scale for Adolescents (S-EFF)

Please remember this is not a test. There is no right or wrong answer. Everyone will have different responses. No one will know how you answered the questions. **Directions:** Think back **BEFORE** participating in this survey. Please choose from the following statements with 1meaning you believe was "extremely difficult to do" and 5 meaning that it was "extremely easy to do."

BEFORE your participation in this urvey, how easy or difficult was it to:	**Extremely difficult** to do [1]	**Difficult** to do [2]	**Neither Difficult** nor easy to do [3]	**Easy** to do [4]	**Extremely easy** to do [5]
1. Start a conversation with a boy or girl who you don't know very well.					
2. Express your opinion to a group of kids discussing a project of interest to you.					
3. Work on a project with a student you don't know very well.					
4. Help make a new student feel comfortable with you group of friends.					
5. Share with a group of kids an interesting experience you once had.					
6. Stand up for your rights when someone accuses you of doing something you didn't					
7. Multiply two large numbers in your head.					
8. Keep up your side of the conversation.					
9. Stand up for yourself when another kid in your class makes fun of you.					
10. Join a school club or sports team.					
11. Express your feelings to another kid.					
12. Ask someone over to your house on a Saturday.					
13. Ask another student for help when you need it.					
14. Make friends with kids your own age.					
15. Correctly spell all words in a one-page writing assignment.					

Appendix F: SAS-A

This is not a test; there are no right or wrong answers. Please answer each item as honestly as you can. Use these numbers to show HOW MUCH YOU FEEL something is true for you:

1= Not at all
2= Hardly ever
3= Sometimes
4= Most of the time
5= All of the time

Now let's try these sentences first. How much does each describe how you feel?

I like summer vacation 1 2 3 4 5

I like to eat spinach 1 2 3 4 5

1. I worry about doing something new in front of others 1 2 3 4 5
2. I like to do things with my friends 1 2 3 4 5
3. I worry about being teased 1 2 3 4 5
4. I feel shy around people I don't know 1 2 3 4 5
5. I only talk to people I know really well 1 2 3 4 5
6. I feel that peers talk about me behind my back 1 2 3 4 5
7. I like to read 1 2 3 4 5
8. I worry what others think of me 1 2 3 4 5
9. I am afraid that others will not like me 1 2 3 4 5
10. I get nervous when I talk to peers I don't know very well 1 2 3 4 5
11. I like to play sports 1 2 3 4 5
12. I worry about what others say about me 1 2 3 4 5
13. I get nervous when I meet new people. 1 2 3 4 5
14. I worry that others don't like me 1 2 3 4 5
15. I'm quiet when I am with a group of people l 2 3 4 5
16. I like to do things by myself 1 2 3 4 5
17. I feel that others make fun of me.. 1 2 3 4 5

18. If I get into an argument, I worry that the other person will not like me 1 2 3 4 5
19. I'm afraid to invite others to do things with me because they might say no l 2 3 4 5
20. I feel nervous when I'm around certain people 1 2 3 4 5
21. I feel shy even with peers I know well 1 2 3 4 5
22. It's hard for me to ask others to do things with me 1 2 3 4 5

Appendix G: BDI-II

BDI-II

Date:

Name: _____ Marital Status: _____ Age: _____ Sex: _____

Occupation: _____ Education: _____

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today.** Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2. Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3. Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6. Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7. Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8. Self-Criticalness
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10. Crying
- 0 I don't cry any more than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

_____ Subtotal Page 1

Continued on Back

11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.

1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.

2a I sleep a lot more than usual.
2b I sleep a lot less than usual.

3a I sleep most of the day.
3b I wake up 1–2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.

1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.

2a My appetite is much less than before.
2b My appetite is much greater than usual.

3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

_____ Subtotal Page 2

_____ Subtotal Page 1

_____ Total Score

281283-2 9876

Appendix H: Demographic Questionnaire

This is the final form to complete. The scores that are gathered here simply give the researcher a better description of you. The scores are combined to give one total, so it will not single out any individual.

Please do not put your name on the form, as it is confidential. *Answer every question to the best of your knowledge.*

1 Are you a resident of Austin County?

☐Yes ☐No

2 How old are you?

☐11 ☐12 ☐13 ☐14 ☐15 ☐16 ☐17 ☐18 ☐19

3 What school do you attend?

☐Bellville ISD
☐Brazos ISD
☐Faith Academy
☐Sealy ISD

4 What race best represents you? Check all that apply.

☐White
☐Black or African American
☐American Indian and Alaska Native
☐Asian
☐Native Hawaiian and other Pacific Islander
☐Other _____

5 What grade did you last complete?

☐7 ☐8 ☐9 ☐10 ☐11 ☐12 ☐other

6 What type of classes do you take? Check all that apply.

☐Regular classes
☐AP or honors classes
☐Resource classes
☐Other _____

*****_CMC is using any kind of communication that requires a computer program or application to send the information._

7 Do you use computer-mediated communication (CMC)?

☐Yes ☐No

8 If yes to question #7: What type of CMC do you use (check all that apply)?

☐Texting on cell phone
☐Chat/IM
☐Social network sites/blogging
☐Email
☐None

9 How old were you when you first started using CMC? _____

10 Do authority figures (e.g., parents, teachers) restrict or monitor your CMC use?

☐Yes ☐No

11 If yes to question #10: Indicate how your CMC use is restricted or monitored:

☐NA (Not Applicable)
☐Restrict my time using CMC (i.e. I can only use during certain times)
☐Restrict where I can use CMC (i.e. I can't use in school, church, family time)
☐Monitor the sites I can visit or the apps I can use (i.e. can't use adult sites, only certain or no social networking sites, can only befriend people I know face-to-face)
☐Other (Please explain)_____

12. Listed below are the days of the week. In the blank next to each day, indicate how long (in minutes or hours) you usually

	minutes	hours
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____
Saturday	_____	_____
Sunday	_____	_____
TOTAL Minutes (TM)		_____

Appendix I: Debriefing Form

Computer-Mediated Communication duration impact on adolescent social self-efficacy, social anxiety, and depression.

Thank you for agreeing to participate in this study! The general purpose of this research is to explore the impact that computer-mediated communication duration has on adolescent social self-efficacy, social anxiety, and depression.

We invited people who are of adolescents 12-19 years of age who attend Faith Academy of Bellville located in Austin county Texas. The experimenter does not know if you are confident in making friends, if you are socially anxious, or depressed at the time of this study. In this study, you were asked to fill out three surveys and a Questionnaire about your duration of using computer-mediated communication. The results from this study will help parents and the community to better understand the way adolescents use their electronic devices. It will also help schools understand the need to use technology in the classroom.

If you feel especially concerned about the questions that you had to answer since some of the questions are private in nature, please feel free to phone Melaney McShan, M.Ed. at 979-877-8213 about options for counseling. A list of Mental Health Resources will also be provided if you feel the need to contact a Mental Health Agency for additional concerns.

Thank you for your participation in this study. Again, if you have further questions about the study, please contact Melaney McShan, M.Ed. at 979-877-8213.

Appendix J: Letter to Connolly S-EFF permission

Melaney Davis-McShan
XXXXXXXXX.
XXXXXXX,XX XXXXX
melaney.mcshan@waldenu.edu

Dear Dr. Connolly,

Currently I am in the process of writing the Methodology section of my dissertation. While working on the literature review, I read your research article *Social self-efficacy in adolescence: Relations with self-concept, social adjustment, and mental health.* I am writing to you regarding possible use of the instrument S-EFF in my doctoral dissertation research.

My research is examining the impact of adolescent computer-mediated communication (CMC) duration on adolescent social self-efficacy, social anxiety, and depression. I found your research on social self-efficacy in adolescents to be interesting, and thought that your instrument might be a good measure to use for the criterion variable adolescent social self-efficacy.

I appreciate your time and any assistance you can give me in this matter.

Respectfully,
Melaney Davis-McShan
(XXX) XXX-XXXX3 cell

From: connolly@yorku.ca
Date: October 23, 2012 8:27:18 AM CDT
To: "melaney mcshan" <mcshanbm@sbcglobal.net>
Subject: **Re: S-EFF use in research**
Reply-To: connolly@yorku.ca

Dear Melaney
You are most welcome to use the measure in your research
Jennifer Connolly
Sent from my BlackBerry device on the Rogers Wireless Network

From: melaney mcshan <mcshanbm@sbcglobal.net>
Date: Tue, 16 Oct 2012 13:39:47 -0500
To: <connolly@yorku.ca>
Subject: S-EFF use in research

Melaney Davis-McShan

XXX St.

XXX, TX XXXXX

melaney.mcshan@waldenu.edu

Appendix K: Letter to La Greca SAS-A Permission

Melaney Davis-McShan
Xxxxxxx
xxxxxxx

melaney.mcshan@waldenu.edu

Dear Dr. La Greca,

Currently I am in the process of writing the Methodology section of my dissertation. While working on the literature review, I read your research article *Social anxiety among adolescents: Linkages with peer relations and friendships.* I am writing to you regarding possible use of the instrument SAS-A in my doctoral dissertation research.
My research is examining the impact of adolescent computer-mediated communication (CMC) duration on adolescent social self-efficacy, social anxiety, and depression. I found your research on adolescent social anxiety and peer relations to be interesting, and thought that your instrument might be a good measure to use for the criterion variable social anxiety.
I appreciate your time and any assistance you can give me in this matter.
Respectfully,

Melaney Davis-McShan
xxxxx cell

La Greca Response:

Thank you.
You have permission to use it.
Annette M. La Greca, Ph.D., ABPP
Distinguished Professor of Psychology Cooper Fellow and Provost Scholar
Director of Clinical Training
PO Box 249229
University of Miami
Coral Gables, FL 33123
(305) 284-5222 (ext. 1)
(305) 284-4795 (fax)
email: alagreca@miami.edu

On 1/3/14 8:32 PM, "Melaney Davis-mcshan" <melaney.mcshan@gmail.com> wrote:

Dr. La Greca,
I agree to use the SAS-A without publishing norms, translations, or alterations of the scale without your written permission or collaboration.

Thank you.

Melaney Davis-Mcshan
Sent from my iPad

On Jan 3, 2014, at 5:47 PM, "Annette M. La Greca" <alagreca@miami.edu> wrote:

Thank you for your interest in the SAS-A.

I hold the copyright to the scales, and give you permission for use if you
agree that you will NOT publish norms, translations, or alterations of the
scale without my express permission or collaboration.

Let me know if this is agreeable. If so, I will send an acknowledgement with permission.

Best wishes,
Annette M. La Greca, Ph.D., ABPP
Distinguished Professor of Psychology
Provost Scholar
Director of Clinical Training
PO Box 249229
University of Miami
Coral Gables, FL 33123
(305) 284-5222 (ext. 1)
(305) 284-4795 (fax)
email: alagreca@miami.edu

On 1/3/14 5:28 PM, "Melaney Davis-McShan" <melaney.mcshan@gmail.com> wrote:

Dr. La Greca,
I wrote to you some time ago about using the SAS-A measure in my dissertation examining adolescent social self-efficacy impacted by computer-mediated communication duration. You directed me to your website at the University of Miami to obtain the manual. The letter was written by your assistant Perez, at that time. I am now at the IRB stage at Walden, and they are asking for the permission letter from you that I may use your measure. I can't find anything explicitly stating that you give me permission to use the measure. I just sent the letter to your department and a check for the manual, however, as I stated I believe a note from you stating permission would be great. A simple answer from this email will suffice.
Respectfully,
Melaney Davis-McShan

Appendix L: Permission Statement from BDI-II Publisher

PsycTESTS

Beck Depression Inventory–II

PsycTESTS Citation:
Beck, A. T., Steer, R. A., & Brown, G. (1996). Beck Depression Inventory–II [Database record]. Retrieved from PsycTESTS. doi: 10.1037/t00742-000

Test Shown: Full

Test Format:
Each question has a set of at least four possible answer choices, ranging in intensity.

Source:
Osman, Augustine, Kopper, Beverly A., Barrios, Frank, Gutierrez, Peter M., & Bagge, Courtney L. (2004). Reliability and Validity of the Beck Depression Inventory--II With Adolescent Psychiatric Inpatients. Psychological Assessment, Vol 16(2), 120-132. doi: 10.1037/1040-3590.16.2.120

Appendix M: Mental Health Referrals

National Hotlines:
National Suicide & Crisis Hotlines: 1-800-272-8255 (TALK)
Hotlines for teens:
Self-injury: 1-800-366-8288 (DON'T-CUT)
Grief: 1-650-321-5272 (KARA)
Relationships: 1-650-259-8136
Houston area crisis:
Crisis Intervention of Houston: 1-713-HOTLINE
Teenline: 1-713-529-8336 (TEEN)
Austin County Counselors:
Kenneth J. Smothers, LPC: 330 Main St. #7, Sealy, TX 77474
979-885-2900
Kelly D. Brast, LPC: Brast Road, Sealy, TX 77474
979-885-2510
Amy Galpin, MA, LPC-S: 1-281-241-6095
Judith Katzman, MA, LMFT: New Ulm, TX
1-713-489-858

Curriculum Vitae

Melaney Davis-McShan

Academic Experience

09/05 – present Doctoral of Philosophy, student – General Psychology
Walden University, Minneapolis, Minnesota
01/91 – 05/93 Master of Education – Counseling
Prairie View A&M University, Prairie View, Texas
07/78 – 005/80 Bachelor of Fine Arts – Art
Carnegie-Mellon University, Pittsburgh, Pennsylvania
08/76 – 07/78 Student – Art Therapy
Carlow College, Pittsburgh, Pennsylvania
08/75 -- 08/76 Student – Fine Arts
Ivy School of Professional Art, Pittsburgh, Pennsylvania

Relevant Professional Experience

01/2010 – present
Blinn College
Adjunct Faculty
Instructor – Psychology. Face-to-face and blended courses.

12/2000 – 12/2009
Walker Counseling Associates
Therapist, Contract
Provide counseling and assessment to CPS clients. Individual, group, family, and marriage counseling, parent training, and anger management groups provided. Maintain files; interact with caseworkers and court system.

08/95 –12/2009 Mental Health Associates
Therapist, Private Practice
Provide group and individual counseling, anger management and sex offender treatment to probationers. Maintain files and interact with probation officers.

01/01 – 02/06
Colorado County Youth Detention Facility
Clinical Director, Crisis Counselor
Crisis worker for youth facility, hired as Clinical director. Provide counseling and clinical services directly to residents as well as being involved in program design and implementation.

10/95 – 08/00
Texana, MHMRA

Clinic Director, Director of Child &Adolescent Services, Therapist

Began as therapist in Child a& Adolescent Services, promoted to Director, then Clinical Director in charge of all services in community mental health clinic. Provided counseling services to youth and families, adults, individuals and groups. Involved in rehabilitation services design and implementation for adults with mental illness.

Community Service and Consulting Experience

- Presided over steering committee and first year at Family Outreach of Austin County
- Volunteer as counselor at Family Outreach of Austin County
- T-ball coach for Little League of Sealy, Texas
- Speakers Bureau for Family Outreach and MHMR.
- Member of Parks Committee for City of Sealy

Professional Papers

- Dissertation: "*The Impact of Computer-Mediated Communication on Adolescent social self-efficacy, social anxiety, and depression." 2014*
- Thesis research: *"The Effectiveness of Lay Counseling to Parents at Risk of Abuse or Neglect."* 1993

Professional Presentations

- Guest Speaker, American University General Psychology class, August 2014. *"Don't give up: Motivation and desire pays off."*
- Poster Session, Walden University Summer Research Symposium, July 2009. "*CMC and Adolescent relational self-efficacy: A test of the moderating impact of type of computer use and emotional stability."*

Honors

- Psi Chi member since January 2006