

2014

# Adolescent Self-Described Volume of Texting: Discovering Relationships with Psychosocial Development and Interpersonal Relationships

Tessa Cutler  
*Utah State University*

Follow this and additional works at: <http://digitalcommons.usu.edu/etd>

 Part of the [Social and Behavioral Sciences Commons](#)

---

## Recommended Citation

Cutler, Tessa, "Adolescent Self-Described Volume of Texting: Discovering Relationships with Psychosocial Development and Interpersonal Relationships" (2014). *All Graduate Theses and Dissertations*. Paper 3696.

This Thesis is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Theses and Dissertations by an authorized administrator of DigitalCommons@USU. For more information, please contact [dylan.burns@usu.edu](mailto:dylan.burns@usu.edu).



ADOLESCENT SELF-DESCRIBED VOLUME OF TEXTING: DISCOVERING  
RELATIONSHIPS WITH PSYCHOSOCIAL DEVELOPMENT AND  
INTERPERSONAL RELATIONSHIPS

by

Tessa Cutler

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF SCIENCE

in

Family, Consumer, and Human Development

Approved:

---

Troy E. Beckert, Ph.D.  
Major Professor

---

Randall M. Jones, Ph.D.  
Committee Member

---

Sarah S. Tulane, Ph.D.  
Committee Member

---

Mark R. McLellan, Ph.D.  
Vice President for Research and  
Dean of the School of Graduate  
Studies

UTAH STATE UNIVERSITY  
Logan, Utah

2014

**ABSTRACT**

Adolescent Self-Described Volume of Texting: Discovering Impacts on  
Psychosocial Development and Interpersonal Relationships

by

Tessa Cutler, Master of Science

Utah State University, 2014

Major Professor: Dr. Troy E. Beckert  
Department: Family, Consumer, and Human Development

The purpose of this study was to explore how self-reported amounts of texting relate to adolescent psychosocial development and personal relationships. Data were collected from a high school in an urban area in the Mountain West. Participants included 180 students (53% female). Participants were asked to self-describe their volume of texting as high, medium, or low. Participants also completed the Rosenberg Self-Esteem Scale, the Self-Concept Scale, the Case Inventory, The Adolescent Autonomy Questionnaire, and The Modified Inventory of Parent and Peer Attachment.

Eta correlation coefficients revealed that text messaging is more strongly related to self-esteem when texting is input as the dependent variable for both males and females. Results showed that this was the pattern for each variable in question. Results also showed that Cognitive Autonomy mean scores were lower for females on four out of the

five subscales. This was opposite from the mean scores of attachment, which revealed that females tend to have higher parental attachment scores than males.

(110 pages)

**PUBLIC ABSTRACT**

Adolescent Self-Described Volume of Texting: Discovering Impacts on Psychosocial  
Development and Interpersonal Relationships

Tessa Cutler

Researchers explored the relationship among adolescent self-reported amounts of texting and self-esteem, self-construal, autonomy, and attachment. Data were collected from a high school in an urban area in the Mountain West. Participants included 180 students (53% female). Participants were asked to self-describe their volume of texting as high, medium, or low. Participants were also asked to complete the following scales: Rosenberg Self-Esteem Scale, the Self-Construal Scale, the Case Inventory, The Adolescent Autonomy Questionnaire, and The Modified Inventory of Parent and Peer Attachment.

It is suggested that text messaging is more strongly related to self-esteem when texting is placed as the dependent variable for both males and females. Results showed that this was the pattern for each variable in question. Results also showed that Cognitive Autonomy mean scores were lower for females on four out of the five subscales of the autonomy measure. This finding was opposite from the mean scores of attachment, which revealed that females tend to have higher parental attachment scores than males.

## **DEDICATION**

To my incredible husband, family, and mentors

## ACKNOWLEDGMENTS

What an amazing opportunity and journey this has been. I have learned and grown much more than I ever imagined. I am so grateful for the loving support of my husband, who sacrificed many nights to listen and read as I worked through the writing process. I am so lucky to have both wonderful parents and in-laws, whose continued support and encouragement kept me excited about the work. I also want to express appreciation to all of my incredible peers who have pushed (and at times carried me) along. Without their friendship and laughter, this would have been a much longer journey.

Special thanks to my major professor, Troy Beckert. He has been incredibly patient with me through my learning curve and kept me motivated to write, write, and write some more! I am thankful for all of the life lessons learned through his mentorship, as well as the skills and knowledge I will be able to take with me as I move forward with new adventures. He is an amazing mentor and I will forever be grateful for the confidence he had in my abilities.

I truly appreciate all of my committee members. Randall Jones, for the guidance on improving methods and assuring that my work is the best it can be. Sarah Tulane, for the assistance in writing and finding needed resources. I am grateful for their willingness to serve on my thesis committee. All of the feedback and support has been deeply appreciated.

Tessa Cutler

## CONTENTS

	Page
ABSTRACT.....	ii
PUBLIC ABSTRACT.....	iv
DEDICATION.....	v
ACKNOWLEDGMENTS.....	vi
LIST OF TABLES.....	ix
 CHAPTER	
I. INTRODUCTION.....	1
Theoretical Framework.....	3
Research Questions.....	4
II. LITERATURE REVIEW.....	6
Text Messaging.....	7
Self-Esteem.....	16
Self-Construal.....	20
Autonomy.....	25
Attachment.....	34
Research Questions.....	43
III. METHOD.....	45
Participants.....	45
Procedures.....	46
Measurement.....	47
IV. RESULTS.....	52
Preliminary Data Analysis.....	52
Research Question 1.....	53
Research Question 2.....	55
Research Question 3.....	57
Research Question 4.....	64
Research Question 5.....	66



Research Question 6.....67  
Results Summary.....68

V. DISCUSSION.....70

    Text Messaging.....70  
    Self-Esteem.....71  
    Self-Construal.....72  
    Autonomy.....73  
    Attachment.....74  
    Limitations.....75  
    Implications and Future Research.....76

REFERENCES.....80

APPENDIX.....93

## LIST OF TABLES

Table	Page
1 Female Means and Standard Deviations Among Self-Esteem and Level of Texting.....	54
2 Male Means and Standard Deviations Among Self-Esteem and Level of Texting.....	55
3 Female Means and Standard Deviations Among Independence and Level of Texting.....	56
4 Male Means and Standard Deviations Among Independence and Level of Texting.....	56
5 Female Means and Standard Deviations Among Interdependence and Level of Texting.....	57
6 Male Means and Standard Deviations Among Interdependence and Level of Texting.....	57
7 Female Means and Standard Deviations for Evaluative Thinking and Level of Texting.....	59
8 Male Means and Standard Deviations for Evaluative Thinking and Level of Texting.....	59
9 Female Means and Standard Deviations for Voicing Opinion and Level of Texting.....	60
10 Male Means and Standard Deviations for Voicing Opinion and Level of Texting.....	60
11 Female Means and Standard Deviations for Comparative Validation and Level of Texting.....	61
12 Male Means and Standard Deviations for Comparative Validation and Level of Texting.....	61
13 Female Means and Standard Deviations for Decision Making and Level of Texting.....	62

14	Male Means and Standard Deviations for Decision Making and Level of Texting.....	63
15	Female Means and Standard Deviations for Self-evaluation and Level of Texting.....	64
16	Female Means and Standard Deviations for Self-evaluation and Level of Texting.....	64
17	Female Means and Standard Deviations Among Autonomy and Level of Texting.....	65
18	Male Means and Standard Deviations Among Autonomy and Level of Texting.....	65
19	Female Means and Standard Deviations Among Parent Attachment and Level of Texting.....	66
20	Male Means and Standard Deviations Among Parent Attachment and Level of Texting.....	67
21	Female Means and Standard Deviations Among Peer Attachment and Level of Texting.....	68
22	Male Means and Standard Deviations Among Peer Attachment and Level of Texting.....	68

## **CHAPTER I**

### **INTRODUCTION**

Cell phones, the Internet, and other forms of modern technology have revolutionized our ability to communicate. Such recent advancements have changed daily life for people around the world, especially young people's communication in interpersonal relationships. The ease and accessibility provided by technological innovation is rapidly progressing and its impacts are only just beginning to be understood.

Cell phones, in particular, have become the epitome of convenience as many users find them indispensable to daily life. Cell phones have been around for decades and have created the opportunity to make calls without geographical restrictions. Over time the "calling" appeal of cell phones has decreased among younger cohorts (Pew Research Center, 2011a). Within the last few years, texting, or short message service (SMS), has skyrocketed as one of the main modes of communication among young people worldwide (Pew Research Center, 2011a). Texting allows an individual to create a short message using the number keys or a touch-sensitive keyboard screen on a cell phone. Most cellular devices allow up to 160 characters in a single message, and most cell phone plans now include an unlimited number of texts per month.

This mode of communication has grown, particularly amongst adolescents (Pew Research Center, 2011a). Pew Research Center (2011a) reported 95% of young adults own a cellular phone in the United States. According to the Nielsen Company (2010), American adolescents between the ages of 13 and 17 send an average of 3,339 text

messages per month, distinctively more than any other age group. Pew Research Center (2011a) stated that young people text an average of 87.7 text messages per day. It is important to note that this texting phenomenon is not restricted to the United States, but occurs worldwide. According to results from a study conducted by Pew Research (2011b) 96% of people in Spain report owning a cell phone and 70% of them use text messaging. Results were similar in Russia with 86% owning a cell phone and 75% using it for text messaging, and in China 93% report owning a cell phone and 80% use it for texting (Pew Global Research, 2011b).

With the high use of text messaging among adolescents, researchers are seeking to identify developmental implications associated with text messaging. Many teens report that texting increases the quality of their friendships with those whom they text frequently (Yau-hau Tse, 2012). This may be the case, especially for adolescents who are shy or experience social anxiety during face-to-face interaction. Those who experience fear when interacting with others face-to-face, report beneficial outcomes when using text messaging (McKenna, Green, & Gleason, 2002). Some even report that they have a deeper relationship with people they text frequently and that the relationship would be different without texting (Yau-hau Tse, 2012).

Texting helps teens feel that the conversation is more “cozy” than a traditional face-to-face interaction allows (Yau-hau Tse, 2012). Another major benefit of texting reported by adolescents lies in a perceived sense of control over the conversation (Ling, Bertel, & Sundøsy, 2012; Madell & Muncer, 2007). Texting permits users to ponder the messages they have received and allows the necessary time to respond appropriately. It

also provides control of the length of the conversation (Madell & Muncer, 2007). It would be safe to assume that such perceived control over a situation is an important aspect of autonomy.

The historic increase in text messaging and technological involvement among adolescents raises a variety of questions. How does this frequent behavior relate to young people's relationships with parents and peers, their communication skills, and their perceptions of self? Does this type of communication, though convenient, hinder the development of communication skills and potential relationships that could be gained from other forms of communication? Or could this type of communication enhance development?

### **Theoretical Framework**

Because the use of text messaging is relatively new, literature in this field is still comparatively sparse. Much of what has been conducted has, unfortunately, remained atheoretical. Using a specific theoretical lens might help anchor our understanding of the impacts of this form of communication and provide direction for future research. One lens that seems particularly promising is Social Cognitive Theory. Social cognitive theory suggests that humans naturally self-develop, and in order to continue developing, they employ self-reflecting/observing, self-regulating/judging, and self-motivating behavior (Bandura, 1986). When applying this perspective to adolescent texting behaviors, it makes sense that self-reflecting adolescents take the time to create text messages that accurately describe what they are thinking and feeling. Teens report

having a circle of friends that they text most often and with those individuals spend more time creating their messages (Ling et al., 2012; Yau-hau Tse, 2012). It appears that the main incentive for this behavior is self-motivating and is perceived as being personally beneficial.

Adolescents sometimes use texting symbols to express and convey personal experiences and emotions. Through this communication, teenagers feel they are able to create deeper relationships that would be different if they did not text (Yau-hau Tse, 2012). Social cognitive theory speculates that individuals use symbols in order to process and transform daily occurrences into cognitive models. These models then act as guidelines for decisions and behaviors (Bandura, 1986). The use of symbols provides a deeper understanding for environmental, cognitive, and behavioral experiences.

The purpose of this study was to investigate how self-reported amounts of texting relate to adolescent psychosocial development and personal relationships. The specific aspects of psychosocial development that are of interest include self-esteem, self-construal, and autonomy. The factors of personal relationships pertinent to this study include adolescent-peer attachment and adolescent-parent attachment.

### **Research Questions**

1. How does the self-described amount of texting (light, medium, heavy) relate to self-esteem?
2. How does the self-described amount of texting (light, medium, heavy) relate to self-construal?

3. How does the self-described amount of texting (light, medium, heavy) relate to cognitive autonomy?
4. How does the self-described amount of texting (light, medium, heavy) relate to emotional autonomy?
5. How does the self-described amount of texting (light, medium, heavy) relate to parent attachment?
6. How does the self-described amount of texting (light, medium, heavy) relate to peer attachment?



## **CHAPTER II**

### **LITERATURE REVIEW**

With 95% of young people owning a cellular phone in the United States sending an average of almost 90 text messages per day (Pew Research Center, 2011a), it is clear that texting plays a large role in the daily interpersonal relationships of adolescents. It is important to understand how this current phenomenon relates to the adolescents' perception of autonomy, self-esteem, self-construal, and personal relationships. This chapter will press the importance of understanding the relationship of adolescent texting by reviewing research that has been conducted regarding these constructs: adolescent-parent attachment and adolescent-peer attachment (personal relationships) intertwined with autonomy, self-esteem, and self-construal (psychosocial variables).

Text messaging, though relatively new in the field of communication, has been studied in regards to multiple constructs. Current focus has been placed on texting while driving (Bayer & Campbell, 2012; Feldman, Greeson, Renna, & Robbins-Monteith, 2011; Nemme & White, 2010; New Approaches to End Texting While Driving, 2013; West et al., 2011), the impact of texting on literacy (Kemp & Bushnell, 2011; Lexander, 2011; Plester, Wood, & Bell, 2008; Wood, Kemp, Waldron, & Hart, 2014), its influence on overall health (Hingle, Nichter, Medeiros, & Grace, 2013; Redmayne, 2013; Worthington et al., 2012), and sexual behaviors including sexting (Dake, Price, Maziarz, & Ward, 2012; Drouin & Landgraff, 2012; Ostrager, 2010). However, less research regarding textings connection to psychosocial variables has been done.

## **Text Messaging**

### **Texting and Self-esteem**

Mixed results in research demonstrate that the relationship between mobile phone usage and psychological characteristics is not yet firmly established (Hong, Chiu, & Huang, 2012). Hong and colleagues (2012) were interested in exploring mobile phone addiction as a mediator in the relationship between psychological characteristics and mobile phone usage. A total of 269 female undergraduate students completed a demographic and mobile phone function questionnaire (e.g., “What are your most frequently used mobile phone functions?”). Participants were also asked to complete a Mobile Phone Usage Behavior Scale (e.g., “How many messages do you send per day?”); a Mobile Phone Addiction Scale (e.g., “I neglect school assignments to spend more time using mobile phone”); Rosenberg’s Self-Esteem Scale (e.g., “Generally speaking, I am satisfied with myself”); and the Lai Personality Scale (e.g., “I quickly get acquainted with other people and make new friends”).

Results showed that participants with lower self-esteem had increased levels of mobile phone usage and mobile phone addiction (Hong et al., 2012). Hong and colleagues (2012) suggested that people with high anxiety perceive social situations as an added source of pressure and may be afraid to establish face-to-face contact, thus resulting in more mobile phone usage. These findings are similar to those of Ehrenberg, Juckes, White, and Walsh (2008) in which researchers suggested that individuals with lower self-esteem report increased time using instant messaging.

### **Texting and Self-construal**

Low self-esteem and mobile phone usage may also be impacted by individual personalities (Ehrenberg et al., 2008; Hong et al., 2012). It would be safe to assume a relationship between text messaging, cultural differences, and the way others perceive text messaging in specific environments. As has been reported, texting has increased across cultures (Pew Research Center, 2011b).

A Malaysian study explored the social and psychological impacts of texting (Yau-hau Tse, 2012). Researchers reported that individuals who identified themselves as “texters” (compared to “talkers”) had personality traits that were more solitary. They also claimed that text messaging creates a different self-image from that for which the family members are familiar (Yau-hau Tse, 2012). Texters claim that text messaging has its own world within its own “social ecology” (Yau-hau Tse, 2012, p. 109). It would be beneficial to explore the relationship between text messaging and self-construal (independence and interdependence). If texting truly relates to self-image, then it is also important to understand the degree to which inclusion into the “texting world” increases or decreases perceived independence.

### **Texting and Autonomy**

In one study, researchers investigated the relationship cell phones had with perceptions of autonomy and connection in young adult romantic relationships (Duran, Kelly, & Rotaru, 2011). Duran and colleagues (2011) suggested that cell phones enable increased opportunities for communication, yet in order to be in a healthy relationship one must maintain some degree of autonomy. They also stated that texting is particularly

related to intimacy within relationships (Duran et al., 2011). It is expected that individuals in relationships develop some degree of expectation for cell phone and text messaging protocol. These researchers suggested that “perhaps the amount of interaction required to achieve coordination via mobile phones affects a couple’s sense of balance concerning autonomy and connection” (Duran et al., 2011, p. 23).

In order to investigate their hypothesis, they recruited undergraduate students from communication courses to survey individuals who have been involved in a romantic relationship. The sample included 145 women and 65 men who were asked to describe their relationship as casual romantic, exclusive romantic, exclusive and serious (considering marriage or living together), or other (Duran et al., 2011). The most common relationship reported was exclusive (43%;  $n = 89$ ), followed by exclusive and serious (34%;  $n = 71$ ). Casual (22%;  $n = 45$ ) was the least common. The average length of relationship was 21.88 months (Duran et al., 2011). Participants were then asked to specify the number of times they initiated contact with their partner by phone or text throughout an average day.

Researchers report that text messaging ( $M = 6.31$ ,  $SD = 2.15$ ) was more common than cell phone calling ( $M = 2.97$ ,  $SD = 2.06$ ). It was also reported that the participants received a similar number of text messages and calls from their partners on an average day (Duran et al., 2011). Participants then completed the Cell Phone Rules Scale (CPRS) and Autonomy-Connection Scale (ACS). The CPRS was used to investigate perceptions of use, rules, and satisfaction of cell phones within the participants’ relationships (e.g., “We expect each other to respond to a text or a voicemail message within the hour,”

“After a certain time at night, it is not ok to call or text,” “I am satisfied with the way my partner and I use cell phones in our relationship,” etc.). The ACS was used to investigate perceptions of autonomy-connection dialectical tension (e.g., “I am satisfied with the amount of time I spend with my partner,” “I don’t have enough time to be with my friends because of my partner,” “I become angry when my partner does ‘things’ without me,” etc.; Duran et al., 2011). Finally, participants answered open-ended items, which researchers suggest gave participants an opportunity to share experiences using information not covered by the scales (Duran et al., 2011).

Results showed that individuals who reported dissatisfaction with cell phone usage in their relationships were also more likely to be unhappy with the amount of time spent with their partner. Participants who reported lower satisfaction with cell phone usage also “felt their freedom to see friends and engage in activities was restricted, and were more controlling of their partner, all of which can be viewed as aspects of the tension between autonomy and connection” (Duran et al., 2011, p. 33). Results like these suggest the importance of investigating the relationship between texting and perceived autonomy. These results, though useful, may not be generalizable to all situations. It would, therefore, be helpful to understand how autonomy is related to texting behavior among adolescents in regards to general peer relationships (not necessarily romantic).

Blair and Fletcher (2011) explored the meaning of cell phones among adolescents using 404 children and their mothers. Twenty mother-child dyads (10 mother-son and 10 mother-daughter) were selected from the larger sample to participate in a qualitative interview (Blair & Fletcher, 2011). Parents and children answered questions separately

regarding access to, use of, and emotional beliefs about cell phones. Coding for the interviews began with multiple readings of all 40 interviews in order to explore the emerging themes. Blair and Fletcher then began focusing on meaning and symbolism. When the list of codes was agreed upon, they independently began to apply it to the sample. Through this process the three themes that emerged were (1) “cell phones facilitating interpersonal connections,” (2) “cell phones promoting adolescent autonomy,” and (3) “cell phones as a status symbol” (Blair & Fletcher, 2011, p. 162).

They found that both children and parents mentioned the role cell phones played in connecting them to important people (Blair & Fletcher, 2011). The majority of adolescents said that talking to friends was a main reason for using a cell phone because they could talk to their friends at any time. This was also the case for family, as students mentioned that their parents can now call them even when they are not at home (Blair & Fletcher, 2011). Nearly all of the adolescents and their parents felt that cell phone use enhanced autonomy. Blair and Fletcher (2011) reported that reasons for this included owning a cell phone is a right of passage, requires some responsibility, and independence from other phones (e.g., when forgetting homework they don't have to go to the office to make a call, they can call mom on a cell phone). Both adolescents and their parents mentioned that cell phones increase parental monitoring but at the same time made monitoring harder. Some mothers feared that adolescents would gain autonomy too quickly (Blair & Fletcher, 2011). These results suggested some level of independence awarded with cell phone use, but also an enhanced connection.

## **Texting and Attachment**

Young adults also use text messaging to communicate with parents and peers (McKenna et al., 2002; Yau-hau Tse, 2012). Crosswhite, Rice, and Asay (2014) recognized that research focused on the reasons why young adults text message their family members is often conducted using majority university samples. They suggest that such samples may limit the generalizability of findings (Crosswhite et al., 2014). In order to avoid such sample constrictions they recruited participants through the social media site Facebook. They did so with the objective of discovering (1) why young adults text family members, (2) what texting patterns exist, and (3) the impact texting has on familial relationships (Crosswhite et al., 2014).

A two-week advertisement was placed on Facebook. The advertisement was titled “Text Message Inquiry” and included a message asking for help to uncover the mysteries of texting in the U.S. Upon clicking the advertisement, participants were linked to a page where consent was sought before allowing completion of the survey. Participants who completed the survey included 87 females, 38 males, and two unidentified ( $N = 127$ ). The majority of the sample was aged 19-24 ( $n = 127$ ), and the sample represented all but 2 of the 50 states in the U.S. (Wyoming and Alaska were unrepresented, Crosswhite et al., 2014). The survey included demographic information (e.g., gender and age), six items to determine general texting tendencies (e.g., number of texts per month, and attention given to texts), and four items assessing general texting and capacity for strengthening family relationships (Crosswhite et al., 2014).

They discovered that 84.2% of participants reported owning a cell phone for at least 2 years or longer, 66.1% sent or received at least 1,000 texts per month, and 72.6% rarely or never ignored a text message (Crosswhite et al., 2014). The majority of participants reported never or rarely texting a lie (63.2%), but women were particularly unlikely to report lying (69.4%). Women were also likely to text parents more frequently (40.5%) than siblings (32.1%), while men reported texting parents (37.8%) and siblings (40.5%) at comparable rates (Crosswhite et al., 2014). Women were more likely to text mothers than fathers, and sisters than brothers (Crosswhite et al., 2014).

Crosswhite and colleagues (2014) also found that the most common reason for young adults to text family members was to convey information. Other reasons included planning activities, engaging in general conversation, sending pictures and jokes, and filling unoccupied time. The least frequent reported reason was to deepen their relationship (Crosswhite et al., 2014). Females (49.3%) felt there was more of a connection in familial relationships because of texting (42.2%), but no significant difference arose for males (Crosswhite et al., 2014). Research using samples outside of the U.S. supports the finding that most young adults text family and friends, and do so for a variety of reasons (Axelsson, 2010). Some researchers have suggested that text messaging has a profound impact on relationships (Horstmanshof & Power, 2005; Yau-hau Tse, 2012).

Otway, Carnelley, and Rowe (2014) aimed to use text messaging in order to test a location-independent method of delivering attachment security primes. Security priming involves showing participants words, pictures, or names that relate to attachment security



(Otway et al., 2014). Previous research (Gillath & Shaver, 2007) found that priming (exposing people to words, pictures, etc.) with attachment security resulted in increased self-esteem, even one week after priming sessions. Otway and colleagues (2014) suggested that if self-esteem can be positively modified, as in Gillath and Shavers' (2007) study, then security priming could also be utilized to increase global attachment (Otway et al., 2014). The purpose of their study was to discover if security priming through text messages could increase personal security after an initial priming session in a lab (Otway et al., 2014).

Participants ( $N = 50$ ) included 32 females and 18 males that were randomly assigned to either a neutral priming condition ( $n = 25$ ) or a secure priming condition ( $n = 25$ ). At time 1, participants were asked to provide demographic information and were allowed 10 minutes to write a response to a given prompt. The prompt included either a security-inducing attachment figure or a super-market shopping trip. Participants were then asked to complete questions regarding the security they felt. Twenty-four hours later (time 2) participants received a 3-minute visualization task through text message (i.e., "Please spend 3 minutes thinking about the person you visualized and how they make you feel loved and valued" or "Please spend 3 minutes thinking about the route you take from home to supermarket"), and were asked to text "Done" when they had completed this task (Otway et al., 2014).

This procedure was repeated two more times in 24-hour intervals (time 3 & 4). After the fourth interval participants were given a web address and password in order to complete the felt security measure online. Twenty-four hours following (time 5), another

text was sent instructing them to complete the final measure (Otway et al., 2014). The felt security scale included 15 items assessing feeling secure and safe, and the extent to which the visualization tasks made them feel secure as they thought about the person or scenario. Alpha coefficients for scores on this measure were very strong with time 1 = .97, time 4 = .98, and time 5 = .99 (Otway et al., 2014).

Researchers reported that security priming compared to neutral priming led to increased felt security immediately, during the three days of text priming, and the day after the last priming. This suggests that individuals in the secure priming group maintained their sense of security for multiple days. However, results decreased between receiving their last message and the final felt security measure (Otway et al., 2014).

Researchers suggest that future research be conducted to explore effectiveness of text messages on sense of attachment security including self-esteem and interpersonal expectations (Otway et al., 2014).

Results like Otway and colleagues (2014) suggest the importance of understanding the positive influence that text messaging may have on individuals. With an increased sense of security through text messaging, attachment could possibly be influenced as well. It would be beneficial to explore the relationships between attachment and text messaging. Otway and colleagues (2014) suggest that “self-views and relationship-views can be changed positively, and that security priming might be utilized in interventions to increase global attachment security in individuals who have insecure global models of attachment” (p. 95).

The research on text messaging is growing. As has been shown, it would be beneficial to continue the study of its relationship with psychosocial variables. This could help establish interventions (Otway et al., 2014) to positively influence parent-child relationships.

### **Self-Esteem**

Rosenberg, a pioneer in self-esteem research, hypothesized that self-esteem is an innate behavior (Rosenberg, Schooler, & Schoenbach, 1989). Others contend that self-esteem is not only related to the individuals' perception of self, but the perception of self as viewed by others (Harter, 1999; Mead, 1934).

Self-esteem is as an important construct in adolescent development. The theory of self-esteem asserts that it is a human motive (Rosenberg et al., 1989), suggesting that it is an innate human characteristic. This means one's self-esteem may be higher or lower than another, but everyone has self-esteem. This human motive, also referred to as self-maintenance (Tesser & Campbell, 1983) and the motive for self-worth (Covington, 1984), is believed to be a basic human need. Mead's (1934) view of taking on the role of someone else, insinuates self-esteem is not only related to the individual's thoughts and feelings of self, but is also related to their beliefs about what others around them may think of them. Rosenberg and colleagues (1989) suggested that self-esteem is then a "product of social interaction" (p. 1006).

Another influential theorist in the study of self-esteem is Harter. Harter observed self-esteem from a developmental perspective (Harter, 1999). She states that from a very

young age, even as children are learning to speak, they conceptualize the world into judgments of good and bad. They impose self-attributes such as smart or dumb (Harter, 1983). Harter (1999), along with other researchers, believed in the importance of distinguishing the difference between global self-esteem characteristics and domain specific self-esteem, including cognitive and social construction. During adolescence, abstract thinking and self-reflection rise to new levels, and the adolescent may attempt to integrate new attributes into a concept of the self (Harter, 1999). Different self-attributes may include incompetence and inadequacy, and because adolescents use social comparisons, they may feel that they fall short (Harter, 1999; Mead, 1934). Adolescents may not have the cognitive ability to handle such an integrated self-portrait and therefore, may experience conflict because of socialization experiences and interactions with significant others (Harter, 1999).

Harter (1986) also stated that the perception of competency in areas important to an individual, and support of significant others are predictors of self-esteem. Harter detailed that physical appearance is most highly correlated with self-esteem across the lifespan, but during adolescence scholastic competence and peer acceptance are the next most correlated domains (Harter, 1996). It is also during adolescence that classmate support correlates more highly with self-esteem than parental or teacher support (Harter, 1996; Rosenberg et al., 1989).

Self-esteem researchers also contend that school marks are a foundation of self-esteem (Rosenberg et al., 1989). For instance, individuals who are successful in school will likely receive more societal praise. This higher praise yields positive social

comparisons and enhances self-esteem. The construct of self-esteem suggests individuals may see school marks as an attribute of their own effort, and eventually connect this to their own self-worth (Harter, 1999; Rosenberg et al., 1989).

Recent research has linked adolescent school connectedness to the last piece of self-esteem theory that will be discussed; the implication that self-esteem is related to depression. Rosenberg et al. (1989) explained that if self-regard is truly a motive of human beings then the dissatisfaction of such a desire can lead to feelings of depression. Researchers also suggest that this link between self-esteem and depression may be a two-way street. It is suggested that depression may also cause low self-esteem (Millings, Buck, Montgomery, Spears, & Stallard, 2012; Orth, Robins, & Roberts, 2008; Rosenberg et al., 1989).

The link between school connectedness and depression among adolescents is what drove Millings et al. (2012) to investigate the element of school connectedness that could potentially be pushing the effects of depression. Additionally, according to Orth et al. (2008), self-esteem is recognized as a predictive factor in depression. Based on past research, Millings et al. (2012) decided to control for self-esteem and peer attachment (because self-esteem refers to individual perceptions of how others view them) to see if these would decrease the effects of school connectedness on symptoms of depression.

Data used were from a randomized controlled national trial known as the PROMISE Project. The original data were collected to examine the effectiveness of CBT-based programs to prevent depression among adolescents. Participants ( $n = 5,022$ )

were aged 11-16 (mean age = 13.43) and recruited from eight secondary schools. The sample comprised of 50.9% males and 85.5% of the participants were Caucasian.

Participants were asked to complete the Short Mood and Feelings Questionnaire where respondents rated each item as 0 = “not true for me,” 1 = “sometimes,” and 2 = “true for me.” Students also completed the Rosenberg Self-Esteem Scale that is comprised of 10 statements related to feelings of self-worth and value. These statements ranged from 4 “strongly agree” to 1 “strongly disagree.” Participants were also asked to complete the Attachment Questionnaire for Children to determine the attachment style they felt best described their relationship with friends. Lastly, they completed the Psychological Sense of School Membership Scale in order to measure the degree to which students felt accepted, valued, and respected at school.

Researchers conducted a linear regression model, which revealed the association between school connectedness and low mood (a symptom of depression). Researchers then adjusted for gender, year, and school, as well as attachment style and self-esteem. Following a Spearman’s rho correlation, researchers discovered that school connectedness was negatively associated with low mood symptoms. Researchers then conducted a Kruskal-Wallis test, which showed that depending on the attachment style, depression scores differed significantly. More specifically, adolescents with a secure attachment style reported fewer low mood symptoms. Results showed that when controlling for attachment style, then for self-esteem, the relationship between school connectedness and low mood decreased. Millings et al. (2012) supported previous research by finding that self-esteem is significantly related to low mood.

## **Conclusion**

Self-esteem overlaps with many variables in the field of adolescent studies. It is a construct that is related to many aspects of the adolescents' perception and experience. Research has demonstrated that school, relationships, attachment, and so forth, all relate to the adolescents' self-esteem. Text messaging plays a large part in the interpersonal relationships of adolescents, and therefore, the relationship between self-esteem and texting should be explored. Just as researchers from the previous study suggest that the link between self-esteem and depression may be a two-way street (Millings et al., 2012), text messaging and self-esteem may also be a two-way street. Texting may relate to self-esteem, but self-esteem may be related to how much adolescents utilize texting. As mentioned in the texting literature review section, researchers have found that individuals are more likely to utilize texting when they feel less comfortable establishing face-to-face communication (Hong et al., 2012; Yau-hau Tse, 2012). Exploring this relationship may give additional insight as to why adolescents' text, on average, more than any other age group (Pew Research, 2011a).

## **Self-Construal**

Self-construal, or the interpretation and meaning of the self, varies between people and among cultures. The theory of self-construal arose in 1991 with Markus and Kitayama. They suggested that the construals of the self are joined with the cultural

influences around them. Markus and Kitayama (1991) argued that despite growing evidence showing that people embrace differing views; researchers continue to base human nature from only one view – “the so-called western view,” or independent view. However, they hypothesize that the construals of the self, the construals of others, and the relationship between the two, may in fact be more influential than suggested (Markus & Kitayama, 1991). Markus and Kitayama (1991) compared an independent view of the self with an interdependent view of the self; stating that the independent view is typified in American and many western European cultures, and that the interdependent view of the self is demonstrated among Japanese and other Asian cultures. Their purpose was to show that views of the self, often presumed to be universal, might, in fact, not be universal and that self-construals influence the regulation of numerous psychological processes (Markus & Kitayama, 1991).

An individual in Western culture tends to construct oneself to behave in a way that is significant to the beliefs and feelings of his or herself, rather than to the beliefs and feelings of others. Markus and Kitayama (1991) referred to the independent construal of the self as conceiving the self to be autonomous, egocentric, and separate. In many non-Western cultures, however, individuals tend to determine behavior and beliefs based on the perception of what others deem appropriate. Markus and Kitayama (1991) have referred to the interdependent construal of the self as sociocentric, holistic, and collective. The researchers point out that everyone has both of the construals present, but people tend to employ one self-construal over the other to guide their behavior. This is, in part, “a function of their cultures” (p. 254).



Markus and Kitayama (1991) also contended that differences among gender may be linked to divergent construals of the self. One of the most important features of the psychology of women is the capacity to be sensitive to others (Markus & Kitayama, 1991). Research shows that the ability to care for others and the focus on interpersonal relationships is a standard for self-evaluation among women (Gilligan, 1986; Henry & Cliffordson, 2013). This then signifies that self-validation should include a focus on relationships as well (Markus & Kitayama, 1991). Further assessing the differences that arise in self-construal between genders could benefit research. Researchers agree that women may differ in their self-evaluations when compared to men (Gilligan, 1986; Henry & Cliffordson, 2013; Markus & Kitayama, 1991).

Research shows that gender differences may exist in the way individuals self-evaluate or perceive self-construal (Gilligan, 1986; Henry & Cliffordson, 2013; Markus & Kitayama, 1991). Research also shows there are differences between genders in the way that texting and cell phone use is viewed (Forgays, Hyman, & Schreiber, 2014). For example, men view texting in public situations more appropriate than women, and women initiate more contact with their parents than men (Crosswhite et al., 2014; Forgays et al., 2014). These texting gender differences align with what self-construal researchers suggest regarding woman's focus on interpersonal relationships relating to their self-evaluations (Gilligan, 1986; Henry & Cliffordson, 2013). It would be beneficial to explore the relationship between texting and self-construal to see if texting relates more or less strongly to an independent or collectivistic view of the self in males compared to females.

Researchers examine self-construals across cultures and relationships. Essau and colleagues (2011) provided an example of the current research of self-construals among cultures. They collected data from 338 adolescents from England and 351 adolescents from Japan, ages ranged from 12-17 (Essau et al., 2011). Researchers were interested in comparing anxiety levels of adolescents in England to adolescents in Japan. It was hypothesized that Japanese adolescents would have elevated anxiety scores “due to differences in socialization practices” (Essau et al., 2011, p. 511). These researchers suggested that some of the socialization practices that might contribute to anxiety in Japan include self-control, emotional restraint, and an increased focus on others’ opinions. On the other hand, socialization practices that were thought to lower anxiety symptoms in England included individualism and independence (Essau et al., 2011).

Participants were asked to complete a number of measures of anxiety disorders including the Spence Children’s Anxiety Scale. In addition, the Self-Construal Scale was used to measure relationships between the self and others, and the degree to which participants felt like they belonged to a social group. The Social Support Scale was used to measure the perceived social support received from others. Lastly, researchers used the Strengths and Difficulties Questionnaire to determine conduct problems, hyperactivity-inattention, emotional symptoms, peer problems, and prosocial behavior.

Using a two-way ANOVA (culture x gender) to evaluate the occurrences of anxiety symptoms, self-construals, and social support, researchers stated that Japanese adolescents reported significantly lower anxiety symptoms when compared to English adolescents. It was also reported that, on average, girls had higher anxiety compared to

boys. Japanese adolescents were not significantly high in interdependent self-construals, which was surprising given the cultural importance placed on others (Essau et al., 2011). These results also suggest the importance of researching self-construal, separated by gender, in order to see the specific relationship that exists for each.

As was previously stated, current research continues to look at self-construals among different cultures and relationships. Researchers Pomerantz, Qin, Wang, and Chen (2009) investigated the amount of inclusion the parent relationship received during early adolescence. They examined “changes in children’s parent-oriented interdependent self-construals over the course of early adolescence in the United States and China” (Pomerantz et al., 2009, p. 794). They hypothesized that due to the gained autonomy from parents during the adolescent years in the United States, a decline of inclusion in their parent relationship was expected. Chinese children may not experience individuation from parents to the same extent, thus it was expected that there would be a smaller decline of inclusion.

Data were collected when participants entered seventh grade to the end of their eighth grade year. Participants included 374 American adolescents (mean age 12.78) and 451 Chinese adolescents (mean age 12.70). American adolescents were recruited from two Boston schools and the Chinese adolescents were recruited from two schools in Beijing. Participants were asked to complete a set of questionnaires during two 45-minute sessions every 6 months for a total of four waves. The measures included Relational Interdependent Self-Construal Scale, a modified version of the Parent-

Oriented Interdependent Self-Construal Scale, Inventory of Parent Attachment, and five additional scales, in order to examine adolescents' emotional functioning.

Results indicated that during the early adolescent years, American adolescents' inclusion of parent relationships declined (Pomerantz et al., 2009). It was also found that the parent-adolescent relationship was seen in a less positive light as they continued through early adolescence. As for Chinese adolescents, the inclusion of parent relationships did not decline.

## **Conclusion**

It is important to understand how the interpretation and meaning of the self is related to outside relationships. It is also valuable to understand what behaviors can increase and decrease self-construals. Text messaging is becoming more common across cultures and many adolescents participate in this behavior throughout the day. Research shows that individuals who identify as "texters" feel that text messaging is its own world and has the potential to create an additional self-image (Yau-hau Tse, 2012). If this is the case, it would be beneficial to understand the degree to which this behavior relates to a more collectivistic or individualistic view of an individual within the U.S. culture.

## **Autonomy**

Initially, autonomy was considered a milestone of toddlerhood. However, in recent years it has gained increasing attention as a task of adolescence (Beckert, 2012). Autonomy, in its simplest form, is the development of behavioral independence. In

essence, it is marked by an adolescents' ability to act, think, and feel independent of others (Beckert, 2012).

As mentioned, autonomy begins long before the adolescent years and is not something that is resolved "once and for all" (Steinberg, 2008). Autonomy surfaces repeatedly throughout the lifespan. Meaning, that even if a toddler negotiates autonomy and begins to behave and think independent of his or her parents, it does not mean that he or she has reached autonomy forever. Once a toddler begins to develop close friendships and relationships, he or she will need to continue to learn ways to behave autonomously in other interpersonal interactions.

Depending on the theoretical lens from which autonomy is viewed, researchers may define it and measure it differently (Beckert, 2005; Noom, Dekovic, & Meeus, 1999, 2001). Early researchers tried to measure autonomy as a single construct, which proved rather complex. Over time, three main areas of adolescent autonomy emerged enabling a more manageable and meaningful measurement of the construct (Beckert, 2012; Noom et al., 1999). These areas include cognitive autonomy, emotional autonomy, and behavioral autonomy. Noom and colleagues (1999) give three basic definitions of the areas of autonomy: (1) the perception of goals and desires; (2) the perception of independence and individuality; and (3) the perception of self-regulation and control.

### **Cognitive Autonomy**

Cognitive autonomy entails being able to think for oneself. An adolescent develops the ability to think about moral issues as well as social concerns. It is the ability to listen to others' opinions, consider their perspective and viewpoint, anticipate the

consequences of the multiple views, and then reach a decision independently (Steinberg, 2008). As with other facets of autonomy, the ability to make informed, independent decisions develops throughout the lifespan.

Of all three areas, cognitive autonomy has received the least attention. The main reason for this is the methodological limitation to effectively measure independent thinking (Beckert, 2007). Beckert (2005) addressed this issue by stating that there needed to be something observable to measure.

Previous work highlighted specific and observable areas of cognitive autonomy including making independent decisions (Lewis, 1981), considering others' opinions (Berndt, 1996; Steinberg, 2008), and contemplating consequences (Trad, 1994). Through previous work, Beckert (2005) suggested that there are observable areas of cognitive autonomy separate from aspects of behavioral and emotional autonomy. These include "making informed, independent decisions, voicing appropriate opinions, weighing the influence of others on thinking, considering consequences, and self-evaluating practices" (Beckert, 2005, p. 13). He continues to suggest that if self-evaluation skills can be facilitated during adolescence, then facilitating autonomy might be possible also (Beckert, 2005).

Beckert (2007) developed a measure quantifying five areas of cognitive autonomy. Initially, 300 college students were asked to complete one of two open-ended questions: "How can you tell if an adolescent can think for her/himself?" and "What would indicate that an adolescent is thinking for him/herself?" Adequate inter-coder agreement (90% and above) was reported for a preliminary set of 20 categories. When

data were examined a second time five categories emerged: “(a) making informed, independent decisions; (b) voicing appropriate opinions; (c) weighing the influence of others on thinking; (d) considering consequences and (e) self-evaluating practices” (p. 582). Multiple field tests were conducted with  $n = 161$  and  $n = 147$  high school students to examine psychometric properties. A Cronbach alpha of .85 from scores from the second sample was reported (Beckert, 2007).

This measure has been used in multiple studies. In one such study, researchers were interested in looking at whether or not psychosocial development models have been properly applied to both urban and rural youth (Lee & Beckert, 2012). The purpose of the study was to assess the development of cognitive autonomy and ego identity among Taiwanese adolescents. Researchers controlled for gender to determine if it was a predictor for psychosocial developmental outcomes. It was hypothesized that the higher the situational advantage (e.g., high family income) and agential factors (e.g., higher scores of attachment), the more likely the adolescent would progress in ego identity and cognitive autonomy (Lee & Beckert, 2012).

Taiwanese participants included 1,149 adolescents (mean age = 16.83) with  $n = 447$  living in urban areas and  $n = 702$  living in rural areas. Participants were asked to select a range representing family income, and were asked to complete a number of scales including the CASE inventory to measure cognitive autonomy. Other scales included the Modified Extended Objective Measure of Ego Identity Status, the Individualism-Collectivism Scale, the Modified Inventory of Parent and Peer Attachment, and the Psychosocial Inventory of Ego Strengths (Lee & Beckert, 2012).

Researchers partitioned gender differences and explored both cognitive autonomy and identity status. It was reported that being a female was associated with a decrease in cognitive autonomy (Lee & Beckert, 2012). Results also showed that income was related to a higher cognitive autonomy score and a lower identity diffusion score (Lee & Beckert, 2012). It is interesting to note that higher parent attachment seemed to enhance adolescent cognitive autonomy but also facilitated adolescent foreclosure, while peer attachment facilitated cognitive autonomy and identity achievement (Lee & Beckert, 2012).

Results like these show the importance of partitioning gender in order to assess the differences relating to psychosocial development. It would also be interesting to know if the adolescents in differing income ranges had similar access to technology. Such knowledge would provide more information on the relation between text messaging and the psychosocial development of adolescents.

### **Emotional Autonomy**

Emotional autonomy deals primarily with the changes that occur in the adolescents' close relationships, especially the parental relationships. Becoming emotionally and socially independent from caregivers is an essential characteristic for this age. It is important to note that as adolescents become more autonomous from parents, they are often more dependent on others around them, especially close friends. This does not entail autonomy, as the adolescent is only shifting dependence from one source and placing it on a new one (Beckert, 2012).



Similar to autonomy, attachment constitutes the quality of relationships with others. It may seem, therefore, that autonomy and attachment are on opposite ends of the spectrum. Many researchers, however, suggest that they should not be considered opposite, but viewed only as two different dimensions (Noom et al., 1999). Researchers argue that a healthy level of adolescent individuality within an affectively supportive system provides a most favorable environment for identity development (Noom et al., 1999). Noom and colleagues (1999) imply that autonomy and attachment “both have an independent positive impact on adolescent adjustment” and that the “combination of a high level of autonomy and a high level of attachment entails an extra effect” (p. 773). This indicates that a combination of both high autonomy and secure attachment is most beneficial for adolescent development.

Allen and Hauser (1994) believe that establishing autonomy does not necessarily entail distance in relationships but relatedness in them. Allen (in press) contended that relatedness within adolescent-family interactions is central and is related to other areas of adolescent psychosocial development. He also hypothesizes that the ability to feel for one’s self and continue to develop emotional autonomy while maintaining relationships with parents is possible. Allen and Hauser (1994) have supported Noom and colleagues’ (1999) claim that the adolescent-parent relationship has the potential to facilitate adolescent exploration while maintaining a secure base. Within these parent-adolescent relationships, a healthy level of attachment plays a vital role (Allen & Moore, 1998; Noom et al., 1999).

Researchers have linked adolescent emotional autonomy to child-parent relationships (Allen & Hauser, 1994; Allen & Moore, 1998; Lamborn & Steinberg, 1993; Noom et al., 1999) and associated it with a level of willingness to seek parental advice (Ryan & Lynch, 1989). Ryan and Lynch (1989) suggested that adolescent emotional autonomy, in regards to parent relationships, might, in fact, be more of a detachment from parents and not necessarily an independence from them.

Chan and Chan (2013), recognizing that emotional autonomy is related to parent and peer relationships, conducted a study to discover whether emotional autonomy was a mediating variable of parent-child relationships on the propensity to peer pressure. Chan and Chan (2013) focused on maternal warmth (commonly the primary caregiver), behavioral control, psychological control, the mediating variable of emotional autonomy, and their association with peer pressure vulnerability. They hypothesized that emotional autonomy mediates the affects of maternal warmth, behavioral control, and psychological control on propensity to peer pressure.

Participants included 550 students from three schools. Ages ranged from 12 to 20 with a mean age of 14.9 (Chan & Chan, 2013). Data were collected through a one-time 15-minute survey in a classroom setting. Participants were asked to complete the Susceptibility to Peer Pressure Scale that determines the tendency to follow peer directed activities, and the Emotional Autonomy Scale that includes 20 items (e.g., “When I become a parent, I’m not going to treat my children exactly the same way that my parents have treated me” Chan & Chan, 2013, p. 291). Lastly, participants were asked to complete the Parental Bonding Instrument that measures parental warmth (e.g., “Enjoy

talking things over with me”), behavioral control (e.g., “Give me as much freedom as I want”), and psychological control (e.g., “Try to make me dependent on her or him” Chan & Chan, 2013, p. 292).

In order to determine the relationship that exists among maternal warmth, psychological control, behavioral control, and the relationship with peer pressure, they used structural equation modeling with emotional autonomy as the mediator (Chan & Chan, 2013). The model showed that emotional autonomy mediated the effects of maternal warmth on susceptibility to peer pressure, but not behavioral or psychological control. The hypothesis was only partially confirmed. It was concluded that when adolescents felt their mother was low in warmth, they reported a more detached relationship, and in turn a higher susceptibility to peer pressure (Chan & Chan, 2013).

### **Behavioral Autonomy**

Behavioral autonomy entails the capacity to act independently of parents, friends, and others. Though behavioral autonomy resurfaces throughout the lifespan, there are noticeable spikes of importance. These occur during toddlerhood and adolescence (Beckert, 2012). Of all the areas of autonomy, behavioral autonomy tends to be measured most often, and areas of study often center on variables such as self-regulation (Flammer, 1991; Pavlova, Haase, & Silbereisen, 2011) and self-governance (Feldman & Wood, 1994). However, a major criticism of behavioral autonomy is the leap in reason by saying that observed independence is autonomy, and the belief that “a reinforcement associated with autonomous behavior fosters further autonomous behaviors” (Beckert, 2005, p. 6). Researchers have disagreed with the independent behavior classification

based on extrinsic rewards and suggest that the motivation for such behavior should not be disregarded (Harter, 1978).

Pavlova et al. (2011) examined psychosocial correlates of early, on-time, and late behavioral autonomy. They decided to concentrate on behavioral autonomy privileges, more specifically, using curfew autonomy (when they began to decide for themselves it was time to come home). Researchers defined the early autonomy cut-off at 16 years because legally driving becomes available, and the late timing cut-off was 18 years because in the U.S. adolescents are now legally recognized as an adult. It was expected that early curfew autonomy would transmit across all adjustment domains (Pavlova et al., 2011).

Results indicated that from study 1 the median age of curfew autonomy was 17.7 and in study 2 was 17.5 (Pavlova et al., 2011). In both studies, early curfew individuals reported the lowest school attainment and the late group reported the highest educational attainment. In regards to externalizing problem behavior, significant differences arose with the early groups in both studies. Both reported higher levels of deviant behavior. The early group reported lower importance of parents while the late group reported lower level importance of peers (Pavlova et al., 2011).

## **Conclusion**

Information from this section highlights that autonomy is an essential area of focus during adolescence. Adolescent autonomy, unlike autonomy in toddlerhood, is reinforced internally rather than externally (Harter, 1978), thus behavioral autonomy, commonly measured externally, is studied less often in adolescence (Beckert, 2012).

Autonomy relates to many areas of an adolescent's life and carries implications for future outcomes. These outcomes might include susceptibility to peer pressure, academic attainment, and deviant behaviors (Chan & Chan, 2013; Pavlova et al., 2011). Understanding the relationship of adolescent autonomy is important, but it is also central to understand the means adolescents use to increase or decrease autonomy from parents and peers. Researchers report that the younger the participant, the higher the number of texts are sent and received (Forgays et al., 2014). Forgays and colleagues (2014) suggested that texting could potentially be related to the development stage. It would be realistic to assume that texting parents and peers may be a means towards independence in these relationships. This study will examine psychosocial development as an emotional autonomy and cognitive autonomy construct.

### **Attachment**

The concept of attachment has a long history dating back a number of years with Freudian and Darwinian roots. The endeavor of tying two separate concepts of ethology (observing behavior first hand), and psychoanalysis (conscious and unconscious basics of the mind), creates a potential explanation of experiences not only in the external world, but internal as well (Bowlby, 1982). Bowlby focused much of his early work on the biological aspect of attachment, but also recognized the influence of the surrounding environment. In his first written volume, Bowlby (1969) suggested that attachment is an instinctive social behavior with functions of biology. Years later, Bowlby (1982) edited his first volume with updated thoughts and findings.

Though Freud studied mainly mature adults, Bowlby (1982) suggested that a study of organisms that are still developing is important. Through these observations, researchers can see how infants are influenced by their relationship with a mature adult and assess how attachments form. He continued to assert that understanding the biological and psychological capacities of an infant is not possible apart from the mother-infant relationship (Bowlby, 1982).

Bowlby (1982) originally suggested that there were three phases that occur during the infants' development of attachment. During the first phase, the infant gains the ability to recognize things from someone else's point of view, and understand caregivers' motivation and plans. The second phase entails the infant attempting to adjust caregivers' plans, whereas before he or she was capable of changing only his or her own behavior and little more. The third phase involves the infant's ability to communicate intentions to the caregiver. Later, Bowlby conceptualized another phase, the fourth and final phase. Bowlby (1982) believes that during this phase a mutual understanding of each other is established. Such a mutual understanding allows the caregiver and infant to communicate differences and negotiate when differences arise. This fourth and final phase is believed to carry through future attachment relationships (Bowlby, 1982).

Bowlby (1982) believed that early in the life-cycle attachment behavior always becomes readily functional. He suggested that not only is attachment present and highly salient during the young years, but is also carried with us throughout the lifespan. In adulthood, attachment tends to be salient but less intense (Bowlby, 1982; Dallago et al.,

2009; Scott et al., 2013). The missing link up to that time in the research was the studying of attachment in older cohorts (school-age children, adolescents, and adults).

According to Ainsworth (1985), the study of school-age children, adolescents, and adults had been detained due to the lack of scales and procedures necessary for measuring attachment among these cohorts. During the 1980s, researchers began devising adult inventories measuring attachment. Armsden and Greenberg (1987) developed an Inventory of Parent and Peer Attachment (IPPA), which produced two attachment scores. The researchers then revised their inventory in order to yield three separate attachments scores: one for mother, one for father, and one for peers. This measure was specifically developed for adolescents and was grounded on the framework of Attachment Theory.

### **Parent Attachment**

Allen and Moore (1998) were interested in linking attachment organization and social functioning. According to Bowlby (1982), attachment organization is reflected in strategies for processing memories regarding past experiences with attachment. The purpose of Allen and Moore's (1998) research was to assess the relationship between attachment and "(1) competence in peer relationships, (2) presence of internalizing behavior problems, and (3) presence of externalizing and delinquent behaviors" (p. 1406). By examining the level of attachment, the previously listed variables, and the interaction with gender, Allen and Moore (1998) brought to light the importance of studying attachment with psychosocial functioning.

Data were collected from 131 9<sup>th</sup> and 10<sup>th</sup> grade students (mean age = 16.0), their mothers, and their peers. Students were included in the study if one of the following risk factors were present: “failing a single course for a single marking period, any lifetime history of grade retention, 10 or more absences in one marking period, and any history of school suspension” (Allen & Moore, 1998, p. 1408). Adolescents were asked to complete the Adult Attachment Interview and Q-Set that explored descriptions of their childhood relationships with parents. They were also asked to complete the AA1Q-set, Youths Self-Report (internalizing behavior problems), Adolescent Self-Perception Profile, and the Inventory of Parent and Peer Attachment (IPPA). Peers were asked to complete the Adolescent Self-Perception Profile as best they could to describe the teen (their peer) participating in the study. Participants also completed a delinquency behavior self-report. The researchers asked mothers to complete the Child Behavior Checklist and a measure for parental control of teens’ behavior (Allen & Moore, 1998).

Results indicated that adolescents who were better able to communicate about attachment experiences in ways that reflected balance and autonomy were more likely to be socially accepted. These adolescents were also likely to encounter fewer internalizing behaviors and to participate in fewer externalizing behaviors (Allen & Moore, 1998). When researchers looked at the interaction with gender, it revealed that predicting peer-reported delinquency was most strongly related to males. Results like these show the importance of adolescent-parent communication. Research shows that the majority of young adults text family members (Axelsson, 2010; Crosswhite et al., 2014) and that texting influences these family relationships (Horstmanshof & Power, 2005; Yau-hau



Tse, 2012). Adolescent-parent text messaging behaviors may, therefore, relate to levels of attachment.

Research continues to support Allen and Moore's (1998) finding that the more acknowledged or recognized the attachment is by adolescents, the more socially accepted they tend to be. Other researchers were interested in whether both maternal and paternal attachment related to friendship quality and social acceptance (Boling, Barry, Kotchick, & Lowry, 2011). They hypothesized that attachment to both parents would be related to higher perceived social proficiency, which, in turn, would transmit to high positive characteristics of friendship.

Boling et al. (2011) grounded their work in Attachment Theory. They suggested that individuals who receive responsive and sensitive feedback from caregivers will be more likely to see themselves as worthwhile and will expect others to respond to them in a similar way (Bowlby, 1982).

One hundred and thirteen participants were recruited from two separate middle schools in order to explore perceived abilities on establishing close relationships (Boling et al., 2011). Thirty-nine participants were included from School A and 74 participants from School B (mean age = 12.7). Students were asked to complete the Parental Attachment Questionnaire to ascertain attachment to their parents. This measure contained three scales that determine "(a) perceived parental availability, understanding, acceptance, respect, and facilitation of autonomy (Parental Fostering of Autonomy), (b) students' interest in interacting with their parents and their affect toward parents (Affective Quality of Attachment), and (c) the degree to which students seek help from

their parents in stressful situations as well as students' satisfaction with the help they receive from their parents (Parental Role in Providing Emotional Support"; Boling et al., 2011, pp. 825-826). Participants were also asked to complete the Friendship Qualities Questionnaire and the Self-perception Profile in order to assess the adolescents' own perception of their ability to establish close relationships.

Independent-samples *t* tests were conducted in order to determine school and sex differences. Zero-order Pearson product-moment correlations were calculated to determine maternal and paternal attachments correlation to friendship quality. They found that maternal Affective Quality of Attachment (PAQ) and the interaction of school with paternal PAQ were predictors of social competence (Boling et al., 2011). Researchers reported that adolescents who were securely attached, were likely comfortable to go and explore social experiences and feel more socially competent (Boling et al., 2011). As has been mentioned, adolescents use text messaging to communicate with parents (Crosswhite et al., 2014). Exploring the relationship between attachment and amount of texting would be beneficial in understanding whether adolescents who feel attached tend to text more or less. It would also be beneficial to add to current research that shows females tend to text parents more than males (Crosswhite et al., 2014).

In 1973, Bowlby expanded his theory by writing a second volume regarding attachment. In this volume, Bowlby addresses working models of attachment and parent-adolescent conflict. He suggested that the reconstruction of the adolescents' memory of parent-adolescent conflict was repeatedly copied through secure base interactions with

caregivers. The adolescent may dig into this internal working model and be disposed to reconstruct their memories, and remember experiences in a more positive light (Bowlby, 1973). He also proposed that the opposite might be true, and if working models are insecure (insecure attachment), then adolescents will remember the contact with parents in a more negative way. It is possible, based on these and other findings, that adolescents use texting as a way to make and retain important relationships, especially with parents. Understanding how this contact through texting relates to adolescent-parent relationships would be beneficial.

As has been demonstrated, adolescent-parent communication and adolescent-parent attachment influence each other. Some research has been done to investigate the significance of text messaging on aspects of the parent-adolescent relationship. What research does show, as presented earlier, is that young adults do text their parents for different reasons (Axelsson, 2010), one of the main reasons being to convey information, which to many enhances familial relationships (Crosswhite et al., 2014; Horstmanshof & Power, 2005).

### **Peer Attachment**

Although parental attachment is important and valuable, it is not the only kind of attachment that adolescents will experience. Bowlby (1982) reported his account of the behavior of young primates and “described how as they get older, they spend a decreasing amount of time with mother and an increasing amount of time with peers and, later, with other adults, and how the change is mainly a result of their own initiative” (p. 196). Research on adolescents likewise shows that teens spend less time with family and

begin to spend more time with peers without adult supervision (Chan & Chan, 2013). This decrease in time spent with parents is often due to increased school demands, including extracurricular activities, as well as outside employment.

During adolescence, peers play an increasingly significant role. Millings et al. (2012), as previously mentioned, investigated how peer attachment style and self-esteem would reduce effects of school connectedness on symptoms of depression. They were also interested in any interaction effects that might occur between attachment, self-esteem, and school connectedness. Bowlby (1982) has suggested that attachment behavior is normally directed not only to people outside of the family, but also to groups including school, work, or religion. In this particular study, Millings and colleagues (2012) expected that self-esteem would have a main effect on depressive symptoms and potentially account for some variance often credited to school connectedness.

Results showed a negative relationship between school connectedness and low mood symptoms (depression). Main effects were found for attachment style, which reduced school connectedness impacts (Millings et al., 2012). Attachment repeatedly surfaced as the most important predictor of depression. Anxious and avoidant attachment styles emerged with similar predictive magnitudes. Millings et al. (2012) concluded that having an insecure style of attachment is associated with depression symptoms.

Bowlby (1982) noted that during adolescence parental attachment changes and other adults might gain equal or greater importance compared to the parents. Scholte, van Lieshout, and van Aken (2001) investigated the perceived relational support from four key providers: father, mother, special sibling, and best friend. It is interesting to

note from this study that adolescents at age 17 perceived their best friends as being equally supportive as their parents. Adolescents perceive friend influence highly during these developmental years, which inevitably alters parent-adolescent relationships.

Establishing and maintaining such relationships throughout life is beneficial. Research shows that the type of attachment influences the quality of social relations among adolescents (Thompson, 2006). Dykas, Ziv, and Cassidy (2008) examined the link between adolescent attachment and (1) social behavior towards peers, (2) victimization to peers, and (3) social acceptance and sociometric group status. It was hypothesized that securely attached adolescents, when compared to those with insecure attachments, would be perceived as more prosocial by their peers and less likely to be perceived as victims of peer aggression.

Eleventh grade participants included 118 girls and 71 boys. Data were collected during spring/summer and took two 50-minute classroom sessions (Dykas et al., 2008). Measures included the Adult Attachment Interview, a social behavior and victimization assessment, a peer acceptance assessment, a sociometric assessment, and the modified version of Children's Expectations of Social Behavior Questionnaire – Peer Version.

Results were as expected, showing links between attachment and social behaviors (Dykas et al., 2008). However, attachment was not related to all aspects of behavior, including disruptive behavior. Insecure/dismissing adolescents were more likely to be voted aggressive or withdrawn, and were less likely to be considered prosocial (Dykas et al., 2008). One surprising finding was that secure/autonomous adolescents were most often voted victims of peer aggression when compared to their counterparts. These

findings indicate a relationship between adolescent social behaviors and peer attachment. Using texting as a social behavior, it can be assumed that adolescent texting will be related to attachment levels.

## **Conclusion**

Information provided in this section demonstrates the relationship that parent and peer attachments have on adolescents. Types of attachment and changes in those attachments during adolescence may relate to potential risky behaviors and other internalizing problem behaviors. The quality of attachment may also augment prosocial behavior and relate to adolescent perceptions of personal ability to form and retain important relationships. Research reports that adolescents text friends and feel that the relationship would be different without the text messaging (Yau-hau Tse, 2012). It is possible, based on findings like these, that adolescents use texting as a way to broker important relationships.

## **Research Questions**

1. How does the self-described amount of texting (light, medium, heavy) relate to self-esteem?
2. How does the self-described amount of texting (light, medium, heavy) relate to self-construal?
3. How does the self-described amount of texting (light, medium, heavy) relate to cognitive autonomy?
4. How does the self-described amount of texting (light, medium, heavy) relate to

emotional autonomy?

5. How does the self-described amount of texting (light, medium, heavy) relate to parent attachment?

6. How does the self-described amount of texting (light, medium, heavy) relate to peer attachment?

## **CHAPTER III**

### **METHOD**

The purpose of this study was to explore relations between adolescent's quantity of texting on psychosocial development (self-esteem, self-construal, and autonomy) and interpersonal relationships (parental attachment and peer attachment) separately for males and females, using an existing data set. The research design is correlational. Information concerning adolescent texting will help us better understand how this behavior is related to psychosocial development and interpersonal relationships.

#### **Participants**

Data for the original study were collected during February and March of 2013 from one high school in the mountain west. This data set, though previously collected, has not been analyzed or used for other purposes. Participants for this study included 180 students, 41.4 % Latino, 34.3% Caucasian, 13.8% Asian or Pacific Islander, 3.4% African American, 2.3% Native American or Alaskan Native, and 1.7% other. Participants ranged from 9<sup>th</sup> through 12<sup>th</sup> grade, 6.1% freshman, 75.7% sophomore, 9.4% junior, and 8.8% senior. Most considered themselves middleclass (79.0%) and 60.7% indicated that they lived with both biological parents. The majority owned a cell phone with texting capabilities (77%).



## Procedures

The Utah State University Institutional Review Board granted approval for the study. Ten days prior to administering the survey, home economics teachers sent home letters of explanation for the study with information about declination to parents. This letter outlined specific details of the study including what demographic information would be requested and the types of questions that would be asked regarding their child's psychosocial development and texting behaviors. Parents were also given a link to the survey so they could preview it directly. Parents were instructed to sign and return the letter of declination if they did *not* wish their child to participate in the study. No letters of declination were returned.

On the day of the survey home economic teachers, using the school computer labs, had students click on the link and provided them with the password for entry. The students logged in prior to beginning the survey and participant assent was sought. This letter of information provided the students with the researchers' intent and ensured them that no identifying information, other than demographic data, would be requested. Instructions informed the students that they did not have to answer any question they did not wish to answer and that participation in the study was completely voluntary. Students were then instructed to click on the link if they agreed to participate in the study.

## Measurement

### Demographic Variables

Participants were asked basic demographic questions about their gender, year in school, ethnicity, and cell phone ownership. Year in school was divided into 5 options: (a) Freshman, (b) Sophomore, (c) Junior, (d) Senior, and (e) Other. Option (e) Other was not chosen.

### Texting

Participants were asked to answer one question to determine volume of texting. The question was stated, “How would you define yourself? (a) Light Texter, (b) Medium Texter, and (c) Heavy Texter.”

### Self-esteem

The Rosenberg Self-Esteem scale (RSE) is a commonly used measure of self-esteem. This measure was originally designed for high school students (Rosenberg, 1965), but has since been used among many different age groups (Platten, Newman, & Quayle, 2013). The 10-item inventory attempts to measure both barometric (e.g., “At times I think I am no good at all”) and baseline self-esteem responses (e.g., “On the whole, I am satisfied with myself”) using a Likert-scale format 1 (strongly agree) up to 4 (strongly disagree). In a sample of 2,168 adolescents, a Cronbach’s alpha of .87 was reported (Small & Luster, 1994). The test-retest reliability for this measure reveals correlations of  $r = .85$  and  $r = .88$  when given over a two-week period (Rosenberg, 1979). Convergent validity between RSE and the Learner Self-Esteem Scale correlated at .72

(Savin-Williams & Jaquish, 1981). The Cronbach's alpha score in the present study was .87. According to Hensen (2001) Cronbach's alpha scores of .60 indicate acceptable reliability, while scores of .70 or above indicate good internal reliability.

### **Self-construal**

Self-construal (independence/interdependence) was measured using a modified version of the Self-Construal Scale developed by Gudykunst et al. (1994). Gudykunst and Lee (2003) derived 29 items, 15 independent items (e.g., "I prefer to be self-reliant rather than depend on others"), and 14 interdependent items (e.g., "I stick with my group even through difficulties") that are common across cultures. Of these 29 items, 12 correlated with self-construal with a factor loading of .50 or greater (Gudykunst et al., 1994). For the current research study, 10 items were selected from the 29 derived items. Six of the 10 items selected for the study correlated with self-construal considerably at .50 or greater in previous studies. Additionally, due to the scope of the investigation, 4 supplementary questions (2 independent and 2 interdependent) were selected for the questionnaire. These questions include, "I try not to depend on others," "If there is a conflict between my values and values of groups of which I am a member, I follow my values," "I remain in the groups of which I am a member if they need me, even though I am dissatisfied with them," and "I will stay in a group if it needs me, even if I am not happy with it." Answers are reported using a Likert-scale format, ranging from 1 (strongly disagree) to 7 (strongly agree). Construct validity for the original scale was established by high correlations between the self-construal scale and similar constructs including high-context communication (Gudykunst & Lee, 2003). Cronbach's alpha

scores above .70 indicate good internal reliability (Hensen, 2001). Cronbach's alpha for scores in the present study were .75 for independence and .76 for interdependence.

### **Cognitive Autonomy**

The Cognitive Autonomy and Self-Evaluation (CASE) inventory was used to assess adolescent cognitive autonomy. The CASE inventory contains 27 items that used a Likert-scale format ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores in each subscale represent an increased propensity toward cognitive autonomy. The measure has 5 subscales; eight items designed to measure evaluative thinking (e.g., "I think of all possible risks before acting on a situation"), six items measuring decision-making (e.g., "There are consequences to my decisions"), five items measuring voicing opinion (e.g., "When I disagree with others I share my views"), five items measuring comparative validation (e.g., "I need my views to match those of my friends"), and three items measuring self-assessing (e.g., "I am the best at identifying my abilities"). The original study, conducted among North American Teenagers (Beckert, 2007), produced the following reliability scores: the Cronbach alphas were .87 for evaluating thinking, .77 for decision-making, .80 for voicing opinions, .64 for comparative validation, and .73 for self-evaluation. Such scores imply good internal consistency and reliability (Henson, 2001). Validity for this measure has been previously established (Beckert, 2007). Cronbach's alphas for scores from the present study were as follows: .86 for evaluative thinking, .74 for voicing opinion, .70 for decision-making, .63 for comparative validation, and .72 for self-evaluation. Cronbach's alpha scores for the current study indicate good internal reliability (Henson, 2001).

### **Emotional Autonomy**

The Adolescent Autonomy Questionnaire (AAQ) is an emotional autonomy measurement developed by Noom, Dekovic, and Meeus (1999; 2001). The AAQ originated from an adult autonomy questionnaire that was selected due to the closely tied theoretical dimensions presented in the questionnaire (attitudinal or behavioral autonomy, emotional autonomy and functional autonomy; Noom et al., 2001). The wording for the adult measure was adapted to appropriately question adolescents. The AAQ consists of three subscales, each consisting of five items, and use a Likert-scale format in which participants scores range from 1 (not at all descriptive of me) to 5 (very descriptive of me). The original sample included 400 Dutch adolescents (ages 12-18) and yielded the following Cronbach alpha scores: .64 for behavioral autonomy (e.g., “I have a strong tendency to comply with the wishes of others”), and .60 for emotional autonomy (e.g., “When I act against the will of others, I usually get nervous”). According to Henson (2001) Cronbach’s alpha scores of .60 indicate acceptable reliability, while scores of .70 or above indicate good internal reliability. Convergent and divergent validity was exhibited by high correlations with similar constructs and low correlations with opposite constructs (Noom et al., 2001). For the purpose of this study, only the emotional autonomy subscale (Noom et al., 1999) was used. The Cronbach alpha coefficient scores in the present study was .58.

### **Parent and Peer Attachment**

The Modified Inventory of Parent and Peer Attachment (IPPA) is a 24-item scale originated from the 53-item scale that was developed by Armsden and Greenberg

(1987). However, due to concerns for time and subject burden, Raja, McGee, and Stanton (1992) modified this even further. The modified version of the IPPA is divided into 12 items measuring parent-child relationships (e.g., “My parents sense when I’m upset about something; talking over my problems with my parents makes me feel ashamed or foolish; my parents respect my feelings”) and 12 items measuring friendship (e.g., “I like to get my friend’s point of view on things I’m concerned about; when I am angry about something, my friends try to by understanding; it seems as if my friends are irritated with me for no reason”). The response scale ranges from 1 (always true) to 5 (never true), with a composite score for the overall quality of the relationship (parent and peer separately) being reported. Armsden and Greenberg (1987) found Cronbach alpha coefficients between .72 and .91 across scores on both the peer and parent scales. Validity was established through moderately to high correlations to Family and Social Self scores and the Tennessee Self-Concept Scale (Armsden & Greenberg, 1987). Cronbach alpha coefficients for scores from the present study were .82 for parent attachment and .82 for peer attachment, both of which indicate good internal reliability (Henson, 2001).

## CHAPTER IV

### RESULTS

#### Sample Characteristics

Of the 180 adolescents participating in this study, 53% were female and 47% were male. Most of the participants were Latino/Hispanic (41.4%), Caucasian (34.3%), Asian or Pacific Islander (13.8%), with about 5% of the remaining participants reporting an ethnic background of African American and Native American or Alaskan Native. Regarding texter type, 46.6% perceived themselves as being a medium texter, 18.8% perceiving light texting, and 11.6% reported being a heavy texter. The remaining 23% reported owning no cellular phone, or owning a cellular phone but not using it for text messaging. Participants ranged from 9<sup>th</sup> through 12<sup>th</sup> grade, 6.1% freshman, 75.7% sophomore, 9.4% junior, and 8.8% senior.

#### Preliminary Data Analysis

Preliminary analyses were conducted in order to explore the frequency distribution for each variable. A one-way ANOVA was conducted separately for both males and females and revealed that the type of texter did not differ significantly by ethnicity for either females or males (female  $F = .093$ ,  $p = .911$ ; male  $F = .146$ ,  $p = .865$ ). Due to a low number of heavy texters among males ( $n = 8$ ), heavy and medium texter types were combined ( $n = 41$ ) for subsequent analyses. The same action was considered for female respondents (heavy texters  $n = 14$ ); however, because past research shows that

females tend to text more than males (Walsh, White, Cox, & Young, 2011), it was important to maintain the voice of females who consider themselves “heavy texters.” Researchers also indicate that females and males differ in their use and interpretations of texting (Otway et al., 2014). Females self-evaluate based upon their ability to maintain interpersonal relationships (Gilligan, 1986; Henry & Cliffordson, 2013) more than males. They also report feeling more of a connection to those whom they text (Otway et al., 2014) than males, and would thus be more emotionally invested in the texting. For these reasons, gender groups were analyzed separately in order to explore the patterns that arise specific for each gender.

### **Research Question 1**

The first research question examined the relationship between self-esteem and self-reported levels of texting. Mean and standard deviations for self-esteem for each level of texting are presented in Table 1 for females and Table 2 for males. The mean score for female self-esteem was lowest for girls who self-identified as heavy texters. Medium texters reported slightly higher self-esteem than heavy texters, while light texters reported the highest self-esteem of females who use text messaging. Though not as pronounced, males followed a similar pattern with light texters reporting a slightly higher self-esteem than medium/heavy texters.

To measure the strength of the association between self-esteem and texting type, a non-linear correlational analysis was conducted separately for each gender. Eta was used



because, based on previous literature, relationship directionality could not be presupposed. This type of analysis was used for all correlational analyses in this study.

For females, self-esteem was first presented as the dependent variable with an eta coefficient of  $\eta = .33$ . The squared eta correlation indicated that approximately 11% of the variance of self-esteem is accounted for by texting type ( $\eta^2 = .11$ ). Next, texter type was analyzed as the dependent variable with a correlation of  $\eta = .63$ . Thus, approximately 40% of the variability of texter type was explained by self-esteem among females ( $\eta^2 = .40$ ).

For males, self-esteem was first analyzed as the dependent variable with a correlation coefficient  $\eta = .11$ . The squared eta correlation indicated approximately 1% of the variance of self-esteem is explained by texting type ( $\eta^2 = .01$ ). With texter type as the dependent variable a stronger correlation was found ( $\eta = .50$ ). Thus, approximately 25% of the variance in texter type was explained by self-esteem in males ( $\eta^2 = .25$ ). The results indicate that the perceived type of texter shares a stronger relation with self-esteem among females as compared to males.

Table 1

*Female Means and Standard Deviations Among Self-Esteem and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	2.84	.69
Light texter	17	3.17	.57
Medium texter	50	2.74	.63
Heavy texter	13	2.42	.58

Table 2

*Male Means and Standard Deviations Among Self-Esteem and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	26	3.07	.58
Light texter	17	2.98	.71
Medium/heavy texter	41	2.92	.60

**Research Question 2**

The second research question sought to examine the relationship of texter type and self-construal. Self-construal has an independence dimension and an interdependence dimension. Each dimension was examined separately.

**Independence**

For females, independence was presented as the dependent variable, with a correlation coefficient of  $\eta = .20$ . Approximately 4% of the variability in independence was accounted for by texting type  $\eta^2 = .04$ . Texting type as the dependent variable accounted for approximately 29% of the variance ( $\eta = .54$ ) relating to independence.

These relationships were similar for males. Male independence was used first as the dependent variable. The correlation coefficient of  $\eta = .16$  was identical to that found among females. The squared eta correlation indicated that 4% of the variance in individualistic self-construal is explained by texting type ( $\eta^2 = .04$ ). However, when texting type was the dependent variable, a correlation coefficient of  $\eta = .55$  indicated that approximately 26% of the variability in texting was explained self-reported independence.

Table 3

*Female Means and Standard Deviations Among Independence and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	5.48	1.31
Light texter	17	6.04	.74
Medium texter	50	5.68	.93
Heavy texter	13	5.46	.95

Table 4

*Male Means and Standard Deviations Among Independence and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	26	5.19	1.07
Light texter	17	5.59	1.33
Medium/heavy texter	41	5.14	1.06

Tables 3 and 4 show the mean and standard deviation scores for female and male independence for each texting type. Independence mean scores were lowest for females who identified as heavy texters (see Table 3). Individualistic mean scores for males who identified as medium/heavy texters reported lower scores than males who identified as light texters (see Table 4).

**Interdependence**

Tables 5 and 6 present means and standard deviations for interdependence for each level of texting type. Girls who identified as light texters had the highest interdependence scores of females who use text messaging (see Table 5). Similarly, males who identified as light texters obtained a higher interdependence scores than medium/heavy texters (see Table 6).

Table 5

*Female Means and Standard Deviations Among Interdependence and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	4.95	.96
Light texter	17	5.28	1.15
Medium texter	50	5.02	1.13
Heavy texter	13	5.07	.99

Table 6

*Male Means and Standard Deviations Among Interdependence and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	26	5.12	1.06
Light texter	17	5.24	1.44
Medium/heavy texter	41	5.00	1.13

Female interdependence was first analyzed as the dependent variable resulting in a correlation coefficient of  $\eta = .10$  (accounting for only 1% of the variance). However, when texting type was used as the dependent variable approximately 30% of the variability in texting is explained by interdependence scores ( $\eta = .55$ ;  $\eta^2 = .30$ ).

These results differed slightly by gender. For males, interdependence, as the dependent variable ( $\eta = .08$ ) accounted for less than one percent of the variability ( $\eta^2 = .006$ ). With texting type as the dependent variable ( $\eta = .42$ ) approximately 18% of the variance in interdependence was accounted for by texting ( $\eta^2 = .18$ ).

### Research Question 3

The third research question sought to examine the relationship between text messaging and cognitive autonomy. Each of the five subscales of cognitive autonomy

were analyzed separately.

### **Evaluative Thinking**

Female evaluative thinking, as the dependent variable had a correlation coefficient of  $\eta = .29$  with self-described amount of texting, indicating that approximately 8% of the variability in evaluative thinking was accounted for by texting type ( $\eta^2 = .08$ ). Texting type as the dependent variable yielded an eta correlation of  $\eta = .56$  showing that approximately 31% of texting type was explained by evaluative thinking ( $\eta^2 = .31$ ).

For males, evaluative thinking as the dependent variable produced a correlation coefficient of  $\eta = .10$ , or approximately 1% of the variance in evaluative thinking was explained by texting ( $\eta^2 = .01$ ). Next, texting type was used as the dependent variable resulting in a correlation of  $\eta = .60$ . Thus, for these males, approximately 36% of the variability in texting was explained by evaluative thinking ( $\eta^2 = .36$ ).

Tables 7 and 8 present the mean and standard deviation scores for evaluative thinking for each type of texting for females and males respectively. The mean score for female evaluative thinking was highest among girls who self-identified as light texters. Heavy texting females reported the lowest self-evaluation scores. Though not as pronounced, males exhibited a similar pattern with medium/heavy texters reporting a slightly lower evaluative thinking score than light texters.

Table 7

*Female Means and Standard Deviations for Evaluative Thinking and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.59	1.03
Light texter	17	3.83	.67
Medium texter	50	3.77	.64
Heavy texter	13	3.16	.69

Table 8

*Male Means and Standard Deviations for Evaluative Thinking and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	3.34	.68
Light texter	17	3.55	.95
Medium/heavy texter	40	3.41	.74

**Voicing Opinions**

For females, voicing opinion as the dependent variable ( $\eta = .23$ ) accounted for 5% of the variability in voicing opinion. With texting type as the dependent variable ( $\eta = .48$ ) approximately 23% of the variance was explained by voicing opinion ( $\eta^2 = .23$ ).

For males, a correlation coefficient of  $\eta = .18$  with voicing opinion as the dependent variable indicated that approximately 3% of the variance was accounted for by texting type ( $\eta^2 = .03$ ). However, with texting type as the dependent variable ( $\eta = .53$ ) 28% of the variance was accounted for by voicing opinion ( $\eta^2 = .28$ ).

Table 9

*Female Means and Standard Deviations for Voicing Opinion and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.30	.98
Light texter	17	3.69	.93
Medium texter	50	3.43	.78
Heavy texter	13	3.02	.64

Table 10

*Male Means and Standard Deviations for Voicing Opinion and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	3.61	.72
Light texter	17	3.20	.91
Medium/heavy texter	40	3.39	.88

Mean and standard deviation scores for voicing opinion for levels of texting are presented below (*see* Table 9 and Table 10). The mean score for female voicing opinion were highest for girls who identified as light texters and lowest for girls who identified as heavy texters. This was not the case for males. The mean score for males was highest for males who reported no texting (*see* Table 10).

**Comparative Validation**

The mean and standard deviation scores for comparative validation and level of texting are presented in Table 11 for females and Table 12 for males. The mean scores for female comparative validation were lowest for girls who identified as heavy texters. Mean scores for males comparative validation were similar across all texting types.

Table 11

*Female Means and Standard Deviations for Comparative Validation and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.10	.66
Light texter	17	3.14	.72
Medium texter	50	3.27	.86
Heavy texter	13	2.85	.79

Table 12

*Male Means and Standard Deviations for Comparative Validation and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	3.13	.72
Light texter	17	3.16	.87
Medium/heavy texter	40	3.16	.67

For females, comparative validation as the dependent variable accounted for roughly 3% of the variance ( $\eta = .18$ ). Using texting type as the dependent variable ( $\eta = .40$ ) approximately 16% of the variability of texting type was accounted for by comparative validation in females ( $\eta^2 = .16$ ).

Texting type failed to account for variance in comparative validation ( $\eta = .02$ ;  $\eta^2 = .0004$ ). However, comparative validation explained 25% of the variance with regard to texting type ( $\eta = .50$ ).

**Decision-Making**

Five percent of variance ( $\eta = .22$ ) in female decision-making scores was explained by texting type ( $\eta^2 = .05$ ). Approximately 24% of the variance in texting type



was explained by decision-making in females ( $\eta^2 = .24$ ) as the correlation coefficient with texting type as the dependent variable ( $\eta = .49$ ).

Male scores followed a similar pattern. Decision-making as the dependent variable resulted in a correlation coefficient of  $\eta = .17$  ( $\eta^2 = .03$ ). However, when texting type was used as the dependent variable, 25% of the variance in texting type was explained by decision-making ( $\eta = .50$ ;  $\eta^2 = .25$ ).

The mean and standard deviation scores for decision-making are presented in Table 13 for females and Table 14 for males. The mean scores for decision-making decreased as the texting type increased, indicating that girls who identified as light texters reported higher decision-making scores than those who identified as heavy texting. Mean scores for decision-making among males suggest that those who identified as heavy/medium texters reported lower decision-making scores than light texters as well.

Table 13

*Female Means and Standard Deviations for Decision Making and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.84	.81
Light texter	17	4.12	.63
Medium texter	49	3.95	.60
Heavy texter	13	3.63	.82

Table 14

*Male Means and Standard Deviations for Decision Making and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	3.80	.61
Light texter	17	4.10	.76
Medium/heavy texter	41	3.87	.62

**Self-evaluation**

Female self-evaluation was examined as the dependent variable resulting in a correlation coefficient of  $\eta = .35$ , indicating that approximately 12% of the variability in self-evaluation was explained by texting type ( $\eta^2 = .12$ ). Next, the correlation was computed with texting type as the dependent variable ( $\eta = .42$ ). The squared eta results show that approximately 18% of texting type was explained by self-evaluation.

For males, self-evaluation as the dependent variable ( $\eta = .14$ ) indicated that only 2% of the variance in self-evaluation was explained by texting type ( $\eta^2 = .02$ ). Texting type as the dependent variable ( $\eta = .40$ ) showed that 16% of the variability in texting was explained by self-evaluation ( $\eta^2 = .16$ ).

Tables 15 and 16 present the mean and standard deviation scores for self-evaluation and texting type. The mean score for female self-evaluation was lowest for girls who identified as heavy texters, and highest for girls identified as light texters. For males, the highest self-evaluation mean was for non-texters and then medium/heavy texters.

Table 15

*Female Means and Standard Deviations for Self-evaluation and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.17	1.05
Light texter	17	3.74	.90
Medium texter	49	3.36	.81
Heavy texter	13	2.60	1.01

Table 16

*Male Means and Standard Deviations for Self-evaluation and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	3.74	.95
Light texter	17	3.37	.93
Medium/heavy texter	40	3.59	.90

**Research Question 4**

The fourth research question sought to examine the relationship of emotional autonomy and texter type. As with previous research questions, to examine this relationship, a non-linear correlation analysis was conducted separately for each gender. Because no clear directionality in the relationship has been established in previous literature, the Eta correlation allows each variable to be examined as both an independent and dependent variable. For females, little variance in emotional autonomy was explained by texter type ( $\eta = .07$ ;  $\eta^2 = .005$ ). However, approximately 20% of variance texter type scores were accounted for by emotional autonomy ( $\eta = .45$ ;  $\eta^2 = .20$ ).

Table 17

*Female Means and Standard Deviations Among Emotional Autonomy and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	3.40	.80
Light texter	17	3.31	.84
Medium texter	50	3.26	.67
Heavy texter	13	3.28	.49

Table 18

*Male Means and Standard Deviations Among Emotional Autonomy and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	25	3.36	.68
Light texter	17	3.06	.61
Medium/heavy texter	41	3.37	.75

Likewise, for males, emotional autonomy as the dependent variable ( $\eta = .18$ ) indicated that only 3% of variability in emotional autonomy was explained by texting type ( $\eta^2 = .03$ ). Texting type as the dependent variable ( $\eta = .39$ ) had 15% of the variance accounted for by emotional autonomy ( $\eta^2 = .15$ ).

Mean and standard deviation scores for emotional autonomy and texting are presented below (see Table 17 and Table 18). The mean scores for female emotional autonomy varied slightly, while male means scores reflected that those who self-identified as non texters or medium/heavy texters reported higher emotional autonomy scores than light texters.

### Research Question 5

The fifth research question examined the relationship between parent attachment and texter type. The mean and standard deviation scores for parent attachment and level of texting are presented in Table 19 for females and Table 20 for males. The mean scores for female parent attachment were highest for girls who self-identified as heavy texters and who indicated that they did not text. Mean scores for male parent attachment varied only slightly among cell phone users, but were lowest for males who report no texting.

For females, parent attachment was first viewed as the dependent variable with a correlation coefficient of  $\eta = .23$  indicating that approximately 5% of the variance of parent attachment was accounted for by texting type ( $\eta^2 = .05$ ). Texter type as the dependent variable ( $\eta = .70$ ) indicated that almost half of the variability of texting type was explained by parent attachment in females ( $\eta^2 = .49$ ).

For males, texting type accounted for no variance in parent attachment ( $\eta = .08$ ;  $\eta^2 = .006$ ). However, 44% of the variance in texting type was explained by parent attachment in males ( $\eta = .66$ ).

Table 19

*Female Means and Standard Deviations Among Parent Attachment and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	2.74	.84
Light texter	17	2.23	.56
Medium texter	50	2.57	.78
Heavy texter	13	2.74	.83

Table 20

*Male Means and Standard Deviations Among Parent Attachment and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	25	2.40	.57
Light texter	17	2.52	.71
Medium/heavy texter	41	2.51	.75

**Research Question 6**

The final research question examined the relationship between peer attachment and texter type for each gender. For females, only 1% of the variance in peer attachment was accounted for by texting type ( $\eta = .11$ ;  $\eta^2 = .23$ ). With texting type as the dependent variable ( $\eta = .48$ ) almost a quarter of the variance in texting type is explained by peer attachment in females ( $\eta^2 = .23$ ).

For males, peer attachment as the dependent variable ( $\eta = .19$ ) showed that roughly 4% of the variance in peer attachment is accounted for by texting type ( $\eta^2 = .04$ ). Approximately one-third of the variance in texter type was explained by peer attachment ( $\eta = .57$ ;  $\eta^2 = .32$ ). The mean and standard deviation scores for peer attachment and texter type are presented in Table 21 for females and Table 22 for males. The mean score for female peer attachment was lowest among girls who report light texting. Highest female mean scores were reported by girls who self-identify as medium and heavy texters. Mean scores for males showed that the highest scores for peer attachment belonged to males who self-identified as light texters, followed by medium/heavy texters (see Table 21 and Table 22).

Table 21

*Female Means and Standard Deviations Among Peer Attachment and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	14	2.28	.77
Light texter	16	2.15	.74
Medium texter	50	2.36	.72
Heavy texter	13	2.33	.43

Table 22

*Male Means and Standard Deviations Among Peer Attachment and Level of Texting*

Texter type	<i>N</i>	<i>M</i>	<i>SD</i>
No texting	27	2.40	.65
Light texter	16	2.74	.62
Medium/heavy texter	41	2.59	.65

### Results Summary

Eta correlations were conducted in order to discover the strength of association between psychosocial variables and the self-described amount of texting. In all cases, results of this study showed that when self-described amount of texting is the dependent variable, stronger relationships with psychosocial variables exist. Variables of interest included self-esteem, self-construal, cognitive autonomy, emotional autonomy, and peer/parent attachments.

Mean scores were also examined to provide context with previous literature. This study did not compare mean scores between light, medium, and heavy texting groups, but supported previous literature in showing that differences exist among males and females in regards to their texting behaviors. In many cases, patterns arose where the amount of

self-described texting increased as the psychosocial variables increased or decreased.

The variables that decreased as amount of texting increased included self-esteem (both males and females), independence (females), and four subscales for cognitive autonomy (females). Another pattern for means revealed that as female self-described amount of texting increased, parent attachment scores also increased.



## CHAPTER V

### DISCUSSION

#### Texting

Results from this study showed that self-identified texting type was more dependent upon the psychosocial variables measured in this study than vice versa. With each analysis, a stronger relationship existed when texting was the dependent variable. This may signify that adolescent behaviors are influenced by their current perceptions of their psychosocial development. With this enhanced perspective it is again suggested that social cognitive theory be a possible theoretical lens through which to view this behavior.

Bandura (1986) suggested that individuals implement self-observing, self-judging, and self-reacting behaviors while observing a specific behavior. The behavior related to this current study was text messaging. This examination leads to self-judging, in which the behavior might be evaluated before a determination is made concerning whether it is effective or not. Additionally, the individual will self-react, meaning he or she will likely modify, continue, or suspend the behavior (Bandura, 1986).

Through the lens of social cognitive theory, the findings from this study may suggest that individuals who have low self-esteem, will likely deem extensive text messaging as beneficial in order to avoid uncomfortable face-to-face communication. Adolescents in the current study reported being more inclined to independent behaviors, however, the strength of eta correlations possibly suggests that they perceive

interdependent behaviors to be beneficial as well. Social cognitive theory also suggests that humans naturally self-develop and implement the previously mentioned strategies in order to do so. Cognitive autonomy and interpersonal attachments are variables known to change as the adolescent develops both cognitively and physically. During adolescence, the individual may frequently self-observe, judge, and react based on how such relationships are benefiting or interfering with personal goals. Cognitive autonomy implies that adolescents develop in their ability to make decisions. By so doing, adolescents are implementing principles of social cognitive theory.

### **Self-Esteem**

Exploring the relationship between self-esteem and perceived type of texter revealed that 40% of the variance in texter type was explained by self-esteem ratings in females, while only 25% for males. Perceived amount of text messaging relates to adolescent self-esteem. This is likely the case for both males and females, but stronger correlations existed for females. In the current study, a pattern for female self-esteem ratings indicated that self-esteem scores decreased as the amount of texting increased. Perhaps individuals who report low self-esteem may find social situations to be overwhelming or burdensome. This difficulty in connecting with people face-to-face may result in implementing more comfortable means of communication. Previous literature also suggests that individuals with lower self-esteem are more likely to utilize text messaging and instant messaging when compared to individuals who report higher self-esteem (Ehrenberg et al., 2008; Hong et al., 2012). The adolescents in this study

with low self-esteem perceive texting to be more beneficial than those with high self-esteem scores.

Results showed that males who reported no text message usage had higher self-esteem than the males who reported any type of texting behavior. Similar to the females, it was found that those with lower self-esteem also perceived their texting to be at a medium or high level. The correlation coefficient for males however, was much smaller—but still, a quarter of the variance was accounted for by self-esteem. This again supports previous literature that suggests females tend to feel a stronger connection to those whom they text compared to males (Otway et al., 2014). Accordingly, females would be more emotionally invested in their text messages, thus indicating a stronger relationship with self-esteem.

### **Independence and Interdependence**

Research on self-construal suggests that individuals in a western culture tend to be more individualistic and independent minded (Markus & Kitayama, 1991). Because the sample was from the United States, it was assumed that the participants would be more individualistic. Many schools, however, are advocating a more interdependent approach to development (Fryberg, Covarrubias, & Burack, 2013). Mean scores for both males and females confirm that these youth were more inclined to independence than interdependence. However, for males, interdependence ( $\eta^2 = .18$ ) and independence ( $\eta^2 = .26$ ; with texting as the dependent variable) differed more among females in an expected pattern. Previous literature shows that females tend to place more focus on interpersonal

relationships (Gilligan, 1986; Henry & Cliffordson, 2013), which may enhance their interdependence compared to males. However, the results for females showed similar relationships among interdependence ( $\eta^2 = .30$ ) and independence ( $\eta^2 = .29$ ).

As expected, both males and females had higher mean scores for independence than interdependence; however, the differences were not extreme. Research shows that during the adolescent years, teens tend to care more about what their friends think and rely more heavily on social comparisons (Harter, 1999; Mead, 1934). Even if adolescents disagreed with what was being texted to them (which would suggest independent behavior), they may feel inclined to continue the conversation in fear of less peer acceptance (suggesting interdependent tendencies).

### **Autonomy**

It is interesting to note that four out of the five correlation coefficients revealed a stronger relationship (texting being the dependent variable) for males than for females.

These constructs included evaluative thinking (male  $\eta = .60$ ; female  $\eta = .56$ ), voicing opinion (male  $\eta = .53$ ; female  $\eta = .48$ ), comparative validation (male  $\eta = .50$ ; female  $\eta = .40$ ), and decision-making (male  $\eta = .50$ ; female  $\eta = .49$ ). The relationship differences that arose based on gender support previous literature, which suggests that females and males differ in their interpretation and use of text messaging (Otway et al., 2014).

However, differences between males and females in the current study were minimal. It is also interesting to note the pattern of female cognitive autonomy mean scores. Four out of five subscale mean scores showed a decrease as the amount of texting increased. The

four subscales were evaluative thinking, decision-making, voicing opinion, and self-evaluation. Previous literature suggests that during the adolescent years, males tend to have higher cognitive autonomy scores than females (Lee & Beckert, 2012). This may be due to the strong focus females place on interpersonal relationships (Gilligan, 1986; Henry & Cliffordson, 2013), and texting (Crosswhite et al., 2014).

### **Attachment**

Results for female attachment showed a high correlation ( $\eta = .70$ ) between parent attachment and texting (with text messaging as the dependent variable). Mean scores also showed that female parent attachment scores increased as perceived texting amount increased. However, the female peer attachment correlation coefficient was much smaller in size ( $\eta = .48$ ). Male attachment also showed a high correlation regarding parent attachment and texting ( $\eta = .66$ ). Compared to females, the male peer attachment correlation coefficient ( $\eta = .57$ ) remains fairly high along with the parent attachment.

These results are not surprising considering previous literature. Research suggests that females tend to text parents more often than males do, and feel more of a benefit in their relationships from texting (Crosswhite et al., 2014). Adolescent females who text parents may feel more connection because of texting, or perhaps females who choose to text parents already have a high level of attachment compared to those that text less.

Interestingly, both males and females appeared to be much less influenced by attachment with peers, compared to parent attachment, in their texting behaviors.

Research conducted on adolescent, parent, and peer relationships suggest that often adolescents consider their friends' perspectives more than their parents' perspectives (Scholte et al., 2001). Even though research shows that adolescents spend less time with parents as they increase their time with peers (Chan & Chan, 2013), scholars (Collins, 2003; Collins & Steinberg, 2007) agree that connectivity to parents does not necessarily decrease. Adolescents may feel a need to keep parents informed and updated, and may utilize text messaging in order to do so (Crosswhite et al., 2014).

### **Limitations**

This study explored the relationship between self-identified texting type and perceived psychosocial level. Due to the scope of the investigation a self-report measure was deemed appropriate. However, self-report measures can present issues related to social desirability. The participants may have answered what they thought their friends would have answered or what they thought would please their friends. Because the data had already been collected, it was not possible to add questions to the survey. This study relied on only one data point for establishing the type and amount of texting from the participants. Additional data points about type and quality of texting might have strengthened the study.

This study included 180 high school students. The sample size for eta correlation groups varied in size, the smallest being females who identified as heavy texters ( $n = 14$ ). However, the general rule for category sample sizes is a minimum of 10 cases (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996).

### **Implications and Future Research**

The self-identified amount of texting by an adolescent may reflect how he or she currently views himself or herself in regards to certain psychosocial variables, as demonstrated in this study. There are a number of reasons why this information might be beneficial to parents, educators, and therapists who work with or among adolescents. Text messaging quantities could act as a gage for parents to better understand how an adolescent perceives himself or herself. If parents observe their adolescent participating in a high amount of texting, it may be beneficial to pay attention to issues like self-esteem. The findings from this study also suggest that the amount of texting occurring between an adolescent and his or her parents may be an indicator of perceived positive attachment, and, therefore, could promote texting as a beneficial way to communicate with the child.

These fascinating results may also be valuable to parents who worry about how texting is influencing their adolescent son or daughter. While this study cannot rule out many variables, it might be possible that texting does not decrease self-esteem or attachment. Although this may be comforting to parents, it is important to remember that these positive benefits come only from the perspective of the adolescent.

Therapists and educators who seek for the well-being of adolescents may use these data to view texting not as a cause of high or low self-esteem, but as a measure. Increased amounts of texting may indicate that an adolescent is not confident in their abilities to communicate effectively in person, or that they turn to texting seeking comfort, validation, or other means of improving their self image. The findings from this

study might suggest that taking away a cell phone or limiting an adolescent from texting may be less effective in improving his or her self-esteem than other forms of intervention. Although increased levels of texting show no relation to decreased levels of parent attachment, further research may be needed to determine if attachment between adolescents and other adults (e.g., employers, teachers, therapists) follows a similar pattern.

The results of this research may even be constructive to adolescents themselves. High school students will potentially realize a need to look for other indicators of low self-esteem when they notice an unusually high amount of texting among their friends. Those who attempt to use texting as a means of increasing their self-perceived worth may recognize a need to modify their behavior.

One of the most interesting findings in this study suggests that the amount of text messaging was more dependent on the current state of self-esteem, self-construal, autonomy, and attachments than these same psychological traits were on text messaging. While previous literature remains inconclusive about the direction of these relationships, it seems more emphasis has been placed on understanding the impact of texting on psychosocial development. Although this study might be a first step in showing that an adolescent's quantity of texting could be based on current psychosocial characteristics, many of these characteristics are known to change throughout the adolescent years. It would, therefore, be beneficial to conduct longitudinal research exploring these relationships over time. As the current cohort of young texters age, exploring how



texting behaviors change in emerging adulthood could create a more expansive understanding of the correlation.

Qualitative research designed to explore the kind of texting that takes place among high, medium, and low texters might also be useful. Such research could add clarity to why adolescents gravitate to this form of communication. It may also demonstrate to what degree different types of text messaging influences self-esteem and other measures of psychosocial development.

Past research suggests that individuals in a western culture tend to become autonomous earlier when compared to non-western cultures (Feldman & Wood, 1994). Mean scores for autonomy in the current study ranged between 2.60 to 4.12 (on a 5-point scale) for both males and females. Though some of the mean scores suggest relatively high cognitive autonomy, it would be beneficial to compare levels of correlation between autonomy and texting across cultures. Future research might also enhance our knowledge of why western cultures tend to have an early lead into adolescent autonomous behavior, when compared to non-western cultures. Previous research also suggests that adolescents and parents feel text messaging enhances autonomy (Blair & Fletcher, 2011). Conducting further research among different cultures may provide additional insight to the amount of autonomy, or in what ways specifically, autonomy is influenced through cell phone use.

Text messaging is a common mode of communication and adolescents will likely continue to use it for years to come. It is important to understand what influences, positive and negative, this behavior may have on psychosocial development. Using Eta

correlations to discover relationship strengths between psychosocial variables and amount of text messaging revealed that the amount of text messaging is more dependent upon psychosocial variables than vice versa. Though this study may only be a first step in suggesting that the amount of texting is more strongly based upon current perceptions of psychosocial variables, it adds to current literature about adolescent texting. Text messaging may not negatively influence self-esteem, self-construal, autonomy, or interpersonal attachments, and could be a gauge for how adolescents perceives their own psychosocial development.

**REFERENCES**

- Allen, J. (in press). Assessing attachment in adolescence. In E. Waters (Ed.), *Handbook of assessment of attachment*. New York, NY: Guilford.
- Allen, J. P., & Hauser, S. T. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Development, 65*(1), 179-194.  
doi:10.1111/1467-8624.ep9406130688
- Allen, J. P., & Moore, C. (1998). Attachment and adolescent psychosocial functioning. *Child Development, 69*(5), 1406.
- Ainsworth, M. D. (1985). Attachments across the lifespan. *Bulletin of the New York Academy of Medicine, 61*(9), 792.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence, 16*(5), 427-454.
- Axelsson, A. (2010). Perpetual and personal: Swedish young adults and their use of mobile phones. *New Media & Society, 12*(1), 35-54.  
doi:10.1177/1461444809355110
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bayer, J. B., & Campbell, S. W. (2012). Texting while driving on automatic: Considering the frequency-independent side of habit. *Computers in Human Behavior, 28*(6), 2083-2090. doi:10.1016/j.chb.2012.06.012

- Beckert, T. (2005). Cognitive autonomy and self-evaluation in adolescents. *American Association of Behavioral and Social Sciences Perspectives*, 8, 1-21. Retrieved from <http://aabss.org/journal2005/>
- Beckert, T. (2007). Cognitive autonomy and self evaluation in adolescence: A conceptual investigation and instrument development. *North American Journal of Psychology*, 9, 579-594.
- Beckert, T. (2012). Autonomy and its assessment. In R. J. Levesque (Ed.), *Encyclopedia of adolescence* (pp. 241-247). New York, NY: Springer. doi: 10.1007/978-1-4419-1695-2\_12
- Berndt, T. (1996). Transitions in friendship and friends' influence. In J. A. Graber, J. Brooks-Gunn, & A. C. Petersen (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 57-84). Mahwah, NJ: Erlbaum.
- Blair, B. L., & Fletcher, A. C. (2011). "The only 13-year-old on planet earth without a cell phone": Meanings of cell phones in early adolescents' everyday lives. *Journal of Adolescent Research*, 26(2), 155-177.  
doi:10.1177/0743558410371127
- Boling, M. W., Barry, C., Kotchick, B. A., & Lowry, J. (2011). Relations among early adolescents' parent-adolescent attachment, perceived social competence, and friendship quality. *Psychological Reports*, 109(3), 819-841.  
doi:10.2466/02.07.09.21.PR0.109.6.819-841
- Bowlby, J. (1969). *Attachment and loss. Vol. 1: Attachment*. New York, NY: Basic Books.

- Bowlby, J. (1973). *Attachment and loss. Vol. 2: Separation*. New York, NY: Basic Books.
- Bowlby, J. (1982). *Attachment and loss. Vol. 1: Attachment* (2<sup>nd</sup> ed.). New York, NY: Basic Books.
- Chan, S., & Chan, K. (2013). Adolescents' susceptibility to peer pressure: Relations to parent adolescent relationship and adolescents' emotional autonomy from parents. *Youth & Society, 45*(2), 286-302. doi:10.1177/0044118X11417733
- Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence (Wiley-Blackwell), 13*(1), 1-24.
- Collins, W. A., & Steinberg, L. 2007. *Handbook of child psychology* (Vol. 3). Hoboken, NJ: Wiley.
- Covington, M. (1984). *The motive for self-worth: Research on motivation in education. Student motivation* (Vol. 1). New York, NY: Academic Press.
- Crosswhite, J. M., Rice, D., & Asay, S. M. (2014). Texting among United States young adults: An exploratory study on texting and its use within families. *Social Science Journal, 51*(1), 70-78. doi:10.1016/j.soscij.2013.10.002
- Dake, J. A., Price, J. H., Maziarz, L., & Ward, B. (2012). Prevalence and correlates of sexting behavior in adolescents. *American Journal of Sexuality Education, 7*(1), 1-15. doi:10.1080/15546128.2012.650959
- Dallago, L., Perkins, D. D., Santinello, M., Boyce, W., Molcho, M., & Morgan, A. (2009). Adolescent place attachment, social capital, and perceived safety: A

- comparison of 13 countries. *American Journal of Community Psychology*, 44(1/2), 148-160. doi:10.1007/s10464-009-9250-z
- Drouin, M., & Landgraff, C. (2012). Texting, sexting, and attachment in college students' romantic relationships. *Computers in Human Behavior*, 28(2), 444-449. doi:10.1016/j.chb.2011.10.015
- Duran, R. L., Kelly, L., & Rotaru, T. (2011). Mobile phones in romantic relationships and the dialectic of autonomy versus connection. *Communication Quarterly*, 59(1), 19-36. doi:10.1080/01463373.2011.541336
- Dykas, M. J., Ziv, Y., & Cassidy, J. (2008). Attachment and peer relations in adolescence. *Attachment & Human Development*, 10(2), 123-141. doi:10.1080/14616730802113679
- Ehrenberg, A., Juckes, S., White, K. M., & Walsh, S. P. (2008). Personality and self-esteem as predictors of young people's technology use. *Cyberpsychology & Behavior*, 11(6), 739-741. doi:10.1089/cpb.2008.0030
- Essau, C. A., Ishikawa, S., Sasagawa, S., Sato, H., Okajima, I., Otsui, K. ... Michie, F. (2011). Anxiety symptoms among adolescents in Japan and England: Their relationship with self-construals and social support. *Depression & Anxiety*, 28(6), 509-518. doi:10.1002/da.20819
- Feldman, G., Greeson, J., Renna, M., & Robbins-Monteith, K. (2011). Mindfulness predicts less texting while driving among young adults: Examining attention-and emotion-regulation motives as potential mediators. *Personality & Individual Differences*, 51(7), 856-861. doi:10.1016/j.paid.2011.07.020

- Feldman, S., & Wood, D. N. (1994). Parents' expectations for preadolescent sons' behavioral autonomy: A longitudinal study of correlates and outcomes. *Journal of Research on Adolescence*, 4(1), 45-70. doi:10.1111/1532-7795.ep11301474
- Flammer, A. (1991). Self-regulation. In R. M. Lerner, A. C. Petersen, & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (Vol. 2; pp. 1001-1003). New York, NY: Garland.
- Forgays, D., Hyman, I., & Schreiber, J. (2014). Texting everywhere for everything: Gender and age differences in cell phone etiquette and use. *Computers In Human Behavior*, 31, 314-321. doi:10.1016/j.chb.2013.10.053
- Fryberg, S. A., Covarrubias, R., & Burack, J. A. (2013). Cultural models of education and academic performance for Native American and European American students. *School Psychology International*, 34(4), 439-452. doi:10.1177/0143034312446892
- Gillath, O., & Shaver, P. (2007). Effects of attachment style and relationship context on selection among relational strategies. *Journal of Research in Personality*, 41, 968-976. doi:10.1016/j.jrp.2006.11.003
- Gilligan, C. (1986). Remapping the moral domain: New images of the self in relationship. In T. C. Heller, M. Sosna, & D. E. Wellbery (Eds.), *Reconstructing individualism: Autonomy, individuality, and the self in Western thought* (pp. 237-252). Stanford, CA: Stanford University Press.
- Gudykunst, W. B., & Lee, C. M. (2003). Assessing the validity of self construal scales. *Human Communication Research*, 29(2), 253.

- Gudykunst, W. B., Matsumoto, Y., Ting-Toomey, S., Nishida, T., Kim, K., & Heyman, S. (1994). *Measuring self construal across cultures*. Paper presented at the annual meeting of the International Communication Association, Sydney, Australia.
- Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. *Human Development, 21*, 34-64.
- Harter, S. (1983). Development perspectives on the self-system. In P. Mussen & E. M. Hetherington (Eds.), *Handbook of child psychology: Socialization, personality, and social development* (4<sup>th</sup> ed.; pp. 275-285). New York, NY: Wiley.
- Harter, S. (1986). Cognitive-developmental processes in the integration of concepts about emotions and the self. *Social Cognition, 4*, 119-151.
- Harter, S. (1996). Teacher and classmate influences on scholastic motivation, self-esteem, and level of voice in adolescents. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding childrens school adjustment* (pp. 11-44). Cambridge, UK: Cambridge University Press.
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York, NY: Guilford.
- Henry, A., & Cliffordson, C. (2013). Motivation, gender, and possible selves. *Language Learning, 63*(2), 271-295. doi:10.1111/lang.12009



- Henson, R. (2001). Understanding internal consistency reliability estimates: A conceptual primer on coefficient alpha. *Measurement and Education in Counseling and Development, 34*(3), 177-189.
- Hingle, M., Nichter, M., Medeiros, M., & Grace, S. (2013). Texting for health: The use of participatory methods to develop healthy lifestyle messages for teens. *Journal of Nutrition Education & Behavior, 45*(1), 12-19. doi:10.1016/j.jneb.2012.05.001
- Hong, F., Chiu, S. I., & Huang, D. (2012). A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. *Computers In Human Behavior, 28*(6), 2152-2159. doi:10.1016/j.chb.2012.06.020
- Horstmanshof, L., & Power, M. (2005). Mobile phones, sms and relationships: Issues of access, control, and privacy. *Australian Journal of Communication, 32*, 33-52.
- Kemp, N. N., & Bushnell, C. C. (2011). Children's text messaging: Abbreviations, input methods and links with literacy. *Journal of Computer Assisted Learning, 27*(1), 18-27. doi:10.1111/j.1365-2729.2010.00400.x
- Lamborn, S. D., & Steinberg, L. (1993). Emotional autonomy redux: Revisiting Ryan and Lynch. *Child Development, 64*(2), 483-499. doi:10.1111/1467-8624.ep9306035475
- Lee, C., & Beckert, T. E. (2012). Taiwanese adolescent cognitive autonomy and identity development: The relationship of situational and agential factors. *International Journal of Psychology, 47*(1), 39-50. doi:10.1080/00207594.2011.572972

- Lewis, C. (1981). How adolescents approach decisions: Changes over grades seven to twelve and policy implications. *Child Development*, 52, 538-554.
- Lexander, K. (2011). Texting and African language literacy. *New Media & Society*, 13(3), 427-443. doi:10.1177/1461444810393905
- Ling, R., Bertel, T., & Sundsøy, P. (2012). The socio-demographics of texting: An analysis of traffic data. *New Media & Society*, 14(2), 281-298.  
doi:10.1177/1461444811412711
- Madell, D. E., & Muncer, S. J. (2007). Control over social interactions: An important reason for young people's use of the internet and mobile phones for communication? *Cyberpsychology & Behavior*, 10(1), 137-140.  
doi:10.1089/cpb.2006.9980
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224-253.
- McKenna, K. A., Green, A. S., & Gleason, M. J. (2002). Relationship formation on the internet: What's the big attraction?. *Journal of Social Issues*, 58(1), 9.
- Mead, G. H. (1934). *Mind, self, and society*. Chicago, IL: University of Chicago Press.
- Millings, A., Buck, R., Montgomery, A., Spears, M., & Stallard, P. (2012). School connectedness, peer attachment, and self-esteem as predictors of adolescent depression. *Journal of Adolescence*, 35(4), 1061-1067.  
doi:10.1016/j.adolescence.2012.02.015
- Nemme, H. E., & White, K. M. (2010). Texting while driving: Psychosocial influences on young people's texting intentions and behavior. *Accident Analysis &*

*Prevention*, 42(4), 1257-1265. doi:10.1016/j.aap.2010.01.019

New approaches to end texting while driving. (2013). *Professional Safety*, 58(9), 16.

Nielsen Company. (2010). U.S. teen mobile report: Calling yesterday, texting today, using apps tomorrow. Retrieved from <http://www.nielsen.com/us/en/newswire/2010/u-s-teen-mobile-report-calling-yesterday-texting-today-using-apps-tomorrow.html>

Noom, M. J., Deković, M., & Meeus, W. (1999). Autonomy, attachment, and psychological adjustment during adolescence: A double-edge sword? *Journal of Adolescence*, 22, 771-783.

Noom, M. J., Deković, M., & Meeus, W. (2001). Conceptual analysis and measurement of adolescent autonomy. *Journal of Youth and Adolescents*, 30(5), 577-595.

Orth, U., Robins, R. W., & Roberts, B. W. (2008). Low self-esteem prospectively predicts depression in adolescence and young adulthood. *Journal of Personality & Social Psychology*, 95(3), 695-708.

Ostrager, B. (2010). SMS. OMG! LOL! TTYL: Translating the law to accommodate today's teens and the evolution from texting to sexting. *Family Court Review*, 48(4), 712-726. doi:10.1111/j.1744-1617.2010.01345.x

Otway, L. J., Carnelley, K. B., & Rowe, A. C. (2014). Texting "boosts" felt security. *Attachment & Human Development*, 16(1), 93-101. doi:10.1080/14616734.2013.851334

Pavlova, M. K., Haase, C. M., & Silbereisen, R. K. (2011). Early, on-time, and late behavioral autonomy in adolescence: Psychosocial correlates in young and

middle adulthood. *Journal of Adolescence*, 34(2), 361-370.

doi:10.1016/j.adolescence.2010.04.002

Peduzzi, P., Concato, J., Kemper, E., Holford, T. R., & Feinstein, A. R. (1996). A simulation of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology*, 49(12), 1373-1379.

Pew Research Center. (2011a). *How Americans use text messaging*. Retrieved from <http://www.pewinternet.org/2011/09/19/how-americans-use-text-messaging/>

Pew Research Center. (2011b). *Global digital communication: Texting, social networking popular worldwide*. Retrieved from <http://www.pewglobal.org/2011/12/20/global-digital-communication-texting-social-networking-popular-worldwide/>

Platten, M., Newman, E., & Quayle, E. (2013). Self-esteem and its relationship to mental health and quality of life in adults with cystic fibrosis. *Journal of Clinical Psychology in Medical Settings*, 20(3), 293-399. doi:10.1007/s10880-012-9346-8

Plester, B., Wood, C., & Bell, V. (2008). Txt msg n school literacy: Does texting and knowledge of text abbreviations adversely affect children's literacy attainment?. *Literacy*, 42(3), 137-144. doi:10.1111/j.1741-4369.2008.00489.x

Pomerantz, E. M., Qin, L., Wang, Q., & Chen, H. (2009). American and Chinese early adolescents' inclusion of their relationships with their parents in their self-construals. *Child Development*, 80(3), 792-807. doi:10.1111/j.1467-8624.2009.01298.x

- Raja, S. N., McGee, R., & Stanton, W. R. (1992). Perceived attachments to parents and peers and psychological well-being in adolescence. *Journal of Youth and Adolescence, 21*, 471-485.
- Redmayne, M. (2013). New Zealand adolescents' cellphone and cordless phone user-habits: Are they at increased risk of brain tumors already? A cross-sectional study. *Environmental Health: A Global Access Science Source, 12*(1), 1-10. doi:10.1186/1476-069X-12-5
- Rosenberg, M. (1965). *Society and the adolescent child*. Princeton, NJ: Princeton University Press.
- Rosenberg, M. (1979). *Conceiving the self*. New York, NY: Basic Books.
- Rosenberg, M., Schooler, C., & Schoenbach, C. (1989). Self-esteem and adolescent problems: Modeling reciprocal effects. *American Sociological Review, 54*(6), 1004-1018.
- Ryan, R. M., & Lynch, J. H. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Development, 60*(2), 340. doi:10.1111/1467-8624.ep7266816
- Savin-Williams, R. C., & Jaquish, G. A. (1981). The assessment of adolescent self-esteem: A comparison of methods. *Journal of Personality, 49*(3), 324-335.
- Scholte, R. J., van Lieshout, C. M., & van Aken, M. G. (2001). Perceived relational support in adolescence: Dimensions, configurations, and adolescent adjustment. *Journal of Research on Adolescence, 11*(1), 71.

- Scott, L. N., Whalen, D. J., Zalewski, M., Beeney, J. E., Pilkonis, P. A., Hipwell, A. E., & Stepp, S. D. (2013). Predictors and consequences of developmental changes in adolescent girls' self-reported quality of attachment to their primary caregiver. *Journal of Adolescence, 36*(5), 797-806. doi:10.1016/j.adolescence.2013.06.005
- Small, S. A., & Luster, T. (1994). Adolescent sexual activity: An ecological, risk-factor approach. *Journal of Marriage & Family, 56*(1), 181-192.
- Steinberg, L. (2008). *Adolescence: Eighth edition*. New York, NY: McGraw-Hill.
- Tesser, A., & Campbell, J. (1983). Self-definition and self-evaluation maintenance. *Psychological perspectives on the self* (Vol. 2). Hillsdale, NJ: Erlbaum.
- Thompson, R. A. (2006). The development of the person: Social understanding, relationships, conscience, self. In W. Damon & R. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed.; pp. 24-98). New York, NY: Wiley.
- Trad, P. (1994). Developmental previewing: Enhancing the adolescent's predictions of behavioral consequences. *Journal of Clinical Psychology, 50*(6), 814-829.
- Walsh, S. P., White, K. M., Cox, S., & Young, R. M. (2011). Keeping in constant touch: The predictors of young Australians' mobile phone involvement. *Computers in Human Behavior, 27*, 333-342.
- West, J. H., Hall, P., Thygeson, S. M., Edwards, E. S., Bennion, S. R., & Bennet, C. (2011). Hispanic adolescents' behavioral intentions to avoid texting while driving. *American Journal of Health Studies, 26*(1), 37-44.

- Wood, C., Kemp, N., Waldron, S., & Hart, L. (2014). Grammatical understanding, literacy and text messaging in school children and undergraduate students: A concurrent analysis. *Computers & Education, 70*, 281-290. doi:10.1016/j.compedu.2013.09.003
- Worthington, L. L., Braunscheidel, E. M., Lachenmayr, L. L., Grutzmacher, S. S., Speirs, K. K., DiBari, J. J. ...Munger, A. A. (2012). Text2bhealthy: A pilot nutrition texting program targeting parents of school-aged children. *Journal of The Academy of Nutrition & Dietetics, 112*(9), A78. doi:10.1016/j.jand.2012.06.278
- Yau-hau Tse, A. (2012). Impacts of short message service texting on university students in Malaysia. *Asian Social Science, 8*(1), 107-110. doi:10.5539/ass.v8n1p107

APPENDIX



Rosenberg Self-Esteem Scale

1. I feel that I am a person of worth, at least on an equal plane with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

Self-Construal Scale

1. I prefer to be self-reliant rather than depend on others.
2. I stick with my group even through difficulties.
3. I will stay in a group if it needs me, even if I am not happy with it.
4. I maintain harmony in the groups of which I am a member.
5. I respect the majority's wishes in groups of which I am a member.
6. I remain in the groups of which I am a member if they need me, even though I am dissatisfied with them.
7. If there is a conflict between my values and values of groups of which I am a member, I follow my values.
8. I try not to depend on others.
9. I take responsibility for my own actions.
10. It is important for me to act as an independent person.

Case Inventory

1. If I have something to add to a class discussion I speak up.
2. I think about the consequences of my decision.
3. I look at every situation from other people's perspectives before making my own judgment.
4. When I disagree with others I share my views.
5. I need family members to approve my decision.
6. I think of all possible risks before acting on a situation.
7. I like to evaluate my daily actions.
8. I consider alternatives before making decisions.
9. I stand up for what I think is right regardless of the situation.
10. I think about how my actions will affect others.
11. I think about how my actions will affect me in the long run.
12. I like to evaluate my thoughts.
13. I feel that my opinions are valuable enough to share.
14. I need my views to match those of my parents.
15. I am good at identifying my own strengths.
16. It is important to me that my friends approve of my decisions.

17. There are consequences to my decisions.
18. I can tell that my way of thinking has improved with age.
19. At school I keep my opinions to myself.
20. I think more about my future today than I did when I was younger.
21. I am best at identifying my abilities.
22. My decision making ability has improved with age.
23. I need my views to match those of my friends.
24. I am good at evaluating my feelings.
25. I am better at decision making than my friends.
26. I care about what others think of me.
27. I am the best judge of talents.

The Adolescent Autonomy Questionnaire (AAQ)

1. When I act against the will of others, I usually get nervous.
2. I have a strong tendency to comply with the wishes of others.
3. When I disagree with others, I tell them.
4. I often agree with others, even if I'm not sure.
5. I often change my mind after listening to others.

Inventory of Parent Attachment

1. My parents respect my feelings.
2. I wish I had different parents.
3. My parents accept me as I am.
4. My parents sense when I'm upset about something.
5. Taking over my problems with my parents makes me feel ashamed or foolish.
6. I get upset easily at home.
7. My parents have their own problems, so I don't bother them with mine.
8. My parents help me to understand myself better.
9. I tell my parents about my problems and troubles.
10. I feel angry with my parents.
11. I don't get much attention at home.
12. My parents encourage me to talk about my difficulties.

Inventory of Peer Attachment

1. I like to get my friends' point of view on things I'm concerned about.
2. Taking over my problems with my friends makes me feel ashamed or foolish.
3. I wish I had different friends.
4. My friends encourage me to talk about my difficulties.
5. I feel alone or apart when I am with my friends.
6. My friends listen to me what I have to say.
7. I feel my friends are good friends.
8. When I am angry about something, my friends try to be understanding.
9. My friends are concerned about my well-being.
10. I get upset a lot more than my friends know about.
11. It seems as if my friends are irritated with me for no reasons.
12. I tell my friends about my problems and troubles.