College Students’ Attachment and Their Observed Community Blogging Activity

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy

in the Graduate School of The Ohio State University

By

Mitchell Kyle Bartholomew, M.S.

Graduate Program Human Ecology

The Ohio State University

2014

Dissertation Committee:

Dr. Sarah Schoppe-Sullivan, Advisor

Dr. Michael Glassman

Dr. Amy Bonomi
Abstract

Community blogging is a potentially important and innovative educational tool that promotes both the cognitive and social construction of knowledge through individual postings, student-to-student commentary, and hyperlink sharing. However, the intimate nature of postings, the social nature of commentary, and the explorative nature of hyperlinking may activate entrenched relational schemas held by students that have potential to influence their community blogging activity in ways that limit their ability to benefit from an educational blogging project. In an attempt to understand exactly what impact students’ relational schemas have on their community blogging activity, the present study examined the direct and indirect associations of students’ attachment anxiety and avoidance with four observed measures of their community blogging activity: 1) posting activity, 2) comment activity, 3) hyperlink activity, and 4) the average length of written contributions. Data were collected from 53 undergraduate students enrolled in a 10-week introductory course in which community blogging was a central component of the course structure. Hierarchical regression analyses tested the associations between students’ attachment anxiety and avoidance and their observed community blogging activity while controlling for students’ self-reported GPA and Internet self-efficacy. In addition, more sophisticated analyses examined (a) whether
students’ relational motivation for blogging mediated these associations, and (b) whether students’ sense of classroom community moderated the second leg of these mediation models and thus the strengths of the indirect effects. Overall, results demonstrated weak evidence that students’ attachment was related to their observed community blogging activity, with the exception of one robust finding. Students’ attachment avoidance was related to their observed hyperlink activity such that students reporting greater attachment avoidance contributed a greater combined quantity and consistency of hyperlinks across the term. Broader implications about educational community blogging are highlighted in addition to the strengths and limitations of the present research.
Dedication

I dedicate this dissertation to Grandma Joan, whom has always been there to inspire confidence in fulfilling my dreams and ambitions. The strength and love she demonstrates for my family is immeasurable. Without her support, graduate school and this dissertation would not have been possible.
Acknowledgments

I would like to express my sincere gratitude and appreciation to:

My advisor, Dr. Sarah Schoppe-Sullivan, for her patience, wisdom, and dedicated mentorship. Sarah, I feel extremely blessed to have had the opportunity to work with you during my graduate school tenure. Your investment in both my personal and academic success has meant the world to me. I intend to pay your generosity forward by advising my future students with the same care and concern that you advised me.

Dr. Michael Glassman for his unwavering confidence in my abilities and enthusiasm for my ideas. Michael, you have been a great friend and mentor to me over the years. Your willingness to collaborate on research and instructional design have not only shaped who I am as a scholar, but will undoubtedly provide me with numerous opportunities moving forward.

Dr. Amy Bonomi for her guidance and feedback throughout the dissertation process. Amy, your diligent contribution to our field of study is unparalleled and inspiring. Given your many responsibilities as both a researcher and department chair, I am truly honored that you were able to serve on my dissertation committee.

Heidi Liou and Lauren Altenburger for devoting their time and effort to sorting through hundreds of pages of blog entries to meticulously count students’ observed
community blogging activity. Heidi and Lauren, your steadfast commitment to my research was instrumental in addressing the major hypotheses of the current study.

My mother, father, and two younger sisters for their unconditional love and support. When I left Arizona six years ago in pursuit of my degree there was a lot of uncertainty regarding the state of our family. Today, it warms my heart to see everyone so happy and healthy. To that point, I would like to acknowledge a few loving additions to my family – my mother’s fiancé, David; my father’s girlfriend, Kurstin; and my newborn niece and nephew, Aniston and Deacon.

My devoted and loyal friends, Meghan Lee, Mikey Castellano, Michael O’Connor, Robert Nichols, and Yun Hwan Kim for their endless moral support. Years from now when I reflect on my time in Ohio and graduate school, the experiences we have shared together will be my most cherished memories. I feel incredibly lucky to have each of you in my life and I look forward to many more years of friendship.

My kindhearted girlfriend, Sophie Lazarus, for always believing in me when I had trouble believing in myself. Sophie, your unyielding devotion and encouragement were undeniably the bedrock upon which this dissertation was completed. I am remarkably fortunate to have your love and I am deeply excited for what the future holds.
Vita

May 2008 ........................................... B.A. Psychology, Suma Cum Laude,
Arizona State University

May 2008 ........................................... Outstanding Graduate Award, Department
of Social and Behavioral Sciences, Arizona
State University

Dec 2009 ........................................... M.S. Human Development and Family
Science, The Ohio State University

Jun 2011 ........................................... Graduate Student Teacher of the Year,
Department of Human Development and
Family Science, The Ohio State University

Feb 2012 ........................................... 2012 – 2013 Dissertation Research
Fellowship, College of Education and
Human Ecology, The Ohio State
University

Award, The Ohio State University
Graduate School, The Ohio State
University
Aug 2006 to May 2008 .......................... ASU General Scholarship and Rodel
Community Scholarship, Arizona State
University

Aug 2006 to May 2008 .......................... Undergraduate Research Assistant, Rodel
Community Scholars, Department of
Education, Arizona State University

Sep 2008 to Jan 2010 ............................. Graduate Research Associate, The New
Parents Project, Department of Human
Development and Family Science, The
Ohio State University

Sep 2010 to Jun 2012 ............................. Graduate Teaching Assistant, Department
of Human Development and Family
Science, The Ohio State University

Jun 2010 to Present .............................. Graduate Teaching Associate, Department
of Human Development and Family
Science, The Ohio State University

Nov 2011 to Present .............................. Doctoral Candidate, Human Development
and Family Science, The Ohio State
University


Fields of Study

Major Field: Human Ecology

Specialization: Human Development and Family Science
Table of Contents

Abstract ........................................................................................................................................ ii
Dedication ...................................................................................................................................... iv
Acknowledgments ....................................................................................................................... v
Vita ................................................................................................................................................ vii
List of Tables ................................................................................................................................... xiv
List of Figures ............................................................................................................................... xv

Chapter 1: Introduction .................................................................................................................. 1

The Web .......................................................................................................................................... 1

The Web as a learning technology ................................................................................................. 3
The Web as a transformative technology ......................................................................................... 6
The Web as an educational technology .......................................................................................... 11

Weblogs .......................................................................................................................................... 13

Educational blogging ....................................................................................................................... 14
Blogging as a stressful departure from the norm ........................................................................ 19

Bowlby-Ainsworth Attachment Theory ......................................................................................... 19

Infant-caregiver attachment ........................................................................................................ 19
Adult attachment ............................................................................................................................ 22
Working models of attachment and the social Web ................................................................. 26
Working models of attachment and interactions with unfamiliar peers ...29

Specific Aims and Hypotheses .................................................................32

Research Question 1 ........................................................................33

Research Question 2 ........................................................................39

Research Question 3 ........................................................................42

Chapter 2: Method ..............................................................................45

Participants and Procedures .................................................................45

Measures ..............................................................................................47

Adult attachment ................................................................................47

Community blogging activity ............................................................47

Relational motivation for blogging ......................................................47

Sense of classroom community ........................................................48

Control variables ................................................................................49

Chapter 3: Results ..............................................................................50

Preliminary Analyses ........................................................................50

Descriptive statistics ........................................................................50

Data reduction ....................................................................................52

Intercorrelations ................................................................................53

Main Analyses ....................................................................................56

Research Question 1 ........................................................................56

Research Question 2 ........................................................................58

Research Question 3 ........................................................................60

Chapter 4: Discussion ........................................................................62
Tests of the Major Hypotheses .................................................................63
Knowledge Gained About Educational Community Blogging ..................68
Strengths and Limitations .......................................................................71
Conclusion ..............................................................................................75

References .............................................................................................76
Appendix A: Syllabus ................................................................................93
Appendix B: Questionnaires .................................................................98
Appendix C: Tables .................................................................................105
Appendix D: Figures .............................................................................109
List of Tables

Table 1. Descriptive Statistics for Sample (N = 53) ............................................106
Table 2. Intercorrelations Among Study Variables (N = 53)..................................107
Table 3. Hierarchical Regressions Predicting Students’ Observed Community Blogging Activity (N = 53).................................................................108
List of Figures

Figure 1. The new framework for educational affordances of blogs ....................110

Figure 2. Model of adult attachment ..............................................................111

Figure 3. The two-dimensional model of individual differences in adult attachment ..........................................................................................................................112

Figure 4. The hypothesized indirect effects of students’ attachment anxiety on their observed community blogging activity via their relational motivation for blogging ..........................................................................................................................113

Figure 5. The hypothesized indirect effects of students’ attachment avoidance on their observed community blogging activity via their relational motivation for blogging ..........................................................................................................................114

Figure 6. The hypothesized indirect effects of students’ attachment anxiety on their observed community blogging activity via their relational motivation for blogging examined at varying levels of students’ sense of classroom community .........115

Figure 7. The hypothesized indirect effects of students’ attachment avoidance on their observed community blogging activity via their relational motivation for blogging examined at varying levels of students’ sense of classroom community .........116
Chapter 1: Introduction

The Web

When Tim Berners-Lee proposed a system for arranging nodes of information in a decentralized, unconstrained, web-like fashion, few understood the significance of this idea. He would call his system the World Wide Web (Web), because of its potential for creating a single, global information space where anything can be universally connected to anything else (Berners-Lee & Fischetti, 2000). Little did he know the Web would change everything, transforming the social practices of a generation. Its growth and impact on the daily lives of its users can only be compared to electrification in the early 1900’s. Both mediums were slow to develop, but once they took hold, fundamentally changed the lives of individuals across the globe (Brown, 2000) by shedding light (literally and figuratively) on a new world of possibilities. However, unlike electrification, the Web is still in its nascent stages. Its design promotes the ever-evolving, organic growth of ideas, technology, and society (Berners-Lee & Fischetti, 2000) that make it difficult to predict its full potential.

In their book *Weaving the Web*, Tim Berners-Lee and Mark Fischetti (2000) described the theoretical and technological antecedents of the Web. Specifically, the works of Vannevar Bush (1945) and Ted Nelson (1965) contributed to the theoretical conceptualization of the Web, while Douglas Engelbart’s invention of mouse computing
in 1963 and the development of the Internet by the U.S. Department of Defense in the late 1960’s provided the technological means by which the Web made possible. Most important to the development of the Web was Nelson’s (1965) concept of *hypertext* – a nonlinear form of text in which the reader is not bound by sequential order, but rather is given the freedom to jump between various content linked from short quotations. In 1990, after years of contemplating a working web of information, Tim Berners-Lee combined the idea of hypertext with the power of the Internet to build the first ever Web page (info.cern.ch). Although archaic by current standards, this first attempt at linking various nodes of information across a central platform proved successful and would provide the basic framework by which the entire Web would be modeled.

Today, the Web has such a dominant presence on the Internet that the two terms are often used interchangeably, when in fact they are very different entities. Put simply, the Internet is a global communication network that connects smaller computer networks together for the purpose of transferring information quickly across vast distances, while the Web is just one way in which this information is shared. As a complex system of interconnected “pages” of information, the Web utilizes browsers and hypertext to access and navigate content via the Internet that may be hosted nearby or half the world away. That is, the Web is an information-sharing system that operates “on top of” the Internet and cannot survive without its networked infrastructure (Beal, 2011; Berners-Lee & Fischetti, 2000). The International Telecommunications Union (2013) estimated there were roughly 2.7 billion Internet users in the world in 2013. This represented over one-third of the world’s population and signified a 566% increase in usage since 2000. Equally as impressive is how many Web pages these Internet users have access to.
According to Maurice de Kunder, author of WorldWideWebSize.com, the Indexed Web contained at least 1.8 billion pages of content as of February 2014. This breaks down to roughly 1.5 unique pages of content for every Internet user worldwide. Considering these remarkable numbers it is not surprising that educators around the world are captivated by the connective potentials of both the Internet and its vast web of information to help students learn.

The Web as a learning technology. Over the past two decades the Web has slowly established itself as the primary technology for learning. Whether searching for answers to life’s daily questions or investigating the world’s greatest mysteries, the Web provides instant access to information at volumes never before experienced by mankind. Brown (2000) refers to the Web as a transformative learning technology – a new medium capable of shifting the ways in which a generation acquires and shares knowledge. There are three key features that make the Web an effective learning tool: the Web is interactive, multimodal, and connective. These features are transforming the learning practices of millions of individuals and therefore should fundamentally change the ways in which we educate (Glassman, Bartholomew, & Hur, 2013).

The Web is interactive. Unlike more traditional forms of media that push information in one direction (i.e., books, newspapers, television), the Web promotes a bidirectional push and pull of information (Brown, 2000). Imagine a book in which one can search for key words or phrases, a newspaper that offers quick access to similar articles, or a television that allows viewers to comment on its programming in real time, and you have just a few examples of the interactivity that exists on the Web. Other examples include, but are not limited to, content sorting, location mapping, social
bookmarking, preference polling, and newsletter subscribing. Yet, each of the
aforementioned examples would not exist without the primary and most basic forms of
Web interactivity – the Web browser and hypertext. Like all forms of interactivity, both
the browser and hypertext require user input to operate. The browser retrieves or fetches
Web documents based on a typing command (e.g., search), while hypertext allows the
user to easily navigate among and within the search results by using a mouse to
selectively click highlighted text (Rouse, 2005). The Web’s initial design therefore
promoted active participation rather than passive viewership – a feature that has since
been strengthened by the Web’s current, more advanced interactive qualities, and one that
fosters the kinds of active learning emphasized in many learning theories (e.g., Bruner,

The Web is multimodal. Its large number of resources present information in
various modes including text, audio, images, animation, video, and more. This is a step
beyond earlier mediums that were limited to just one mode of information and may begin
to address the notion of multiple intelligences (Brown, 2000). Gardner (1983) theorized
that individuals demonstrate a wide range of cognitive abilities and learn most efficiently
when they access information in a format that best suits their intellectual strengths. These
strengths include: spatial, linguistic, logical-mathematical, bodily-kinesthetic, musical,
interpersonal, and intrapersonal abilities. The Web may be the only medium in history to
afford individuals an instant match between what they seek to understand and the format
in which they are most likely to understand it. For example, individuals high on spatial
intelligence may have an easier time processing information delivered in animation or
video formats. Web resources such as interactive tutorials and/or streaming video provide
the kinds of experiences that best fit the ways in which these individuals learn. Similarly, individuals high on interpersonal intelligence may learn most efficiently by utilizing the Web’s many social media features (Baird & Fisher, 2005). While some researchers argue against the idea of multiple intelligences (e.g., Waterhouse, 2006), many educators have gravitated towards this perspective’s ability to inform the instruction of students with diverse learning styles (Armstrong, 1994; Campbell, Campbell, & Dickinson, 1999; Schiller & Phipps, 2002).

The Web is connective. Its connective nature is perhaps the Web’s most important feature. In 1945, Vannevar Bush proposed a futuristic machine that made knowledge more accessible through linked nodes of information. He called this machine Memex, and suggested its processes reflected the natural way in which humans think – through a web of associative trails. The concept of a learning machine that could establish instant connections among pieces of information in a fashion similar to the human brain not only inspired the Web’s development, but also provides a model for understanding its ability to facilitate learning. Mainly, the billions of connections that exist in the Web, although less sophisticated than neural connections, augment and project the workings of the human brain (Glassman, 2012). This is not to say the Web approaches the remarkable processing power of human thought (Derbyshire & Raja, 2008), but to suggest its expansive network of linked information may serve as a natural extension of the human mind into the larger information universe (Glassman, Bartholomew, & Jones, 2011). Siemens (2004) describes learning as the act of making connections between specialized nodes of information within and among networks, with those connections that enable us to know more having more importance than what is
currently known. In a short time, the Web has become the most important resource for knowing more. Its many interactive features, multimedia content, and connective potential are shifting how individuals navigate, discover, think about, and approach information.

**The Web as a transformative technology.** Today’s youth are different from any generation before them. They are the first to grow up surrounded by home computers, video games, smartphones, and most importantly, the Internet and the World Wide Web (Tapscott, 1998). Exposure to digital technologies in nearly all facets of their daily lives allows them to fluently speak and understand the “native language” of a rapidly advancing digital society (Prensky, 2001). These so-called *digital natives* may understand and utilize information in a way that differs from their predecessors, who have been dubbed *digital immigrants*. Unlike digital natives, digital immigrants were not born into the digital age, but have since migrated into the world of digital technology. Like immigrants learning a new language, digital immigrants retain, to some degree, their “accent” – or remnants from their past (Prensky, 2001). This “accent” is perhaps most pronounced with respect to differences in literacy, learning, thinking, and action. Brown (2000) described how one digital technology – the Web – is prompting shifts along these dimensions. For ease of description, the digital native vs. digital immigrant discourse will guide the following examples, though it is recognized that such designations may be limiting in scope (e.g., some digital immigrants may demonstrate greater digital proficiency than some digital natives depending on factors such as technology access, skill, frequency of use, and comfort; Bullen & Morgan, 2011; Gros, Garcia, & Escofet, 2012; Jones & Czerniewicz, 2010).
A shift in literacy. Dictionary.com defines literacy as the quality or state of being literate, especially the ability to read and write. This definition is generally accepted, though it fails to address the new literacies of the 21st century. Literacy has transformed over time from the more basic skills of decoding words and knowing their meaning (e.g., reading along the lines) to the more critical and dynamic abilities to interpret, analyze, synthesize, and explain information for problem-raising and problem-solving matters (e.g., reading between and across the lines) (Westby, 2004). The rise and popularity of digital technologies like the Web make these shifts in literacy essential. The abilities to understand multimedia material and comfortably navigate complex, interconnected information spaces (Brown, 2000) make these shifts in literacy possible. Gilster (1997) coined the term digital literacy to describe “the ability to understand and use information in multiple formats from a wide range of sources when presented via computers” (p.1). Digital natives likely possess the requisite digital aptitude to effectively traverse the multifaceted, fast-paced Web environment (Jones-Kavalier & Flannigan, 2006), while digital immigrants must master these skills if they are to successfully adapt to the changing information landscape. Indeed, digital literacy research by Alkali and Amichai-Hamburger (2004) demonstrated that younger users performed better than older users on tasks that required “reading” instruction from graphical displays, and constructing knowledge from non-linear, hypertext navigation. However, older users were found to be more literate in reproducing existing digital information to create new material and evaluating the quality and validity of online content – two valuable skills, but likely carried over from a non-digital world.
A shift in learning. Before the Web, knowledge was restricted, to some extent, by those disseminating the information. Learners were limited to which literature was published, what articles were printed, what news was broadcasted, and what lessons were taught. This one-way transfer of information placed publishers, producers, and instructors in positions of authority and the common learner in the position of passive recipient. Today, the Web is revolutionizing what it means to be a learner by breaking down barriers to the free flow of knowledge. Its impressive volumes of multimedia information and interactive capabilities have shifted learning from a passive process to a more self-directed, discovery-based activity (Brown, 2000) where learners take ownership of their learning. For decades, education and learning theorists (e.g., Bruner, 1961; Dewey, 1916; Freire, 1970; Papert, 1980; Piaget, 1954) have championed the kinds of democratic, hands-on, inquiry-based learning experiences currently made possible by the Web. Unlike digital immigrants who may prefer the more controlled learning experience of being told what to know (Brown, 2000), digital natives are more likely to be self-discovery learners – openly exploring the possibilities of a largely uncharted information frontier. Hai-Jew (2008) described the self-discovery learner as someone who takes an active role in choosing the subject of their learning, does so according to their personal pace and schedule, and approaches the subject with a fluid and individual learning plan.

A shift in thinking. It can be argued there are two general forms of thinking: vertical and lateral (de Bono, 1968). Vertical thinking is a linear and stepwise process, where depth of knowledge is used to methodically solve a problem. Vertical thinking tends to be structured and logical, using rigid singularity with respect to potential solutions. Lateral thinking (also known as divergent thinking) is a multidimensional and
creative process, where breadth of knowledge is used to approach a problem from many different angles. Lateral thinking tends to be innovative, using “outside-the-box” strategies with respect to potential solutions (Hernandez & Varkey, 2008; Eklund, 2012). Both forms of thinking are valuable, though lateral thinking breaks through the constraints of old ideas to generate new ones (de Bono, 1992). The infinite number of possibilities available on the Web may begin to foster lateral thought. Specifically, the sheer scope and variety of its resources and functionality have prompted an increasing number of thinkers to engage in bricolage. That is, they approach problem-solving situations by tinkering with possible solutions, testing their effectiveness, and reevaluating their methods (Turkle & Papert, 1991). Take for example, the many angles from which digital natives are likely to approach a mysterious ailment. Using information gathered from various online resources including: health Web sites (e.g., MayoClinic.com and WebMD.com), user-generated Web sites (e.g., blogs, wikis, and forums), and even social media (e.g., YouTube.com and Twitter.com), digital natives engage lateral perspectives as they resemble bricoleurs cognitively constructing unique solutions to their specific problems. Conversely, digital immigrants may be more likely consult only one trusted online resource, thinking this method is the quickest, most efficient way to a solution.

*A shift in action.* As described above, digital natives display a tendency toward action when faced with novel situations. Namely, they approach “the unknown” head on – they explore, try, and retry in route to greater understanding. This is not surprising given the relative ease with which they navigate complicated digital settings, freely exploring and discovering a spectrum of solutions that range from conventional to
creative. Given the same novel situation, digital immigrants are likely to behave differently than digital natives. Their familiarity and comfort with authority-based, lecture-oriented instruction (where clear direction often guides action) engenders a reluctance to try new things without first reaching for a manual, taking a course, or asking an expert (Brown, 2000). To illustrate these differences with respect to Web technology, consider a situation where both digital natives and digital immigrants are introduced to a never-before-seen social media platform. In this case, both groups will likely demonstrate some confusion regarding the platform’s many new features, though digital natives will resolve their confusion very differently from digital immigrants.

Digital natives might elect a trial-and-error approach to learning the new platform, where they explore, test different alternatives, and see what works (Brown, 2000). Digital immigrants, on the other hand, are less likely to engage the unfamiliar platform without some degree of scaffolding. There is indirect evidence of this with respect to Twitter, a newer social media platform (circa 2008) that has been described by CEO Dick Costolo as “confusing to some folks who are unfamiliar with the service” (Crook, 2013). In 2010, Twitter was still in its infancy and largely unfamiliar to many. Yet, a tracking survey of 2,253 adult Internet users that year indicated that Twitter use among younger adults (ages 18 – 24) was four times that of older adults (ages 55 to 65), 16% to 4% (Smith & Brenner, 2012). This suggests that digital natives were far more likely than digital immigrants to take action on Twitter during this period of discovery.

It is important to note that shifts along these dimensions are not independent of each other. Instead, the skills denoting a shift in one dimension likely have a positive effect on the others. For example, a shift in literacy from basic comprehension of text to
effective navigation of hypertext greatly influences the degree to which an individual uses the Web to explore and discover, engages lateral perspectives, and takes action in their lives. Therefore, it proves advantageous to recognize each of the aforementioned shifts as reflecting a larger intertwined set of skills possessed by today’s youth (Brown, 2000) and more slowly acquired by their predecessors.

**The Web as an educational technology.** Given that the Web serves as a learning technology capable of transforming a generation of learners, it is not surprising that it has received much attention for its potential academic utility in formal educational settings. However, despite this attention, the integration of information and communication technologies (ICT) into teaching and learning practices has been limited – where ICT integration is understood as the unification of pedagogy and content through technologies that connect students to information and fellow learners (Buabeng-Andoh, 2012). This is not surprising considering that most educators are likely digital immigrants who are struggling to fluently understand the burgeoning technologies of the digital age (Presnky, 2001) and their many educational affordances. Competence with and attitude toward these new technologies serve as possible barriers to ICTs use among educators in the classroom (Hew & Bush, 2007). Fortunately, a recent trend toward a younger, Web-smart, digital native teaching force may increase the likelihood that these technologies will be integrated into course structures at all stages of formal education.

Using data from a large and representative survey of educators (e.g., the Schools and Staffing Survey and the Teacher Follow-up Survey) Ingersoll and Merrill (2010) described the changing face of the American teaching force. Their research revealed two trends of particular importance to ICT integration. First, the number of teacher
retirements has increased from 35,000 in 1988 to over 85,000 in 2008, and is expected to continue to increase through the 2011-2012 school year. This trend is largely the result of an aging teaching force that comprised 1.3 million teachers 50 years or older in 2008. Second, an emergent new teaching force has increased the number of first-year teachers from 65,000 in 1987-88 to over 200,000 in 2007-08 – a development that is likely to progress as more teachers retire (Ingersoll & Merrill, 2010). So what does this mean for ICT integration? Research by The U.S. Department of Education’s National Center for Education Statistics (2000) reported that teachers with less teaching experience (≤ 3 years) were more likely to integrate computers into their instruction (48%) than teachers with more teaching experience (≥ 20 years, 33%). In addition, Tezci (2010) found teachers’ knowledge and use of ICTs relates positively to their attitudes towards computers and the Internet (a finding supported by Albirini, 2006), and that greater knowledge and use of ICTs and more positive attitudes towards ICTs were more characteristic of newer teachers. If it is assumed older teachers are digital immigrants who may display more reluctance towards ICT integration and newer (younger) teachers are digital natives who may be more open to the integration of ICTs in education, the changing face of the American teaching force bodes well for students who may learn differently as a result of growing up digital (Prensky, 2001).

However, an influx of teachers who are likely tech-savvy, ICT advocates, is only one factor potentially influencing ICT integration. Recent advancements in Web technologies beyond the static pages of early Web sites to services that afford learners greater opportunity to socially construct knowledge may also contribute to increased integration of ICTs into teaching and learning practices. These advancements include
blogs, wikis, podcasts, crowdsourcing, video sharing sites, social network sites (Sendall, Ceccucci, & Peslak, 2008), and any other service that allows learners to interact and collaborate online as co-creators of user-generated content (“Web 2.0,” 2012). The term Web 2.0 has been commonly used to describe these new collaborative Web technologies, though Tim Berners-Lee argues the term is merely jargon for what he had originally designed the Web to be – a readable, writeable, collaborative workspace (Berners-Lee & Fischetti, 2000; Sendall et al., 2008). Regardless of its designation, the rapidly evolving Web has become more social, allowing countless opportunities for learners to co-construct knowledge within a communal social setting (Selwyn, 2008). For these reasons, Web 2.0 technologies appear particularly well suited for the kinds of “student-centered pedagogy that engage learners in constructing their own understanding through active participation in a learning community” (Luehmann & MacBride, 2008, Introduction, para. 1). As such, Web 2.0 technologies are perhaps the most popular method of ICT integration into formal education.

Central to this integration is a constructivist learning perspective that perceives “learners as active creators of knowledge” (Deng & Yuen, 2011, p. 441). Weblogs (popularly referred to as blogs) represent perhaps the earliest form of Web 2.0 technology. As constructivist learning tools, blogs promote both the cognitive and social construction of knowledge (Du & Wagner, 2007), making them an important source of interest in educational circles.

Weblogs

Put simply, blogs are frequently-updated online spaces where authors (i.e., bloggers) publish a series of posts, engage readers in commentary, and share hyperlinks
to a variety of Web resources. Blogs are typically searchable by category, archived over a long period of time, and presented in reverse chronological order, thus displaying the most recent work first (Luehmann & MacBride, 2008). According to Dave Winer, the pioneering blogger of *Scripting News*, blogs are characterized by: 1) personalization – reflecting a blogger’s personality; 2) easy maintenance – allowing bloggers to present content in attractive formats without knowledge of Web coding; and 3) community-support – enabling the sharing of information and ideas via commentary and hyperlinks (Du & Wagner, 2007).

In general, the act of blogging is a social activity where bloggers are intimately related to an audience that may include both known and unknown readers (Nardi, Schiano, & Gumbrecht, 2004). This intimacy likely stems from the very motivations that drive most individuals to blog – to document life experiences, to provide commentary and opinions, to express deeply felt emotions, to articulate ideas through writing, and to form and maintain a community (Nardi, Schiano, Grumbrecht, & Schwartz, 2004). With respect to education, teachers may attempt to capitalize on these blogging motivations for knowledge building purposes.

**Educational blogging.** Blogging as an educational practice has been associated with favorable outcomes for students. For example, Drexler, Dawson, and Fredig (2007) found collaborative blogging improved third grade students’ writing skills, digital literacy, and ability to flexibly apply learning to novel contexts. Ellison and Wu (2008) reported that college students benefitted from exposure to more diverse viewpoints as evidenced by their feedback that reading peer blogs was most helpful for understanding course content. Yang (2009) demonstrated that blogging served as a vehicle for reflection, enabling pre-service teachers to critically reflect on their classmates’ teaching
experiences, as well as pose questions about current practice and theory. Glassman et al. (2011) described the potential for blogging to transform traditional college courses into ongoing community projects, where the presentation of information is non-hierarchical, malleable, and subject to the needs and contributions of students as they become co-owners of the course. Together these findings represent the use of educational blogs as constructivist tools, leveraging their capacity for the cognitive and social construction of knowledge (Du & Wagner, 2007).

*Educational blogging and the cognitive construction of knowledge.* Though all constructivist theories are essentially cognitive, the term cognitive constructivism has been used to describe the individual, internal process of making sense of one’s environment. Heavily influenced by Jean Piaget’s (1952; 1954) theory of cognitive development, cognitive constructivism places the source of learning in the mind and defines it as the cognitive processing of environmental interactions (i.e., experiences) and the subsequent construction of mental structures that allow understanding of these experiences (Swan, 2005). According to this theory, learners actively explore and reflect on their environment, continuously refining preexisting knowledge in light of new discoveries and interpretations. Educational blogging may foster the kinds of exploration and reflection necessary for students to continuously progress as learners. Specifically, blogging provides an authentic task where students simultaneously explore the Web’s abundant resources, reflect upon on-and-offline experiences, and publish their thoughts and understandings of both (Fredrig & Trammell, 2004). The Web in particular affords students a bazaar of information possibilities expanding far beyond the classroom (Glassman et al., 2011) that must be assimilated or accommodated into current mental
structures in order for learning to occur. The blog itself provides the vehicle for reflecting upon this information en route to new and improved ways of knowing. Furthermore, blogs archive students’ postings (i.e., students’ thinking) over time, enabling them to engage in the ongoing process of knowledge construction and sense making (Du & Wagner, 2007). At its best, educational blogging empowers students to take ownership of their own learning.

As a central component of course structures, an individually-authored student blog is the most likely tool to promote cognitive constructivism. The personal nature of individual blogging reinforces identity and accountability in the learning process (Du & Wagner, 2007) and provides a platform for reflective writing (Freeman & Brett, 2012).

**Educational blogging and the social construction of knowledge.** According to the social constructivist theory, “learning is achieved more effectively through social interactions and collaboration with others than through individual effort alone” (Du & Wagner, 2007, p. 4). Derived primarily from the work of Lev Vygotsky (1962; 1978), social constructivism views the construction of meaning as a reciprocal process between social activity and individual cognition. Specifically, interactions within social contexts influence an individual’s construction of meaning; in turn, their individualized understandings guide social interactions. Moreover, social constructivism emphasizes the critical role of communication in knowledge building, asserting that advanced modes of thought are transmitted through words and provide resources for others (Swan, 2005). Through sustained, informal, and collaborative student-to-student discourse (Du & Wagner, 2007), educational blogs provide the means for socially distributed intelligence among a community of learners (Hewitt & Scardamalia, 1998). Commentary between
student authors generates a “web of knowledge” where alternative perspectives, hypotheses, and/or major premises challenge students to consider new avenues of thought as they create and recreate their current understandings (Glassman et al., 2011). Additionally, the use of hyperlinks is inherently social, promoting knowledge sharing between learners not bound by space or time. By visiting hyperlinks, students journey from their learning network into new social settings, making unique and sometimes distant connections between old knowledge and new information. Returning with this information (and hyperlinking to it) opens the learning network to outside influence, diminishing groupthink and forcing students to collectively reconsider current knowledge structures.

As a central component of course structures, a community-authored classroom blog is the most likely means of promoting social constructivism. The collaborative nature of community blogging encourages the co-ownership of knowledge development, where all students have an equal stake in the learning process, attempting to maintain a continuous “group knowing” through lateral communication (Glassman et al., 2011).

**Framework for educational affordances of blogging.** Though individual and community blogs typically encourage the cognitive and social construction of knowledge, respectively, the very nature of blogging requires a degree of student engagement in both aspects of constructivism regardless of blog format. For example, students authoring an individual blog may receive comments from their readers and/or visit hyperlinks to information that socially impacts their knowledge development. Likewise, student authors of a community blog must cognitively construct individualized meaning from on-and-offline experiences before contributing their knowledge to the community of
learners. Deng and Yuen (2011) proposed a framework for the educational affordances of blogging, structured around blog writing, reading, and commentary, and spanning the continuum between individual and community (Figure 1). According to their framework, writing postings represents the individual side of blogging and affords students the cognitive and social opportunities for self-reflection and self-expression, respectively. In contrast, commentary represents the community side of blogging and affords students the cognitive and social opportunities for reflective dialogue and social interaction. Reading the written contributions of other bloggers serves as the bridge from individual to community and affords students the cognitive and social opportunities for triggered reflection and social connection. Unfortunately, the Deng and Yuen (2011) framework fails to recognize the educational affordance associated with hyperlinking. This may be because hyperlinking is an important component embedded within blog writing, reading, and commentary that contributes to the positive educational affordances identified.

In addition to the benefits identified by Deng and Yuen (2011), blogging has also been associated with better academic performance. Du and Wagner (2007) asked 31 senior-level college students to blog about their learning experiences, as well as visit and comment on their classmates’ blogs as part of course curriculum. Their findings revealed blogging performance was a significant predictor of final exam scores, while traditional coursework performance was not. Furthermore, content analysis revealed that students’ blog entries represented cognitive construction efforts to build knowledge and social construction efforts to enrich and expand learning. These constructivist blogging behaviors accounted for 67% of the variance in blogging performance.
Blogging as a stressful departure from the norm. For years, formal education has upheld the long-established customs of traditional teaching and learning models. Today, advancements in Web technology challenge the notions that teachers are the primary source of information and students are docile, obedient receptacles of knowledge. Blogging shifts the traditional classroom from a place where the teacher owns and controls information as a commodity (Glassman et al., 2011) and the students quietly receive and believe fixed knowledge (Dewey, 1938), to a place where teacher and students work in close proximity, building knowledge structures that advance the entire learning community toward a collective understanding. “The participatory and decentralized structure of blogging [discourages] the ‘sage on the stage’ approach [of traditional educational practice] and instead recalibrates communication patterns so that knowledge-sharing is increasingly student-to-student and student-to-instructor” (Ellison and Wu, 2008, p. 105). However, the heavy emphasis on active exploration and social interaction within educational blogging may represent a stressful departure from the norm, activating very entrenched relational schemas held by students that may influence their blogging activity in ways that limit their ability to fully benefit from an educational blogging project. Bowlby-Ainsworth attachment theory provides a conceptual foundation for understanding potential individual differences in student blogging activity.

Bowlby-Ainsworth Attachment Theory

Infant-caregiver attachment. Bowlby-Ainsworth attachment theory can be used to understand close relationships across the lifespan (Bowlby, 1979). According to the theory (Bowlby, 1969, 1973, 1980), human infants (similar to nonhuman primate infants; Harlow & Zimmerman, 1959) are born with a biological predisposition to form long-
lasting attachments to specific individuals (Colin, 1996). This predisposition – commonly referred to as an individual’s attachment system – is thought to emerge from the evolutionary pressure for survival and operates to keep infants in close proximity to their primary caregiver for protection and safety (Bretherton, 1992; Cassidy, 1999). When the infant is distressed, the attachment system attempts to elicit comfort and care through proximity-promoting signals and behaviors such as crying or crawling to the attachment figure (Mikulincer & Shaver, 2012). Caregivers who respond to their infant’s distress in a prompt and appropriate manner foster a sense of security within the relationship that the infant uses to confidently navigate the world around them. That is, infants with a responsive primary caregiver tend to use this attachment figure both as a secure base from which to explore their environment and a safe haven where they seek comfort in times of need (Ainsworth, Blehar, Waters, & Wall, 1978; Hazan & Shaver, 1994; Holmes & Johnson, 2009).

However, other infants learn very quickly that their proximity-promoting signals and behaviors do little to generate the comfort and care they seek. Bowlby stressed the importance of these early infant-caregiver interactions, suggesting that children internalize experiences with their caregivers, forming a relational prototype that influences the formation and course of future close relationships both inside and outside the family (Bartholomew & Horowitz, 1991; Owens, Crowell, Pan, Treboux, O’Connor, & Waters, 1995). These prototypes, also referred to as internal working models, determine (a) whether or not the self is judged to be the sort of person towards whom anyone is likely to respond in a helpful manner and (b) whether or not others are judged to be the sort of people who in general respond to calls for support (Bowlby, 1973).
Given the significant variability that exists in caregiver responsiveness (e.g., caregivers can be consistently responsive, consistently unresponsive, or inconsistently responsive), the internal working models of self and others held by infants are also expected to vary, yielding individual differences in attachment-based perceptions and behaviors that are carried forward across development.

Drawing on these ideas, Ainsworth et al. (1978) developed an innovative methodology for empirically testing differences in the quality (i.e., security) of infant-caregiver attachment in a controlled laboratory setting. Her Strange Situation procedure was designed to activate an infant’s attachment system by separating the infant from their primary caregiver in an unfamiliar setting that at times included a stranger. Using this procedure as the primary mode of investigation, Ainsworth and colleagues identified three major patterns of attachment based on the extent to which the infants exhibited proximity-maintenance, safe haven, and secure base behaviors in the presence of their caregiver – all of which are defining features and/or functions of attachment relationships (Hazan & Shaver, 1994). Infants who showed distress when separated from their attachment figure, were comforted when reunited with their attachment figure, and engaged in active exploration in the presence of their attachment figure were identified as having a secure attachment. Infants who appeared anxious when separated from their attachment figure, ambivalent about their attachment figure’s return, and too preoccupied with their attachment figure’s presence to actively explore their surroundings were identified as having an insecure-ambivalent attachment. Infants who did not appear distressed or anxious when separated from their attachment figure, avoided contact with their attachment figure upon return, and actively directed their attention to the
surroundings instead of the attachment figure were identified as having an insecure-avoidant attachment (Ainsworth et al., 1978; Colin, 1996). These patterns of attachment represent the quality of the caregiving system, in that infant behavior in the Strange Situation is assumed to reflect expectations based on the caregiver’s past responsiveness to the infant’s signals for comfort and care – a glimpse into the infant’s internal working models of self and others.

**Adult attachment.** Since the early days of attachment theory and research, the prototype hypothesis has been investigated extensively. Literature on the topic suggests that working models of early relationships are stable over time (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Zayas, Mischel, Shoda, & Aber, 2011) and influence adult functioning in a variety of relational contexts (Fraley & Shaver, 2000; Mikulincer & Shaver, 2012). Most notably, the attachment framework has been utilized to understand the formation and maintenance of adult romantic relationships (Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998; Hazan & Shaver, 1987, 1994). This research tradition has sought to develop self-report measures that assess conscious aspects of working models of attachment presumably formed in childhood. Hazan and Shaver (1987) were the first to apply the principles of attachment theory to understanding individual differences in romantic relationship functioning later in life. Specifically, they applied Ainsworth’s three-category typology of attachment to the study of romantic relationships by developing a self-report procedure to classify adult attachment style as either secure, anxious/ambivalent, or avoidant. Hazan and Shaver drafted three short paragraphs describing how secure, anxious, and avoidant adults ought
to feel in romantic relationships and asked participants to choose which paragraph most closely resembled their own personal experiences (Simpson & Rholes, 2012).

They found that 56% of participants selected the paragraph describing the emotional and behavioral characteristics expected from adults who possess secure working models of attachment. The remaining participants selected the paragraphs describing either the emotional and behavioral characteristics expected from highly anxious adults (20%) or those expected from highly avoidant adults (24%). Their findings revealed a compelling parallel between the distribution of adult romantic attachment styles and that of infant-caregiver attachment patterns (62% secure, 15% anxious, 23% avoidant; Campos, Barrett, Lamb, Goldsmith, & Sternberg, 1983). According to attachment theory, this consistency may result from internal working models formed early in development and carried into adult relationships (Hazan & Shaver, 1987).

Bartholomew and Horowitz (1991) expanded the measurement of adult attachment to include a fourth attachment style – fearful-avoidant. This new classification permitted identification of individuals who appear dismissing of romantic relationships, but are actually fearful of them. Based entirely on the prototype hypothesis, the Bartholomew and Horowitz model of adult attachment (Figure 2) centers on the idea that attachment styles reflect an individual’s thoughts regarding self and others. Specifically, their four attachment classifications – secure, preoccupied, dismissive, and fearful – stem from the possible combinations of positive or negative thoughts about self (i.e., whether or not individuals judge themselves to be the sort of person towards whom a romantic partner is likely to respond with support) and positive or negative thoughts about others.
(i.e., whether or not individuals judge romantic partners to be generally accessible and responsive to requests for support). Secure attachment reflects positive views of both self and others, whereas dismissive attachment reflects positive views of self but negative views of others. Preoccupied attachment is characterized by negative views of self and positive views of others, and fearful attachment is marked by negative views of both self and others. Although the format of assessment was similar to Hazan and Shaver’s (1987) single-item response procedure, the Bartholomew and Horowitz four-category conceptualization represented an important advance in the measurement of adult attachment styles.

Subsequently, Brennan et al. (1998) further improved on these early conceptualizations and corresponding measurement strategies by assessing adult romantic attachment on continuous dimensions rather than categorizing adult attachment style via single-item responses. Their comprehensive analysis of existing attachment scales revealed that virtually all self-report attachment measures gauged, to some degree, an individual’s attachment-related anxiety and avoidance in close relationships. This prompted the development of their Experiences in Close Relationships questionnaire (ECR) – a valid and reliable measure of the two dimensions: attachment Anxiety (i.e., fear of rejection and/or abandonment: “I worry a lot about my relationships”) and attachment Avoidance (i.e., discomfort with closeness and depending on others: “I get uncomfortable when a romantic partner wants to be very close”). Although largely influenced by previous research (e.g., Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987), the continuous dimensions of Anxiety and Avoidance allow for a more powerful and precise measurement of attachment style than categorical measures (Fraley & Waller,
1998). However, the four adult attachment classifications identified by Bartholomew & Horowitz (1991) can provide useful descriptors when discussing individuals’ scores on these dimensions. Individuals reporting low levels of both attachment anxiety and avoidance are considered to have a secure attachment style. Individuals reporting high levels of attachment anxiety and low levels of attachment avoidance are considered to have a preoccupied attachment style. Individuals reporting low levels of attachment anxiety and high levels of attachment avoidance are considered to have a dismissive attachment style. Individuals reporting high levels of both attachment anxiety and avoidance are considered to have a fearful attachment style (Figure 3).

Research using the aforementioned self-report measures has taught us a great deal about adult functioning in romantic relationships. Securely attached adults, or those with low levels of anxiety and avoidance, feel comfortable with interdependence in relationships and do not worry about being alone or having their partners accept them. As such, secure individuals experience happy, friendly, and trusting romantic relationships and enjoy both physical and emotional closeness to their partners (Hazan & Shaver, 1987; Simpson & Rholes, 2012). Conversely, adults with insecure attachment styles display a range of behaviors that thwart successful romantic relationships. Highly anxious individuals seek physical and emotional closeness, worry about abandonment, and need constant reassurance that they are loved (Brennan et al., 1998). Not surprisingly, anxious individuals’ relationships are characterized by insecurity, jealousy, and conflict (Hepper & Carnelley, 2012). Individuals scoring high on the dimension of Avoidance feel uncomfortable in close relationships, have trouble expressing thoughts and feelings, and find themselves pulling away when their partner gets too close (Brennan et al., 1998),
resulting in poor quality romantic relationships characterized by low levels of trust, commitment, and satisfaction (Hepper & Carnelley, 2012). Notably, these attachment-based perceptions are believed to impact a range of social relationships, not just those that are romantic.

**Working models of attachment and the social Web.** A simple Web search for “Adult Attachment” on Google Scholar (scholar.google.com) returned nearly 1.7 million academic articles in early 2014. The vast majority of these articles discuss adult functioning in a variety of face-to-face contexts, however a growing body of research is investigating how working models of attachment affect adult functioning online. This appears particularly important given the rapid growth and popularity of social Web sites. For example, Facebook.com – the world’s largest social network site (SNS) – has over one billion monthly active users (Facebook, 2013), affording its members ample opportunity to establish and/or maintain various social connections (Bartholomew, Schoppe-Sullivan, Glassman, Kamp Dush, & Sullivan, 2012). With respect to adult attachment, the social Web provides a number of characteristic features that make it possible for insecure individuals to comfortably meet their attachment needs. Some of these features include the ability to maintain relationships in spite of geographical constraints, manage the time and pace of interactions, maintain self-presentation, and ensure steady connection with a social network (Oldmeadow, Quinn, & Kowert, 2013).

Oldmeadow et al. (2013) explored this new domain by investigating how working models of attachment influence the experience and use of Facebook. Six hundred and seventeen participants (50% female) ranging in age from 18 to 64 years completed a series of online questionnaires that included a measure of adult attachment (i.e., the
ECR), a social skills inventory, and a measure of Facebook usage and experience.

Findings revealed significant associations between adult attachment and several Facebook items. Specifically, high attachment anxiety was related to more time spent on Facebook, and more frequent use of Facebook when feeling negative emotions. This is likely because highly anxious individuals desire connection to others, as well as comfort and reassurance in times of need – two things Facebook may provide on a large scale. Furthermore, high attachment anxiety was associated with greater concerns about evaluation from other Facebook users. This is not surprising given that highly anxious individuals greatly value the opinions of others and are particularly sensitive to criticism.

As mentioned above, Facebook and other SNSs provide users increased control over self-presentation – a key characteristic of the social Web that may have great appeal for those with high attachment anxiety even though it can require a great deal of profile management (i.e., increased usage monitoring and updating content).

Conversely, while high attachment avoidance was not related to time spent on Facebook, it was related to other aspects of Facebook use. Specifically, individuals with high attachment avoidance demonstrated less openness and positivity regarding Facebook. This is likely because highly avoidant individuals tend to be excessively self-reliant, reluctant to share their feelings, and apprehensive of relationships with others. However, similar to those with high attachment anxiety, highly avoidant participants displayed greater evaluation concern. This demonstrates that even though individuals with high attachment avoidance are typically independent, they are just as focused on the perceptions that other Facebook users have of them as their preoccupied counterparts. Finally, Oldmeadow et al. (2013) found the aforementioned relationships between
attachment anxiety and avoidance and Facebook usage and experience to be unrelated to participants’ social skills. Together these findings suggested an individual’s experience and use of Facebook may reflect their working models of attachment above and beyond their social competencies.

It is important to note that while Facebook is the archetype for online social networking, the Web site is not commonly used for networking in the traditional sense. That is, most individuals use Facebook to establish or maintain lighthearted connections with members of their pre-established offline networks rather than to meet new people (Bartholomew et al., 2012; Boyd & Ellison, 2007; Pempek, Yermolayeva, & Calvert, 2009). Marder, Joinson, and Shankar (2012) supported this notion with research showing that on average Facebook friends fall into seven different social circles, the most common of which likely represent online extensions of offline interactions – friends known offline, extended family, siblings, friends of friends, and colleagues. Their study, which surveyed 546 Facebook users (70% female), also found that individuals were much less likely to befriend strangers met online (15%). While there are many potential explanations for why Facebook users primarily communicate with those whom they have some degree of offline affiliation, an attachment perspective might suggest that Facebook provides the means by which individuals – especially those who are insecurely attached – can satisfy their desire for belonging and connection that they are not able to garner from their offline social interactions (Oldmeadow et al., 2013). However, an ever-growing portion of the social Web strongly encourages interactions among users who may have no pre-existing affiliation (e.g., blogs, forums, Twitter, etc.). These online communities are more open, thus exposing users to a greater diversity of social interaction and viewpoints.
Working models of attachment and interactions with unfamiliar peers. To begin to understand how working models of attachment may impact adult functioning within open online communities, studies investigating the associations between adult attachment and face-to-face interactions with unfamiliar peers were reviewed. This research appears particularly important for considering the potential individual differences in students’ community blogging activity, especially in settings of higher education where students are typically required to interact and collaborate with unfamiliar classmates.

In one study, Feeney, Cassidy, and Ramos-Marcuse (2008) assessed the impact of individual differences in working models of attachment on support-seeking and support-giving behaviors during interactions with an unknown partner. These behaviors were chosen because they represent core aspects of the attachment system are likely to transfer to new relationships. Participants included 135 eleventh-grade students (62% female), all of whom completed questionnaires including the ECR, and a discussion activity involving an unfamiliar peer of the same-sex from a different school. The discussion activity was designed to be a peer-advising task where participants were asked to both seek and provide support on topics related to areas of difficulty identified from their own lives. Independent raters coded peer interactions on a variety of dimensions that measured the extent to which participants disclosed their concerns, worries, or problems and were accepting of advice, as well as the extent to which participants were sensitive and responsive to the concerns, worries, or problems disclosed by their interaction partner.
Results indicated that highly anxious students demonstrated greater support-seeking behaviors and greater expressions of negative/hostile affect when support was provided. This form of ambivalence is consistent with the behaviors of infants identified as anxious during the Strange Situation procedure and likely reflects a working model of attachment that stipulates closeness and acceptance can at times be achieved through expressions of anger. However, with respect to support-giving behavior, highly anxious students demonstrated greater expressions of warmth/friendliness. This represents an interesting paradox that suggests students high in attachment anxiety respond positively when asked by another person for help, likely because it affords the closeness they crave without the vulnerability of pursuing it – protecting against the possibility of rejection. No significant associations existed between attachment avoidance and either support-seeking or support-giving variables, though results suggested that avoidant students tended to keep attachment behaviors (i.e., proximity-promoting behaviors) hidden or muted (Feeney et al., 2008).

Furthermore, specific peer behavior varied depending on the degree of students’ attachment anxiety and avoidance. For example, highly anxious students demonstrated warmth/friendliness when their peer acquaintances showed acceptance of their support attempts, but also strongly reciprocated negative/hostile affect conveyed by their peers. These findings support the adult attachment literature that shows individuals high in attachment anxiety tend to blend both positive and negative interaction behaviors in efforts to elicit care from their partners. Results for attachment avoidance were also consistent with prior research in that highly avoidant students exhibited less warmth/friendliness in relation to their peers’ instrumental/controlling support, a behavior
that likely serves as a barrier to emotional closeness. Lastly, fearful (high anxiety, high avoidance) and secure (low anxiety, low avoidance) attachment predicted increases in support provision in response to peers’ support-seeking behaviors, but also increases in negative/hostile affect in response to peers’ instrumental/controlling support. No such results were found for preoccupied (high anxiety, low avoidance) and dismissive (low anxiety, high avoidance) students, likely because these students place heavy emphasis on meeting their own attachment needs (Feeney et al., 2008).

In another study, Roisman (2006) investigated the role of adult attachment (assessed using the Adult Attachment Interview; George, Kaplan, & Main, 1996) in interactions between two same-sex partners who were previously unacquainted (strangers). Participants included 100 undergraduate students (50% female), all of whom completed a personality inventory, participated in a moderately difficult puzzle-building task with an unfamiliar peer, and were interviewed to establish their adult attachment orientation. Independent raters coded the interactions between strangers for expressions of both positive and negative affect, and dominance during the puzzle-building task. Guided by previous research (i.e., Main, 1990), Roisman expected insecure students to exhibit either attachment-related hyperactivation (i.e., passive or angry preoccupation) or deactivation (i.e., dismissive or negative affect) during the collaborative task. Specifically, it was hypothesized that preoccupied students might display hyperactive tendencies during the puzzle-building task as evidenced by dominating/monopolizing behaviors, and dismissive students might display deactivating tendencies as evidenced by higher levels of negative affect.
Indeed, both hypotheses were confirmed – students classified as preoccupied monopolized collaborative efforts and students classified as dismissive demonstrated higher levels of negative affect, suggesting their disinterest in engaging in a task that required peer collaboration. Moreover, these results persisted after controlling for self-reported personality factors, indicating that individual attachment plays a unique role in initial interactions between same-sex strangers. Similar research by Dykas, Woodhouse, Ehrlich, and Cassidy (2012) demonstrated that insecure students tend to report more negative/hostile first interactions with strangers when asked to recall these interactions two weeks afterward. Thus, evidence indicates that working models of attachment are relevant to individuals’ interactions with unfamiliar peers. Given that educational blogging often involves interactions between unfamiliar peers as they work together to socially construct meaning from course content, the aforementioned studies shed light on the various ways that students’ attachment may influence their active contributions to an educational community blog. This is important knowledge for educators choosing to integrate blogging as a central component of course structures, especially if student assessment is based on their collaborative and supportive participation during an educational blogging project.

**Specific Aims and Hypotheses**

Guided by Bowlby-Ainsworth attachment theory, the current research sought to investigate the influence of students’ working models of attachment on their activity on a community blog shared by classmates. Specifically, students’ attachment anxiety and avoidance were examined in relation to the observed quantities, consistencies, and lengths of their postings, comments, and hyperlinks. These measures of blogging activity
were chosen because they reflected, to a certain degree, students’ engagement in the knowledge development process as they attempted to disseminate information to and communicate with members of the learning community in ways that advanced their collective understanding. Further, because students demonstrating attachment insecurity are likely to be either preoccupied with or dismissing of the many social opportunities fostered by active community blogging, the mediating effects of students’ relational motivation for blogging were examined. Lastly, the strengths of these indirect effects via relational motivation for blogging were examined at low, average, and high levels of students’ sense of classroom community. Three main research questions were addressed:

**Research Question 1. Do students’ attachment anxiety and avoidance predict their observed community blogging activity above and beyond control variables?** It was hypothesized that students’ attachment anxiety and avoidance would predict their observed community blogging activity in contrasting ways. Students scoring high on attachment anxiety were expected to publish more postings and comments to the community blog, to do so with greater consistency across the term, and to write more on average when compared to their less anxious peers. However, it was also anticipated that highly anxious students would publish fewer hyperlinks, and do so with less consistency over the 10-week term. The exact opposite pattern of community blogging activity was hypothesized for students scoring high on attachment avoidance. Highly avoidant students were expected to publish fewer postings and comments to the community blog, to do so with lesser consistency across the term, and to write less on average when compared to their less avoidant peers. Further, highly avoidant students were also expected to publish more hyperlinks, and do so with greater consistency over the 10-
week term. Based on the current knowledge of the utility of blogging in a formal educational setting (Glassman et al., 2011) and its wide range of affordances (Deng & Yuen, 2011) these hypotheses examined how students’ attachment-based perceptions and behaviors were likely to manifest on a blog shared by classmates.

Regarding the hyperactivating community blogging activity expected from highly anxious students, it was anticipated that their preoccupation with relationships would drive the greater quantities, consistencies, and lengths of both their observed postings and comments. Individuals scoring high on attachment anxiety have been shown to display a strong desire for acceptance, approval, and reciprocation from others, in addition to a variety of proximity-promoting behaviors intended to keep others physically and emotionally close (Bartholomew & Horowitz, 1991; Brennan et al., 1998; Hazan & Shaver, 1987, 1994). Because community blogging has a distinct social component that affords each contributing author the opportunity for self-expression, social connection, and social interaction (Deng & Yuen, 2011), highly anxious students were expected to maintain an overly active presence on the blog in attempt to leverage these affordances in ways that satisfy their needs for belonging, closeness, and security (Oldmeadow et al., 2013). To this end, the increased community blogging activity expected from highly anxious students might reflect their neurotic efforts to establish close relationships that they may otherwise not have had the opportunity to foster.

In further support of these expectations, research by Feeney et al. (2008) found that highly anxious students have a greater propensity to seek support from and happily provide support to unfamiliar peers. These behaviors were likely motivated by a fear of abandonment and functioned to keep their peers close (Brennan et al., 1998). On
educational community blogs, especially those promoting the social construction of knowledge between largely unfamiliar classmates, postings and comments are central to the support-seeking and support-providing process as they serve as the primary means by which students communicate their needs and help others en route to new ways of knowing (Glassman et al., 2011). Given the role of written contributions in the co-construction of knowledge and the many social benefits afforded to active members of an educational blogging community (Deng & Yuen, 2011), it was predicted that highly anxious students would publish more postings and comments to the community blog, do so with greater consistency across the term, and write more on average when compared to their less anxious peers.

However, it was also anticipated that highly anxious students would be less active in terms of the quantity and consistency of their hyperlink contributions. Though hyperlinking is inherently social in its ability open a learning network to outside influence, it does require that students first journey from their immediate social setting in search of new information possibilities (Glassman et al., 2011). Because of their preoccupation with others, highly anxious students were expected to explore the Web very little and thus hyperlink to few outside sources. This expectation was consistent with attachment research demonstrating that highly anxious students, while more curious overall, display inhibited exploration when it competes for time with social interaction (Mikulincer, 1997). Even when faced with the possibility of discovering new social settings, it was predicted that highly anxious students would maintain proximity to the community blog given the possibility that online social interaction with their classmates could lead to offline relationships.
In contrast, it was hypothesized that students scoring high on attachment avoidance would display deactivating community blogging activity with respect to the quantities, consistencies, and lengths of both their observed postings and comments. These expectations were guided by attachment research (e.g., Bartholomew & Horowitz, 1991; Brennan et al., 1998; Hazan & Shaver, 1987, 1994) suggesting that highly avoidant individuals hold a general disinterest in relationships and an extreme discomfort with intimacy. Because posting to a community blog forces the contributing author to reflect on their thoughts and express their feelings (Deng & Yuen, 2011), while commentary encourages the development of working relationships through collaborative discourse (Du & Wagner, 2007), educational community blogging ought to be an uncomfortable activity for highly avoidant students. As a result, it was anticipated that highly avoidant students would publish fewer postings and comments to the community blog, do so with lesser consistency across the term, and write less on average when compared to their less avoidant peers.

It should be noted that these expectations for lesser community blogging activity with respect to postings and comments were by no means an assumption that highly avoidant students dislike blogging, but instead a recognition of their uncanny ability to suppress their attachment needs (Fraley & Shaver, 1997) and dismiss situations that have the potential to foster emotional closeness. Consistent with their discomfort with closeness, highly avoidant students have been shown to be excessively self-reliant, reluctant to share their feelings, and apprehensive of potential relationships with others (Brennan et al., 1998) – all characteristics that were expected to diminish their desire to actively contribute postings and comments to a collective learning environment like a
community blog. In support of this logic, research by Roisman (2006) found that highly avoidant students display negative affect and express clear disinterest in engaging in an activity that involves collaborative interactions with unfamiliar peers.

However, when highly avoidant students did contribute to the community blog, it was anticipated that they would offer a greater quantity and consistency of hyperlink contributions. This is because the process of hyperlinking enables highly avoidant students to share information and ideas via hypertext that support the learning objectives of the blogging community (Du & Wagner, 2007) without having to express their own thoughts and feelings or engage classmates in conversation directly. Utilized in this fashion, hyperlinks become the least intimate component of blogging and thus the most comfortable method for highly avoidant students who wish to contribute to a blog shared by classmates. Moreover, because hyperlink contributions start with a certain degree of independent exploration away from the learning community, the process of hyperlinking may function to buffer against any possibility of emotional closeness between highly avoidant students and their classmates (Hazan & Shaver, 1990). This notion is consistent with attachment research demonstrating that highly avoidant students, while less curious overall, will increase their search for information when it competes for time with social interaction (Mikulincer, 1997).

Moreover, it was believed that students’ attachment anxiety and avoidance would predict their observed community blogging activity in the hypothesized directions even after taking into account the unique influences of students’ self-reported grade point average (GPA) and Internet self-efficacy. These variables appeared important to control for given their relevance to community blogging in educational settings. For example,
because varying degrees of blogging activity (e.g., the quantities, consistencies, and lengths of postings, comments, and hyperlinks) can be used to evaluate students’ relative engagement in the knowledge-sharing process, and those with a higher GPA provide some quantitative evidence that they have met certain performance standards en route to more positive academic evaluations in the past, it was anticipated that students reporting a higher GPA would be more active members of the educational blogging community, even if only to maintain their academic standing. However, academic successes in traditional educational settings may not necessarily result in performance accomplishments in Web-based learning environments. Therefore, students’ Internet self-efficacy was also considered as a control variable.

It was anticipated that students scoring high on Internet self-efficacy would feel more confident performing online tasks and therefore more apt to contribute to a learning community that utilized Web 2.0 technologies to aid knowledge development. Whereas efficacy is an objective measure of performance, self-efficacy is a perceptual judgment held by individuals regarding their abilities to perform certain tasks. These perceptions are at the core of an individual’s motivation to perform (Bandura, 2006), serving as the key link between their knowledge of what to do and actually doing it (Lawrance & McLeroy, 1986). Within an online learning environment, high Internet self-efficacy has been associated with greater learning motivation and performance among college students (Chang et al., 2013). Therefore, it was expected that students’ scoring high on Internet-self efficacy would demonstrate greater community blogging activity because of their personal beliefs that they are capable of performing the various online tasks required in such a learning environment.
Research Question 2. Does students’ relational motivation for blogging mediate the associations between their attachment anxiety and avoidance and their observed community blogging activity? It was also hypothesized that students’ relational motivation for blogging would explain associations between their attachment anxiety and avoidance and their observed community blogging activity. This variable was selected as a potential mediator assuming that students recognized the social nature of community blogging and understood (or learned very quickly) that the degree to which they actively contributed to the community blog had the potential to establish and/or strengthen working relationships with other members of the blogging community (i.e., their classmates). After all, from the outset of the course, the importance of working closely with classmates to develop new ways of knowing was heavily stressed to the current sample of students as the best use of community blogging as a learning tool (Glassman et al., 2011). Given these circumstances, the effects of students’ attachment anxiety and avoidance on their observed community blogging activity could be explained as a function of the degree to which they were motivated by relationships.

Building upon the hypotheses outlined above (see Research Question 1), it was anticipated that students scoring high on attachment anxiety would display a greater motivation to share their knowledge on a community blog because of their expectations that doing so might establish new and/or strengthen existing relationships with other bloggers. In turn, their greater relational motivation for blogging was expected to be associated with greater quantities, consistencies, and lengths of their written contributions (see Figure 4a). This indirect effect was expected given that prior research has shown that highly anxious individuals are preoccupied with relationships (Bartholomew & Horowitz,
1991) and tend to demonstrate greater usage of the social Web, likely in an attempt to fulfill their attachment needs for belonging and connection (Oldmeadow et al., 2013). On an educational community blog, highly anxious students may feel their hyperactivity with respect to postings and comments offers them the best chance of fulfilling their attachment needs, because pursuing and/or sharing knowledge within a learning community where students rely on one another to advance their understanding of course content has the potential to promote proximity to other classmates, thus increasing the likelihood of relationship formation.

However, it was also anticipated that highly anxious students’ greater relational motivation for blogging would be associated with a lesser quantity and consistency of hyperlink contributions (see Figure 4b). As explained previously, this expectation stems from research by Mikulincer (1997) that suggests the exploration (i.e., information search) that precedes hyperlinking may cause highly anxious students to feel uncomfortable because it directly competes for time with social interaction – the very thing likely motivating their blogging in the first place. Additionally, their reluctance to leave the immediate social setting of the community blog in search on new information possibilities may reflect their extreme fear of abandonment (Bartholomew & Horowitz, 1991; Brennan et al., 1998). To address this worry, individuals with high attachment anxiety attempt to establish feelings of codependence within their relationships by engaging their partners with various support-seeking and support-providing behaviors that draw them closer (Hepper & Carnelley, 2012). As mentioned above, pursuing and sharing knowledge via written contributions to an educational community blog may serve to promote proximity between highly anxious students and members of the learning
community. Because these students are likely to be motivated by the potential relationships that such proximity offers, it is predicted that they will display lesser hyperlink activity across the term.

Conversely, it was anticipated that students scoring high on attachment avoidance would display a lesser motivation to share their knowledge on a community blog because of their expectations that doing so might foster the development of relationships with other bloggers. In turn, their lesser relational motivation for blogging was expected to be associated with lesser observed quantities, consistencies, and lengths of their written contributions (see Figure 5a). This indirect effect was expected given that prior research has shown that highly avoidant individuals are apprehensive of potential relationships (Bartholomew & Horowitz, 1991) and tend to demonstrate lesser usage of the social Web, likely in an attempt to maintain their emotional distance from others (Oldmeadow et al., 2013). On an educational community blog, postings and comments are arguably the most intimate contributions, affording students the means for self-reflection, self-expression, and social interaction (Deng & Yuen, 2011). However, these educational affordances also demand a certain degree of vulnerability that is likely to make highly avoidant students feel uncomfortably exposed. With little-to-no relational motivation for blogging, highly avoidant students were therefore expected to display attachment-related deactivation with respect to written contributions.

However, it was also expected that highly avoidant students’ lesser relational motivation for blogging would be associated with a greater quantity and consistency of hyperlink contributions (see Figure 5b). Given their anticipated aversion to the intimate nature of postings and comments, highly avoidant students may increase their hyperlink
activity in an effort to meet the expectations for participation in the course without having to express their personal thoughts and feelings or interact too closely with their classmates. That is, to ensure a comfortable distance from others, the postings and comments that highly avoidant students did contribute to the community blog were expected to contain many hyperlinks. Furthermore, as previously mentioned, the process of hyperlinking first demands independent exploration of the Web’s information landscape, preferably in search of material that supports the learning objectives of the blogging community (Du & Wagner, 2007). This was expected to appeal to highly avoidant students’ need for independence and serve as a preferred activity to reflective postings and collaborative discourse. Again, this was supported by Mikulincer’s (1997) research showing that individuals high on attachment avoidance will increase their search for information when it competes for time with social interaction.

Research Question 3. Do the indirect effects of students’ attachment anxiety and avoidance on their observed community blogging activity through their relational motivation for blogging depend on students’ sense of classroom community? Finally, it was hypothesized that the indirect effects discussed above (see Research Question 2) would be conditional upon students’ sense of classroom community. According to Rovai and Lucking (2000), classroom community consists of four components: spirit, trust, interaction, and learning. Spirit refers to students’ recognition and acceptance that they belong to a community of learners with whom they feel friendship, cohesion, and satisfaction. Trust refers to students’ belief that learners within the community will deliver feedback in ways that support their efforts to understand. Interaction refers to students’ feelings of closeness and mutual benefit
resulting from their relations to other learners in the community. *Learning* refers to students’ understanding that community membership enhances their acquisition of knowledge through the social construction of meaning (as cited in Rovai, 2001). Each component of classroom community encompasses elements that overlap nicely with what securely attached individuals typically experience in their close relationships – feelings of belonging, satisfaction, trust, support, intimacy, and interdependence (Bartholomew, 1997; Brennan et al., 1998; Hazan & Shaver, 1987). This likeness suggests that a sense of classroom community may provide “felt security” in ways that encourage students to utilize the perceived community as a secure base from which to explore their learning environment, as well as a safe haven where they can seek assistance when needed (Waters & Cummings, 2000).

Given this conceptualization of classroom community, it was therefore anticipated that the degree to which students felt a sense of classroom community (i.e., felt security in the connectedness and support found within the classroom) would moderate the magnitude of the indirect effects expected in the proposed mediation models. Specifically, it was hypothesized that students’ attachment anxiety and avoidance would demonstrate a stronger influence on their observed community blogging activity indirectly through their relational motivation for blogging at lower levels of perceived classroom community. This was because a lesser sense of classroom community was expected to reinforce the working models of attachment that drive the community blogging behavior of insecure students. However, it was also hypothesized that students’ attachment anxiety and avoidance would demonstrate a weaker influence on their observed community blogging activity indirectly through their relational motivation for
blogging at higher levels of perceived classroom community. This was because a greater sense of classroom community was expected to elicit feelings of security that may serve to buffer the extent to which students’ insecure working models of attachment drive their community blogging behavior.

Furthermore, the moderating effects of students’ sense of classroom community were expected to occur on path b of the proposed mediation models (see Figures 6 & 7). This was because the impact of students’ attachment anxiety and avoidance on their motivation to establish new and/or strengthen existing relationships via blogging (path a) was believed to be deeply rooted in their early attachment experiences and thus not likely to be influenced by temporary conditions of security. In contrast, it was predicted that the associations between students’ relational motivation for blogging and their actual blogging behavior would be influenced by their sense of classroom community. Most notably, those students with a greater sense of classroom community were expected to feel more secure within the classroom and therefore less driven to exercise different types of community blogging activity (e.g., hyperactivating vs. deactivating posting, comment, and hyperlink contributions) in attempt to meet their attachment needs.
Chapter 2: Method

Participants and Procedures

Data were derived from a larger study of the effects of community blogging as a central component of course structures. Participants in the present study were 62 undergraduate students recruited from a 10-week introductory course on Infant Development. The course incorporated a community blogging component, which counted for one-third of the students’ total grade in the course. Data from nine students were excluded from the present study because they reported having taken a course in the past that utilized community blogging as a core activity – yielding a total sample size of 53 students. Demographic information obtained at the beginning of the course indicated participants were between the ages of 18 and 44 years ($M = 21.75, SD = 3.55$), with the majority of the sample being female (88.7%), Human Development and Family Science majors (90.6%). In addition, participants represented each of the four class ranks (Freshman = 3.8%, Sophomore = 22.6%, Junior = 28.3%, Senior = 45.3%) and reported a mean GPA of 3.10 ($SD = .54$, Range = 2.00 to 3.96).

With respect to Internet experience, the most commonly reported number of years of Internet experience was 10 ($M = 10.5, SD = 3.21$). A large portion of the sample reported using a laptop as their major Internet tool (78.4%) and accessing the Internet mostly from home (87.5%). Lastly, 96.2% of participants reported using one or more
online social network sites, and 47.1% reported visiting online blogs or owning an online blog themselves (37.7% and 9.4%, respectively).

Participants completed a series of questionnaires assessing demographics and general Internet usage, community blogging experiences, perceptions of learning environment, and adult attachment. Trained research assistants administered questionnaires during the first, fourth, and tenth (last) week of the course and students received extra credit as compensation for their time and effort. If absent during either Week 1 or Week 4 data collections, students were given the opportunity to complete missed questionnaires during Week 10 data collection. In all, 17% of the current sample ($N = 9$) completed Week 1 and/or Week 4 questionnaires at the same time they completed Week 10 questionnaires. Nearly half (44%) of those students ($N = 4$) completed all three questionnaires at Week 10. Informed consent was obtained from students prior to participation and those who elected not to participate were given an alternative extra credit opportunity.

As part of the course, students utilized a community blog to engage classmates in thoughtful discussion on topics related to infant development. Blogging activity was evaluated based on the quality of contributions as outlined in the course syllabus (see Appendix A). Following completion of the course, a second informed consent was obtained from participants requesting permission to link their survey data to the quantity, consistency, and length of their community blogging contributions. Both survey and blogging data were de-identified to maintain the confidentiality of each student. All study procedures and materials were approved by the University’s Behavioral and Social Science Institutional Review Board.
Measures

**Adult attachment.** Students’ attachment orientation was measured at Week 4 using the 36-item Experiences in Close Relationships questionnaire (ECR; Brennan et al., 1998). The ECR is a valid and reliable measure of two attachment subscales: Avoidance (i.e., discomfort with closeness and depending on others: “I get uncomfortable when others want to be very close”; 18 items) and Anxiety (i.e., fear of rejection and/or abandonment: “I worry a lot about my relationships”; 18 items). Students self-reported the degree to which 36 statements about close relationships resembled their personal experiences using a 7-point scale (1 = disagree strongly; 7 = agree strongly). Data yielded a Cronbach’s alpha for Avoidance of .89 and for Anxiety of .90.

**Community blogging activity.** Students’ community blogging activity was measured at Week 10 using the observed quantity, consistency, and length of their published contributions to a community blog shared by classmates. Two independent research assistants recorded the number of postings, comments, and hyperlinks contributed by each student across the term, the highest consecutive weeks these contributions were published, and the average written length (in words) of both students’ postings and comments. Blogging activity assigned by the instructor was not included in these totals. Due to the objective nature of coding students’ observed community blogging activity and the fact that all data discrepancies were reviewed and resolved by the principal investigator, no reliability statistics were computed.

**Relational motivation for blogging.** Students’ relational motivation to blog was measured at Week 10 using the Expected Relationships construct outlined in Hsu and Lin’s (2008) study of the factors contributing to blog usage. The 5-item Expected
Relationships construct measures the degree to which an individual’s knowledge sharing via blogging is motivated by the expected formation and/or maintenance of relationships (i.e., “Sharing my knowledge on blogs would strengthen the tie between other bloggers and me”). Students self-reported the degree to which 5 statements about establishing and/or strengthening relationships through sharing knowledge on a blog resembled their own motivational expectations using a 7-point scale (1 = disagree strongly; 7 = agree strongly). Data yielded a Cronbach’s alpha for Expected Relationships of .95. For the purpose of the present study, the concepts “relational motivation for blogging” and “knowledge sharing motivated by expected relationships” were used interchangeably as blogging is understood as form of knowledge sharing (Hsu & Lin, 2008) that has the potential to foster professional and/or personal relationships between bloggers.

**Sense of classroom community.** Students’ sense of classroom community was measured at Week 4 and again at Week 10 using the 20-item Classroom Community Scale (CCS; Rovai, 2002). The CCS is a valid and reliable measure of two dimensions contributing to overall sense of community in various classroom settings: Connectedness (i.e., feelings of cohesion, trust, and interdependence within the classroom: “I feel I can rely on others in this course”; 10 items) and Learning (i.e., feelings regarding interaction with others in the construction of knowledge: “I feel that I receive timely feedback”; 10 items). Students self-reported the degree to which 20 statements about classroom community resembled their personal experiences using a 5-point scale (1 = strongly disagree; 5 = strongly agree). Since the present study was focused on students’ overall sense of classroom community, data from all 20 items were used to compute a total score for classroom community at both time points (Week 4: Cronbach’s alpha = .88; Week 10: .85).
Cronbach’s alpha = .89). Preliminary correlation analyses reinforced this decision by indicating that Connectedness and Learning were highly correlated ($p < .01$) with one another across the term (Week 4: $r = .51$; Week 10: $r = .52$).

**Control variables.** Control variables associated with the key variables of interest according to theory or past research were measured at Week 1. These variables included students’ self-reported GPA and Internet self-efficacy. Students’ reported their GPA in response to the question: “What is your G.P.A?” Internet self-efficacy was measured using a 25-item questionnaire developed for the present study. Students reported how confident they felt performing online tasks (i.e., “I can be successful using a search engine to find the information that I need”) using a 7-point scale ($1 = not at all confident; 7 = very confident$). Data yielded a Cronbach’s alpha for Internet self-efficacy of .89.

All questionnaires yielding self-reported measurement of students’ attachment, relational motivation for blogging, sense of classroom community, and Internet self-efficacy can be found in Appendix B.
Chapter 3: Results

Preliminary Analyses

**Descriptive statistics.** Means, standard deviations, and ranges for all study variables were computed. Due to the modest sample size of the present study, significance was determined using an alpha level of .10. Though students in the current sample reported relatively low levels of both attachment anxiety ($M = 3.23, SD = 1.17$) and avoidance ($M = 2.65, SD = .96$), a comparison of the means revealed that students reported significantly higher levels of attachment anxiety, $t(52) = 3.50, p < .01$. This was not surprising given the large proportion of female students in the current sample. According to prior research, females tend to report higher levels of attachment anxiety (Del Giudice, 2009).

With respect to their observed community blogging activity over the 10-week term, the quantities, consistencies, and lengths of students’ blogging contributions ranged greatly. On average, students contributed a total of 5.75 postings ($SD = 3.02$, range $= 1.00 – 14.00$), 13.64 comments ($SD = 11.82$, range $= 1.00 – 61.00$), and 6.55 hyperlinks ($SD = 6.72$, range $= .00 – 40.00$) to the community blog. A comparison of these means revealed that over 10 weeks students contributed significantly more comments ($p < .01$) to the blogging community than both postings ($t = 5.06$, $df = 52$) and hyperlinks ($t = 4.81$, $df = 52$). This finding confirms that students were indeed using the community blog to interact
directly with their classmates. Concerning the consistencies with which students published these contributions, data showed that on average the highest consecutive weeks that students published postings were 2.66 (SD = 1.73, range = 1.00 – 8.00), while comments and hyperlinks were published an average of 3.15 (SD = 2.31, range = 1.00 – 10.00) and 2.25 (SD = 1.74, range = .00 – 8.00) consecutive weeks, respectively. Though these data indicated that students published each contribution fairly inconsistently across the term, mean comparisons showed that students contributed hyperlinks with significantly greater inconsistency than postings, \( t(52) = -1.69, p = .10 \), and comments, \( t(52) = -3.07, p < .01 \). Because hyperlinks cannot be contributed to a community blog without publishing a posting or a comment, this finding suggests that students’ written contributions often did not include a hyperlink to outside sources. Lastly, the written length of students’ postings ranged anywhere between 92 and 409 words (\( M = 212.88, SD = 79.12 \)), while their average comment was nearly 76 words long (\( SD = 79.12 \); range = 31.00 – 137.88).

Students also reported slightly greater than neutral relational motivation for blogging (\( M = 4.43, SD = 1.42 \)). This implied that students’ knowledge sharing was somewhat motivated by their expectations that blogging would establish and/or strengthen relationships with other bloggers. In addition, students demonstrated clear agreement with statements describing aspects of classroom community at Week 4 (\( M = 3.80, SD = .51 \)) and Week 10 (\( M = 3.94, SD = .54 \)), suggesting that students felt connected and supported within the learning community at both time points. A comparison of these means further revealed that students’ sense of classroom community increased significantly across the term, \( t(52) = -2.88, p < .01 \). Though it is unclear what
factors are responsible for the increase in students’ sense of classroom community from Week 4 to Week 10, it could be argued that the constructivist nature of educational community blogging had some degree of influence.

Finally, the mean GPA of students in the present study was 3.10 ($SD = .54$; range $= 2.00 – 3.96$). This GPA corresponds with a respectable B+ letter grade or a percentile grade of 86%. The current sample also reported fairly high Internet self-efficacy ($M = 5.53$, $SD = .81$), suggesting that students felt confident in their abilities to perform certain online tasks.

**Data reduction.** Because preliminary correlation analyses displayed strong positive associations between the observed quantities and consistencies of students’ postings ($r = .68$, $p < .01$), comments ($r = .72$, $p < .01$), and hyperlinks ($r = .82$, $p < .01$), the measures of quantity and consistency for each blogging contribution were standardized and averaged together to create composite variables yielding a more global representation of students’ *posting activity, comment activity,* and *hyperlink activity.* A similar procedure was used to create a composite variable (i.e., *average length of students’ written contributions*) representing how many words students wrote on average across their published postings and comments. This decision was also supported by preliminary correlation analyses that demonstrated the average word lengths of these written contributions were found to correlate positively with each other ($r = .25$, $p < .10$).

In addition, to gain a more comprehensive understanding of students’ sense of classroom community, data were averaged across Week 4 and Week 10 to create a composite variable representing students overall sense of classroom community across the term. Strong positive associations between students’ ratings of classroom community
at both time points \((r = .59, p < .01)\) reinforced this decision. To aid interpretation, Table 1 presents the raw means, standard deviations, and ranges for all study variables before data reduction. Subsequent analyses focused on the composite variables described above.

**Intercorrelations.** Pearson’s correlation coefficients were computed to test the strength of the associations between all reduced study variables (Table 2). Data revealed a moderate positive association between the independent variables of attachment anxiety and avoidance \((r = .36, p < .01)\). Noteworthy associations were also found among the dependent variables. For example, students’ posting activity related positively with both their comment activity \((r = .35, p < .01)\) and hyperlink activity \((r = .49, p < .01)\) over the 10-week term. Similarly, students’ comment activity and hyperlink activity were also significantly correlated \((r = .52, p < .01)\). Together these findings suggested that students who were more active in one area of community blogging were generally more active in other areas of community blogging, at least in terms of the combined quantity and consistency of each type of contribution. Additionally, students’ observed hyperlink activity demonstrated a significant association with the average length of their written contributions \((r = .25, p < .10)\) to the community blog. That is, students who wrote more words on average across their postings and comments, published hyperlinks more actively.

Findings also indicated a few associations of relevance to the major hypotheses of the present study. First, regarding the correlations between the independent and dependent variables, students’ attachment avoidance was found to relate positively with both their observed hyperlink activity \((r = .34, p < .05)\) and the average length of their written contributions \((r = .24, p < .10)\). That is, as students’ attachment avoidance
increased so did the combined quantity and consistency of their hyperlink contributions, as well as how many words they wrote on average across their postings and comments. Students’ attachment anxiety was not related to any measure of their observed community blogging activity. Next, an examination of the correlations between the independent variables and the proposed mediator yielded no significant associations. Specifically, neither students’ attachment anxiety nor avoidance was significantly correlated with their relational motivation for blogging. However, the correlations between the proposed mediator and the dependent variables revealed that students’ relational motivation for blogging was positively associated with their comment activity ($r = .26, p < .10$). This finding suggested the more that students’ knowledge sharing was motivated by expected relationships the more they engaged in commentary with their classmates across the term. No other measures of community blogging activity were related to students’ relational motivation for blogging. Finally, the correlations between the independent variables and the proposed moderator showed that students’ attachment anxiety was significantly related to their sense of classroom community ($r = -.28, p < .05$), in that highly anxious students perceived lesser classroom community across the term. No significant association was found between students’ attachment avoidance and their sense of classroom community. Furthermore, an examination of the correlations between the moderator and the dependent variables indicated that students’ commentary was the only aspect of their community blogging significantly associated with their sense of classroom community ($r = .23, p < .10$). That is, as students’ sense of classroom community increased, so did the combined quantity and consistency of their commentary. Data also indicated a strong, positive association between students’ sense of classroom community...
community and their relational motivation for blogging \((r = .49, p < .01)\), suggesting that the more students felt connectedness and support within the classroom the more their community blogging was motivated by expectations that doing so would establish and/or strengthen relationships with fellow bloggers (i.e., their classmates).

Notably, several significant associations were found between the control variables and the key variables of interest in the present study, which support their inclusion in the proposed models. For example, examining the correlations between the independent variables and the control variables revealed that both students’ attachment anxiety \((r = -.25, p < .10)\) and avoidance \((r = -.24, p < .10)\) were each negatively associated with their Internet self-efficacy. That is, the more attachment insecurity that students exhibited, the less confident they felt performing online tasks. Conversely, no correlations were found between students’ attachment and their self-reported GPA. With respect to the dependent variables, students’ self-reported GPA \((r = .26, p < .10)\) and Internet self-efficacy \((r = .41, p < .01)\) were each found to relate positively with their observed comment activity, suggesting the higher students reported their GPA and the more confident they felt performing online tasks, the more actively they contributed commentary to the community blog. Correlations also revealed that the higher students self-reported their GPA, the more actively they published hyperlinks \((r = .52, p < .01)\) and the lengthier their written contributions \((r = .29, p < .05)\) were over the 10-week term. Lastly, data showed that students’ Internet self-efficacy was positively associated with their relational motivation for blogging \((r = .57, p < .01)\) and their sense of classroom community \((r = .47, p < .01)\). This finding suggested the more confident students felt performing online
tasks, the more their knowledge sharing was motivated by their expected relationships and the more connectedness and support they felt within the classroom.

**Main Analyses**

**Research Question 1. Do students’ attachment anxiety and avoidance predict their observed community blogging activity above and beyond control variables?** To test whether attachment anxiety and avoidance have a direct association with students’ community blogging activity, a series of hierarchical regression equations were computed. Each equation predicted one of four measures of community blogging activity – posting activity, comment activity, hyperlink activity, and the average length of students’ written contributions. Students’ self-reported GPA and Internet self-efficacy were entered on Step 1 and students’ attachment anxiety and avoidance were entered on Step 2. Entering the control variables followed by the independent variables tested whether students’ attachment anxiety and avoidance explained variance in their community blogging activity over and above that explained by their self-reported GPA and Internet self-efficacy. The results for each equation can be found in Table 3.

For the equation predicting students’ observed posting activity, students’ self-reported GPA and Internet self-efficacy did not explain significant variance in the combined quantity and consistency of students’ published postings across the term. Moreover, students’ attachment accounted for no significant additional variance in their observed posting activity. These findings demonstrated that neither the control variables nor the independent variables predicted how many postings students contributed to the community blog or how often these postings were published.
The equation predicting students’ observed comment activity yielded different results. Twenty-four percent of the variance in the combined quantity and consistency of students’ commentary was explained by the control variables. Of these controls, students’ self-reported GPA ($\beta = .28, p < .05$) and Internet self-efficacy ($\beta = .42, p < .01$) each significantly predicted comment activity independent of one another. No significant additional variance was explained by students’ attachment. These findings suggested the higher students reported their GPA and the more confident they felt performing online tasks, the more actively they contributed commentary to the community blog.

Furthermore, students’ self-reported GPA ($\beta = .52, p < .01$) and Internet self-efficacy ($\beta = .22, p = .10$) each proved to be significant predictors of students’ observed hyperlink activity, together accounting for 31% of the variance in the combined quantity and consistency of students’ published hyperlinks over the 10-week term. Data further revealed that students’ attachment explained a significant additional 8% of variance in their observed hyperlink activity, with attachment avoidance ($\beta = .30, p < .05$) significantly predicting students’ hyperlink activity above and beyond the control variables. These findings show that attachment avoidance played a particular role in how actively students contributed hyperlinks across the term, independent of their attachment anxiety and in addition to the unique contributions of their self-reported GPA and Internet self-efficacy.

For the equation predicting the average length of students’ written contributions, neither the control variables (Step 1) nor the independent variables (Step 2) together explained significant variance in the total words that students wrote on average across their published postings and comments. However, among the control variables, students’
self-reported GPA ($\beta = .28, p < .05$) did prove to be a significant predictor of the average length of students’ written contributions, independent of their Internet self-efficacy. Thus, there was some indication that students who reported higher GPAs made lengthier written contributions to the blog. No significant additional variance in the outcome variable was explained by students’ attachment.

In conclusion, the regression analyses showed noteworthy trends regarding which variables had a significant direct association with students’ community blogging activity. Of particular importance to the first research question of the present study, students’ attachment avoidance was found to significantly predict the combined quantity and consistency of their hyperlinks, and together with attachment anxiety accounted for significant variance in hyperlink activity over and above that explained by the control variables. Based on this finding, attachment avoidance appears to be an important factor influencing students’ community blogging activity involving hyperlinks.

**Research Question 2.** Does students’ relational motivation for blogging mediate the associations between their attachment anxiety and avoidance and their observed community blogging activity? To determine whether students’ relational motivation for blogging operated as an intervening variable through which students’ attachment anxiety and avoidance were associated with their observed community blogging activity, 8 mediation models were tested. Traditionally, the causal steps approach popularized by Baron and Kenny (1986) has been used for testing mediation, though this procedure has received considerable criticism in recent years for, among other things, its condition that there be a significant direct effect between the independent variable and the dependent variable that becomes nonsignificant when a proposed
mediator is introduced into the model. This requirement makes the causal steps approach not only extremely conservative, but also lowest in power among tests of mediation – unlikely to detect if the independent variable’s effect on the dependent variable is carried at least in part indirectly through the proposed mediator (Hayes, 2009).

More recent methodology (e.g., Preacher & Hayes, 2004) demonstrates that in cases when no significant direct effect is identified between the independent and dependent variables, significant indirect effects can still exist. That is, even in the context of a null direct effect, the independent variable (X) may still have an indirect influence on the dependent variable (Y) through an intervening variable (M). As mentioned, in the tradition of Baron and Kenny, this \( X \rightarrow M \rightarrow Y \) sequence of associations would not be considered mediation without the loss of a significant \( X \rightarrow Y \) relationship (Mathieu & Taylor, 2006). However, full mediation such as this is extremely rare, making the Baron and Kenny (1986) logic and procedure nearly obsolete. For these reasons, the current analyses employed the more powerful bootstrapping technique of Preacher and Hayes (2004). The bootstrapping procedure creates 5,000 bootstrap samples from the original data through random sampling with replacement. This method proves particularly useful in situations where smaller sample sizes may cause distortions not fully representative of the population (Ader, Mellenbergh, & Hand, 2008).

Using an SPSS computer macro created by Preacher and Hayes (2004), 8 mediation analyses (2 IVs each predicting 4 DVs) were conducted, each yielding 5,000 estimates of the indirect effects of students’ attachment (IVs: anxiety and avoidance) on their observed community blogging activity (DV: posting activity, comment activity, hyperlink activity, average length of written contributions) through their relational
motivation for blogging. These estimates were then sorted from smallest to largest providing a 95% bootstrap confidence interval from which significance was determined. If the lower and upper bounds did not include zero, the null hypothesis was rejected and a significant indirect effect of $X$ on $Y$ through $M$ was identified (Hayes, 2009). In each analysis, the current data revealed no significant indirect effect of students’ attachment on their observed community blogging activity through their relational motivation for blogging. That is, students’ motivational expectation that sharing their knowledge on a blog could foster the development of relationships with other bloggers did not appear to serve as a mediating variable through which students’ attachment anxiety and avoidance significantly predicted their observed community blogging behavior.

**Research Question 3. Do the indirect effects of students’ attachment anxiety and avoidance on their observed community blogging activity through their relational motivation for blogging depend on students’ sense of classroom community?** Even though no significant indirect effects were found, the same mediation models were analyzed again, this time testing whether varying levels of students’ sense of classroom community moderated the associations between their relational motivation for blogging and their observed community blogging activity (path $b$). The tests were conducted in efforts to identify what Preacher, Rucker, and Hayes (2007) referred to as conditional indirect effects – when the influence of the independent variable ($X$) on the dependent variable ($Y$) through an intervening variable ($M$) is conditional upon the value of a moderator ($W$). Each analysis held path $a$ (i.e., the effect of $X$ on $M$) constant, while the effects of $M$ on $Y$ were examined at varying levels of $W$. Specifically, the conditional indirect effects were probed for significance at students’ mean level of perceived
classroom community ($M = 3.87$) and ± 1 standard deviations ($SD = .49$) from the mean yielding three levels of the moderator (3.38, 3.87, 4.36). Testing the moderating effects of $W$ on the $M \rightarrow Y$ relationship at these three points independent of the $X \rightarrow M$ relationship is not only common practice (see Model 3 in Preacher et al., 2007), but also directly addressed the hypotheses of the present study by examining whether the proposed indirect effects were strengthened under conditions in which students felt a lesser sense of classroom community (-1 $SD = 3.38$) and attenuated under conditions in which they felt a greater sense of classroom community (+1 $SD = 4.36$).

Using an SPSS computer macro created by Preacher et al. (2007), 95% bootstrap confidence intervals (based on 5,000 bootstrap samples) were generated for each model. If the lower and upper bounds did not include zero, the null hypothesis was rejected and a significant conditional indirect effect of $X$ on $Y$ through $M$ at $W$ was identified (Hayes, 2009). However, the current analyses generated bootstrap confidence intervals for each model that contained zero, indicating that no significant conditional indirect effects existed within the data. That is, students’ sense of classroom community (whether low, average, or high) had no meaningful impact on the $M \rightarrow Y$ relationship within each of the proposed mediation models. There appeared to be one exception to this (i.e., a significant interaction between students’ relational motivation for blogging and their sense of classroom community when predicting comment activity), though it was not confirmed during the bootstrapping procedure.
Chapter 4: Discussion

The main purpose of the present study was to examine how students’ attachment anxiety and avoidance related to their observed community blogging activity in a formal educational setting. Hierarchical regression analyses tested for these associations while controlling for students’ self-reported GPA and Internet self-efficacy. In addition, more sophisticated analyses examined (a) whether students’ relational motivation for blogging mediated the associations between their attachment anxiety and avoidance and their observed community blogging activity, and (b) whether students’ sense of classroom community moderated the second leg of these mediation models and thus the strengths of the indirect effects. Overall, results demonstrated weak evidence that students’ attachment was related to their observed community blogging activity, with the exception of one robust finding. Students’ attachment avoidance was related to their observed hyperlink activity such that students reporting greater attachment avoidance contributed a greater combined quantity and consistency of hyperlinks across the term. This central finding will be discussed in relation to the major hypotheses of the present study, followed by a review of several noteworthy associations discovered during the current analyses that provide valuable insight regarding students’ experience and use of community blogging in a formal educational setting.
Tests of the Major Hypotheses

Prior to testing the major hypotheses, intercorrelations among all study variables were examined. Though data yielded several significant associations, only two associations were directly relevant to Research Question 1. Specifically, students’ attachment avoidance was significantly related to both their hyperlink activity and the average length of their written contributions. None of the remaining associations between students’ attachment avoidance and their observed community blogging activity (i.e., postings and comments), as well as none of the associations between students’ attachment anxiety and all four measures of their community blogging activity demonstrated significance. It should be noted, however, that each subsequent analysis in the present study tested the associations of both students’ attachment anxiety and avoidance with each measure of their observed community blogging activity, regardless of the preliminary findings. This was done deliberately to understand whether associations that lacked significance during preliminary analyses became significant when related variables were either accounted for or introduced into the analyses.

The first of the abovementioned significant associations indicated that as students’ attachment avoidance increased, so did their observed hyperlink activity. This finding supported the expectation that highly avoidant students would display a greater quantity and consistency of hyperlink contributions across the term. As discussed previously, the independent exploration that precedes hyperlinking may attract highly avoidant students looking to distance themselves from the learning community (Hazan & Shaver, 1990; Mikulincer, 1997), while the actual process of providing hyperlinks allows them to contribute content to the community blog (Du & Wagner, 2007) without having to
express their personal thoughts and feelings or engage classmates in conversation. Thus, the finding that attachment avoidance is associated with greater hyperlink activity supports the idea that highly avoidant students are using hyperlinks to evade situations that may foster closeness to others and/or elicit feelings of vulnerability, while ensuring they still maintain an active presence within the blogging community.

The second significant association indicated that as students’ attachment avoidance increased, so did the average length of their written contributions. This challenged the expectation that highly avoidant students would write fewer words on average across their postings and comments over the 10-week term. Though this finding appears to contradict what is known about avoidant individuals – that they generally have trouble expressing their thoughts and feelings (e.g., Brennan et al., 1998) – the current analyses cannot confirm that the lengthier written contributions of highly avoidant students were actually expressive. It is possible that their postings and comments were more descriptive in nature and functioned primarily to explain their many hyperlink contributions rather than utilized as a means for self-reflection, self-expression, and/or social interaction (Deng & Yuen, 2011). The positive relation between students’ observed hyperlink activity and the average length of their written contributions might support this notion. Still, it may also be the case that highly avoidant students are in fact using their written contributions to express and communicate the thoughts and feelings they have such trouble sharing with others offline. Analyses that account for the expressiveness of the language used in students’ postings and comments may provide more clarity on this finding.
Both significant associations were further tested using hierarchical regression equations to examine whether students’ attachment avoidance explained variance in their observed community blogging activity above and beyond that explained by their self-reported GPA and Internet self-efficacy. These variables appeared important to control for given their potential influence on students’ community blogging activity. Specifically, those students reporting a higher GPA were expected to be more active members of the educational blogging community in an effort to maintain their academic standing, while those students with greater Internet self-efficacy were expected to contribute more to the community blog because they felt confident in their abilities to perform certain online tasks. Indeed, data revealed that the control variables together account for a significant amount of variance in both students’ comment and hyperlink activity, while students’ self-reported GPA proved to be a significant predictor of the average length of their written contributions.

After controlling for these confounds, the significant association between students’ attachment avoidance and their hyperlink activity remained significant, suggesting that attachment avoidance was an important factor predicting the greater quantity and consistency with which students contributed hyperlinks to the community blog. Again, this finding was consistent with the major hypotheses of the present study and provided answers to the first research question. In contrast, the significant association between students’ attachment avoidance and the average length of their written contributions was no longer significant after accounting for the variance explained by the control variables. Indeed, because students’ self-reported GPA was identified as a significant predictor in this equation, it may be assumed that their desire to perform well...
academically played a more prominent role in their decisions to contribute lengthier postings and comments to the community blog than did their working models of attachment. This ought to be especially true for highly avoidant students, as attachment avoidance has been shown to relate to disengagement in activities that are intimate in nature and/or promote close interactions with others (e.g., Jenkins & Tonigan, 2011) – two common characteristics of written contributions to a community blog. No other associations were found between students’ attachment anxiety and avoidance and their observed community blogging activity above and beyond control variables.

Given that a major feature of adult attachment involves how individuals approach relationships (e.g., highly anxious adults tend to be preoccupied with relationships, while highly avoidant adults tend be apprehensive of relationships), analyses for Research Question 2 tested the mediating effect of students’ relational motivation for blogging. Across each model, the extent to which students were motivated by expected relationships to share knowledge on the community blog did not significantly mediate the associations between students’ attachment anxiety and avoidance and their observed community blogging activity. Notably, while the regression analyses indicated a significant association between students’ attachment avoidance and their hyperlink activity, the mediation model explaining this association as a function of their relational motivation for blogging was not significant. This suggests that another potential mechanism may explain the relation between students’ attachment avoidance and the increased quantity and consistency of their hyperlink contributions. Alternatively, it is possible that the lack of a significant finding was due to the specific measure of students’ relational motivation used rather than the absence of a true mediating effect.
While no significant indirect effects were found during mediation analyses, the possibility of conditional indirect effects were still tested in accordance with Research Question 3. Specifically, it was hypothesized that the indirect effects of students’ attachment anxiety and avoidance on their observed community blogging activity through their relational motivation for blogging would depend on the extent to which path b of each mediation model was moderated by students’ sense of classroom community. Based on the commonality that exists across the characteristics of both classroom community (Rovai and Lucking, 2000) and a secure relationship (e.g., Bartholomew & Horowitz, 1991; Brennan et al., 1998; Hazan & Shaver, 1987, 1994), it was believed that a greater sense of classroom community might elicit feelings of security that have a buffering effect on the degree to which students’ relational motives predicted their activity on a community blog shared by classmates. In contrast, a lesser sense of classroom community was expected to reinforce students’ insecure working models of attachment, thus strengthening the degree to which their relational motives predicted their observed community blogging activity. However, across each model students’ sense of classroom community did not moderate the indirect effect of their attachment insecurity on their observed community blogging activity through their relational motivation for blogging.

In conclusion, tests of the major hypotheses yielded very little evidence that students’ working models of attachment predicted their activity on a community blog shared by classmates. Potential explanations for these null findings will be addressed when discussing limitations of the present study.
Knowledge Gained About Educational Community Blogging

Despite a lack of support for the major hypotheses, much knowledge was gained about educational community blogging as a result of the current investigation. In particular, an examination of the preliminary results provides valuable insight into students’ experience and use of community blogging in a formal educational setting that may help guide the future implementations of this learning technology into new and more innovative course structures. Educators interested in the academic utility of community blogging will most certainly learn from these findings, so long as they understand the unique contextual factors contributing to the data. That is, data were collected using a rather homogenous sample of undergraduate students taking an introductory course in their major area of study. Further, the 10-week assignment used to generate measures of students’ observed community blogging activity had no weekly requirements with respect to quantity, consistency, and/or length of blogging activity. These factors, among perhaps more subtle contextual issues, may make the results difficult to generalize.

The most salient of these findings was that students in the current sample displayed relatively low community blogging activity. For example, over the course of 10 weeks, students averaged approximately 6 postings, 14 comments, and 7 hyperlinks. Relatedly, students published these contributions fairly inconsistently in terms of how many consecutive weeks each type of contribution was published to the community blog; a finding that was especially true with respect to hyperlink contributions. These findings indicate that in the absence of more traditional course structures that provide clearly defined learning objectives and corresponding performance guidelines, students did not independently elect to contribute much to the community blog. However, despite their
general inactivity, students published significantly more comments to the community blog in compared to their postings and hyperlinks. This finding suggests that when students did contribute to the community blog, they mostly preferred to communicate directly with their classmates. While there are numerous reasons that may explain this preference (e.g., commentary is more social, dynamic, rewarding, brief, etc.), one thing is certain, students were reading their classmates’ written contributions and then providing their own personal input on the matter – a potential catalyst to the social construction of knowledge. Empowering students to publicly voice their ideas, opinions, and knowledge in this fashion represents a major benefit of community blogging in a formal educational setting.

Furthermore, consistent with the central premise of the present study, the findings also revealed that individual characteristics were meaningfully related to certain aspects of students’ observed community blogging activity. Not surprisingly, students’ commentary was most associated with these characteristics. For example, as students’ relational motivation for blogging and their sense of classroom community each increased, so did their observed comment activity. Together these findings demonstrate a clear connection between the social needs of students and how active they are with respect to commentary. Students’ observed comment activity was the only aspect of community blogging that was associated with their Internet self-efficacy, revealing that students who were more actively contributing comments on the community blog also had greater confidence in their abilities to perform online tasks. Because a single comment thread may consist of multiple lines of thought both directly and indirectly related to the content of the original posting, high Internet self-efficacy might be an essential
characteristic for students as they navigate (or untangle) the “web of knowledge” generated by their classmates to then insert their own understanding into the conversation. Of course, students’ greater comment activity may also function as a means to an end (i.e., more positive evaluations from the instructor); a notion that is supported by the positive relations that existed between students’ self-reported GPA and nearly all aspects of their observed community blogging activity.

Finally, perhaps the most exciting knowledge gained from the present study concerned the significant increase in students’ sense of classroom community from Week 4 to Week 10 of the term. Though this finding cannot be directly connected to students’ involvement with community blogging throughout the course, there is some evidence to indicate that an association between their community blogging and their sense of classroom community may exist. Mainly, the fact that students’ sense of classroom community was already above average at Week 4 and then increased substantially across their community blogging tenure suggests that there may have been certain aspects to sharing a community blog with classmates that were related to students’ greater overall sense of connectedness and support within the classroom. For example, as discussed above, there was a positive association between students’ sense of classroom community and their observed comment activity. This was initially conceptualized as a situation in which students’ greater sense of classroom community led to greater activity with respect to their commentary; however, it is equally likely that students who more actively engaged their classmates in commentary across the term subsequently felt greater connectedness and support within the classroom. Regardless, educators should consider the possibility that community blogging may help increase the overall sense of classroom
community felt by their students across the term. Simultaneously examining the trajectories of students’ sense of classroom community in two separate courses taught by the same instructor – one utilizing a more blog-centric approach and the other utilizing a more traditional approach to teaching and learning – would provide answers regarding the effects of community blogging on students’ sense of classroom community.

**Strengths and Limitations**

The foremost strength of the present study is that it is the first of its kind. An extensive review of the attachment literature yielded no research that has explored the potential influence of insecure working models of attachment on student functioning within online learning communities. Given the ever-growing acceptance and use of Web technologies in formal education (Nussbaum-Beach & Ritter Hall, 2012) – especially those technologies that promote the cognitive and social construction of knowledge (Du & Wagner, 2007) – understanding how students’ attachment representations may influence their active participation within an online community shared by classmates is an important first step to understanding the potential barriers that may exist when implementing the social Web into course structures. The current findings, though modest, provide a jumping off point from which to further explore the utility of community blogging in formal education and the role that students’ attachment insecurity plays in their experience and use of community blogging as a constructivist learning tool.

In addition to being unique in its focus, the present study offered several strengths with respect to measurement and analysis. For example, the ECR provided power and precision in assessing students’ attachment by utilizing the continuous dimensions of attachment Anxiety and Avoidance instead of attachment categorizations (Brennan et al.,
Similarly, in an effort to obtain the most accurate measurement of students’ community blogging activity, two research assistants independently observed and systematically recorded the quantities, consistencies, and lengths of students’ published contributions to the community blog. This process provided a more objective measurement of students’ community blogging activity than could have been gained through students’ retrospective self-reports. In fact, according to attachment research (e.g., Mikulincer, Dolev, & Shaver, 2004), it was understood that insecure students’ recollections of their behavior might be distorted by their skewed self-representations.

Furthermore, the current hypotheses were subjected to stringent analyses that involved controlling for students’ self-reported GPA and Internet self-efficacy. Partitioning out the confounding effects of these variables allowed for a more direct examination of the variance in students’ community blogging activity that was explained by their attachment anxiety and avoidance. Lastly, perhaps the most notable strength of the current analyses was the use of bootstrapping to test for mediation and moderated mediation (Preacher & Hayes, 2004; Preacher, Rucker, & Hayes, 2007). The powerful bootstrapping procedure created 5,000 bootstrap samples from the original data through random sampling with replacement, allowing for a more accurate estimate of significant indirect and conditional indirect effects. This represented the most up-to-date, state of the art technique for testing the hypotheses of the present study.

However, it is also important to acknowledge some limitations of the present study, the first of which concerns the inherent difficulty of examining individual differences in students’ community blogging activity while they are simultaneously being
evaluated by their instructor on the quality of their blogging contributions. In recent years, for many reasons beyond the scope of this paper, higher education has placed an increased emphasis on student assessment and evaluation (Astin & Antonio, 2012), creating a culture where students’ academic contributions are largely motivated by performance goals (i.e., receiving high marks, outperforming others, etc.). Given this trend and the fact that the quality of students’ blogging contributions accounted for one-third of their final grade in the current course, it is possible that students’ performance goals were a more powerful predictor of their community blogging activity than were their working models of attachment. That is, a motivation to perform well academically may have overshadowed any influence of students’ attachment anxiety and avoidance on the quantities, consistencies, and lengths of their community blogging contributions (even though students were made aware that evaluations would be based on measures of quality, not quantity). Future research should consider extending the current hypotheses to course structures that recommend (not require) student participation within a community of learners. It may also prove beneficial to assess students’ baseline orientation towards performance goals (see Archer, 1994; Urdan & Mestas, 2006 for possible items) to better understand how motivated the sample is by external academic rewards.

Certain characteristics of the current sample also presented limitations that may have contributed to a lack of significant findings in the present study. Possibly the most notable of these limitations is the relatively modest sample size. Examining data from only 53 students yielded lower statistical power, making significant associations harder to detect. Furthermore, using only data from students enrolled in a single course resulted in
a relatively homogeneous sample. Specifically, a sample of predominately female (88.7%), Human Development and Family Science majors (90.6%), completing either their junior (28.3%) or senior (45.3%) year in college is atypical for college courses. These unique characteristics make the generalization of findings difficult. For instance, having a nearly all-female sample may explain the relatively lower levels of and restricted variability in students’ attachment avoidance (e.g., Del Giudice, 2009). It is also possible that highly avoidant students were not very well represented in the current sample. For example, it is difficult to know whether the social nature of blogging and/or the intimate nature of certain early questionnaires resulted in more avoidant students dropping the class or declining to participate in the present study.

Another aspect of the current sample that may have impacted the results concerns the level of familiarity students had with one another. Given that the majority of the sample consisted of upperclassmen sharing the same major, it can be assumed that most of the students were at least somewhat familiar with each other, if not already close acquaintances. Thus, it is possible that students in the current sample had already established alternative, less academic mediums for interacting with one another in ways that comfortably meet their attachment needs (e.g., text messaging, social media, email, etc.). Moreover, because students have likely shared several prior experiences with their classmates, the novelty of community blogging may not have triggered their attachment-based perceptions and behaviors to the same extent that community blogging (i.e., interacting/collaborating) with a group of strangers might have (e.g., Dykas et al., 2012; Feeney et al., 2008; Roisman, 2006). In light of these limitations, future research should attempt to utilize a larger sample with greater diversity. Specifically, better representation
of males, more variation in class rank, and students from a broader range of academic backgrounds would be ideal to examine the current hypotheses and provide more confidence in the current findings.

Conclusion

Community blogging is a potentially important and innovative educational tool that promotes both the cognitive and social construction of knowledge through individual postings, student-to-student commentary, and hyperlink sharing. However, the intimate nature of postings, the social nature of commentary, and the explorative nature of hyperlinking, may activate very entrenched relational schemas held by students that have potential to influence their blogging activity in ways that limit their ability to benefit from an educational blogging project. The present study, while not without its limitations, represents a significant first step toward understanding how individual differences in these relational schemas may impact students’ observed community blogging activity. Additional research is needed in this novel area to identify and address more potential barriers to the effective implementation of community blogging into course structures.
References


Dewey, J. (1938). *Experience and education*. Indianapolis, IN: Kappa Delta Pi


90


Appendix A: Syllabus
The Ohio State University
College of Education and Human Ecology
Department of Human Development and Family Science

HDFS 363: Infant Development and Care
Spring Quarter 2012
Tuesday and Thursday, 10:30am – 12:18pm
Campbell Hall 252

Instructor: Mitchell K. Bartholomew, M.S.
Office: Columbia Gas Lounge Mailbox: CM135
Email: Bartholomew.70 Phone: ####-####-#### (cell)
Office Hours: Tuesday and Thursday, 8:30am – 10:00pm (or by appointment)

Recommended Text:

Course Website:
Carmen will serve as the course homepage. Important announcements, course content, weekly quizzes, cumulative grades and a link to the course blog can be found at carmen.osu.edu.

Class Structure:
Tuesday, 10:30am – 12:18pm
10:30am – 11:00ish Discuss class interests
11:00ish – 12:00ish Scheduled/impromptu lecture
12:00ish – 12:18pm Propose group activity

Thursday, 10:30am – 12:18pm
10:30am – 11:00ish Discuss class interests
11:00ish – 12:00ish In-class group activity
12:00ish – 12:18pm Closing – questions or concerns

Grading Scheme/Assignments:
Assignments for this course total 300 points. Details with regards to point distribution and individual/group work can be found on Page 2.

Final letter grades are based on the OSU standard grading scheme:

A = 93% - 100% A- = 90% - 92.9% B+ = 87% - 89.9% B = 83% - 86.9%
B- = 80% - 82.9% C+ = 77% - 79.9% C = 73% - 76.9% C- = 70% - 72.9%
D+ = 67% - 69.9% D = 60% - 66.9% E = 0% - 59.9%
Individual work – Worth 2/3 of total grade

Writing Assignment (100 pts): This course does not require students to write a traditional paper. Instead, students will use a course blog to engage with classmates in thoughtful discussion on topics related to infant development. Hyperlinks to current publication and popular media are strongly encouraged in the exchange of relevant information. Evaluation will be largely based on the quality of online communication. In addition, students are asked to meticulously log their blogging activity using a “Blog Log” uploaded to Carmen. A hard copy of the Blog Log will be due at the beginning of class on the due date. For each day the assignment is late, 10 points will be deducted.

Online Quizzes (90 pts): Students will be quizzed on lectured material throughout the quarter (10 points x 9 quizzes). All quizzes will be open source and cover information presented during the previous lecture. Students have one half hour to answer 5 – 10 questions from the time the quiz is active on Friday until it closes before class the following Tuesday. Student’s lowest quiz score will be dropped for completing all three portions of the extra credit opportunity (see below).

Intro/Exit Reflections (10 pts): Students are asked to publish a single post by the second Thursday of the quarter introducing themselves on the course blog (5 points). This short self-reflection serves as an opportunity to establish identity within the learning community while practicing effective blogging. Students may be as candid as they like, keeping in mind what they share is public. Students are also asked to publish a single post by the last day of class reflecting on their experience in the course (5 points).

Group work – Worth 1/3 of total grade

Group Activities (70 pts): Throughout the quarter, students will be given in-class group activities that promote creative application of course content (10 points x 7 activities). Students are expected to collaborate with group members to tackle these mini projects in a manner that demonstrates knowledge for the major topics and theories present during lecture. Each group must publish a single blog post presenting their finished product before leaving class that day. Evaluation will be largely based on creative effort, although the accuracy and relevance of information presented is also very important. Group blogging points can be made up ONLY IF students were absent due to a University sponsored event or illness as evidenced by doctor’s note.

Group Participation (30 pts): Students are expected to be actively engaged during group blogging activities. In effort to protect against freeloading, students will have the opportunity to rate each group member’s overall participation in group blogging activities across the quarter.

Extra Credit Opportunity:
Students may earn up to 5% of their total grade in extra credit (15 pts). The extra credit is prorated, meaning students can receive points for partial or full completion of the extra credit opportunity.
**Option A:** Students may voluntarily participate in research assessing topics related to internet usage. Three in-class questionnaires will be given throughout the quarter (see course calendar), each of which should take roughly 45 minutes to complete.

**Option B:** Those who elect NOT to participate in the aforementioned research may write three short essays which requiring the same time commitment as the questionnaires. Essay topics will be provided mid-quarter and responses will be due the last day of class.

**Operating Course Blog:**

**Access Dashboard:** Visit classes.ehe.osu.edu/wp → Login using OSU username and password → Select the course blog from the “My Sites” drop-down menu located atop your screen. Explore the dashboard as it offers many blogging functions.

**View Course Blog:** From the dashboard, scroll over the title of the course blog from atop your screen and select “Visit Site”. Explore the course blog as it offers many archiving features. For example, the header provides links to important course content. The sidebar allows you to filter posts by day, month, or author. Finally, the footer provides easy access to recent posts and comments.

**Add New Post:** Select “Post” from the “+ New” drop-down menu located atop your screen. This will take you to the publishing tab. From there: Enter the title of your new post → Enter the body of your new post → Check your Name.# from list of categories → Click “Publish”. **Do not forget to check your Name.# from the list of categories as this allows me to locate and evaluate all of your posts throughout the quarter.** If you are still confused watch the video tutorial located under the “How do I?” dropdown menu atop your screen.

**Insert Image:** From the publishing tab, click the icon located under the title of your new post → Follow the prompts → Click “Insert Into Post”. If you are still confused watch the video tutorial located under the “How do I?” dropdown menu atop your screen.

**Insert Hyperlink:** From the publishing tab, highlight the word in the body of your post that you wish to make hypertext → click the icon located in editing options → Fill in the boxes → Click “Add Link”.

**Course Policies:**

**Academic Misconduct:** As stated in the Code of Student Conduct, academic misconduct is defined as any activity that “compromises the academic integrity of the institution, or subverts the educational process.” Academic misconduct includes such activities as plagiarism, cheating on an exam, and dishonesty in reporting research results. Of particular importance to this course is plagiarism. According to the University: "Plagiarism is the representation of another's work or ideas as one's own; it includes the unacknowledged word-for-word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas." As per academic misconduct guidelines, **I must report to the Committee on Academic Misconduct all instances of what I believe to be academic misconduct.** If COAM determines that misconduct has been committed, you may receive a failing grade in this course, and/or be suspended or dismissed from the University.
OSU Counseling and Consultation Service: A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other, and alcohol use are among the top ten impediments to academic performance. Students experiencing personal problems or situational crises during the quarter are encouraged to contact the OSU Counseling and Consultation Services (614-292-5766; http://www.ccs.ohio-state.edu) for assistance, support, and advocacy. This service is free and confidential.

Disability Services: Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss specific needs. Also, please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall. They can help coordinate reasonable accommodations for students with documented disabilities.

Course Calendar:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/27/12</td>
<td>Introduction to course - Syllabus</td>
<td></td>
</tr>
<tr>
<td>3/29/12</td>
<td><em>In-class extra credit opportunity 1</em></td>
<td></td>
</tr>
<tr>
<td>4/03/12</td>
<td>Lecture</td>
<td>Quiz 1 closes</td>
</tr>
<tr>
<td>4/05/12</td>
<td>Group Activity</td>
<td>Intro Reflection Due</td>
</tr>
<tr>
<td>4/10/12</td>
<td>Lecture</td>
<td>Quiz 2 closes</td>
</tr>
<tr>
<td>4/12/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>4/17/12</td>
<td>Lecture</td>
<td>Quiz 3 closes</td>
</tr>
<tr>
<td>4/19/12</td>
<td><em>In-class extra credit opportunity 2</em></td>
<td></td>
</tr>
<tr>
<td>4/24/12</td>
<td>Lecture</td>
<td>Quiz 4 closes</td>
</tr>
<tr>
<td>4/26/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>5/01/12</td>
<td>Lecture</td>
<td>Quiz 5 closes</td>
</tr>
<tr>
<td>5/03/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>5/08/12</td>
<td>Lecture</td>
<td>Quiz 6 closes</td>
</tr>
<tr>
<td>5/10/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>5/15/12</td>
<td>Lecture</td>
<td>Quiz 7 closes</td>
</tr>
<tr>
<td>5/17/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>5/22/12</td>
<td>Lecture</td>
<td>Quiz 8 closes</td>
</tr>
<tr>
<td>5/24/12</td>
<td>Group Activity</td>
<td></td>
</tr>
<tr>
<td>5/29/12</td>
<td>Lecture</td>
<td>Quiz 9 closes</td>
</tr>
<tr>
<td>5/31/12</td>
<td><em>In-class extra credit opportunity 3</em></td>
<td>Blog Log, Group Evaluation, Exit Reflection due</td>
</tr>
</tbody>
</table>
Appendix B: Measures
Experiences in Close Relationships Questionnaire

The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Circle the number using the following scale:

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 = Disagree Strongly</th>
<th>4 = Neutral/Mixed</th>
<th>7 = Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I prefer not to show a partner how I feel deep down.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I worry about being abandoned.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I am very comfortable being close to romantic partners.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I worry a lot about my relationships.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Just when my partner starts to get close to me, I find myself pulling away.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I worry that romantic partners won’t care about me as much as I care about them.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I get uncomfortable when a romantic partner wants to be very close.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I worry a fair amount about losing my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I don’t feel comfortable opening up to romantic partners.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I often wish that my partner’s feelings for me were as strong as my feelings for him/her.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I want to get close to my partner, but I keep pulling back.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I often want to merge completely with romantic partners, and this sometimes scares them away.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I am nervous when partners get too close to me.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I worry about being alone.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I feel comfortable sharing my private thoughts and feelings with my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. My desire to be very close sometimes scares people away.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I try to avoid getting too close to my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I need a lot of reassurance that I am loved by my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I find it relatively easy to get close to my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Sometimes I feel that I force my partners to show more feeling, more commitment.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I find it difficult to allow myself to depend on romantic partners.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. I do not often worry about being abandoned.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. I prefer not to be too close to romantic partners.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. If I can’t get my partner to show interest in me, I get upset or angry.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. I tell my partner just about everything.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. I find that my partner(s) don’t want to get as close as I would like.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. I usually discuss my problems and concerns with my partner.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. When I’m not involved in a relationship, I feel somewhat anxious and insecure.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. I feel comfortable depending on romantic partners.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. I get frustrated when my partner is not around as much as I would like.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. I don’t mind asking romantic partners for comfort, advice, or help.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. I get frustrated if romantic partners are not available when I need them.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. It helps to turn to my romantic partner in times of need.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. When romantic partners disapprove of me, I feel really bad about myself.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. I turn to my partner for many things, including comfort and reassurance.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. I resent it when my partner spends time away from me.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Odd items measure the dimension of attachment Avoidance. Even items measure the dimension of attachment Anxiety.
## Motivation to Share Knowledge Scale

Below are statements about blogging activities. Please mark on the following scale on how you feel about each statement.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I like helping other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Writing and commenting on blogs can help others with similar problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>I enjoy helping others through blogging.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>I find that writing and commenting on blogs can be mutually helpful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>I find my participation in blogs can be advantageous to me and other bloggers.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>I think that participating in blog can improve reciprocal benefit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>I earn respect from others by participating in blog.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>Participating in blog activity would enhance my personal reputation in the blog.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Participating in blogs would improve my status in the blog.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>I’d trust blogger to do the work right even if not monitored.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>I trust a blog’s information to be true.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>People on blogs are trustworthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>Sharing my knowledge on blogs would strengthen the tie between other bloggers and me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14.</td>
<td>Sharing my knowledge on blogs would create new relationships with new friends on blogs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15.</td>
<td>My knowledge sharing would expand the scope of my association with other users in blogs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16.</td>
<td>My knowledge sharing would draw smooth cooperation from outstanding users in the future.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17.</td>
<td>My knowledge sharing would create strong relationships with members who have common interests in blogs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Note.* The Expected Relationships subscale consists of items 13 – 17.
## Classroom Community Scale

Below are statements about this Development course. Please mark on the following scale on how you feel about each statement.

1 = Disagree Strongly  
3 = Neutral/Mixed  
5 = Agree Strongly

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel that students in this course care about each other.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I feel that I am encouraged to ask questions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I feel connected to others in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I feel that it is hard to get help when I have a question.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I do not feel a spirit of community.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I feel that I receive timely feedback.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I feel that this course is like a family.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I feel uneasy exposing gaps in my understanding.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I feel isolated in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I feel reluctant to speak openly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I trust others in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I feel that this course results in only modest learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I feel that I can rely on others in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I feel that other students do not help me learn.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I feel that members of this course depend on me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. I feel that I am given ample opportunities to learn.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I feel uncertain about others in this course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. I feel that my educational needs are not being met.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. I feel confident that others will support me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I feel that this course does not promote a desire to learn.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
## Internet Self-Efficacy Questionnaire

A number of situations are described below with regard to your Internet use. Please mark the number on **how certain** you are that you can **perform** each task described in the statement.

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Not at All Confident</td>
<td>4 = Neutral/Mixed</td>
<td>7 = Very Confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I can use the Internet to find good information about topics that are important to me.  

2. I can use the Internet to help me find good information about children and their development.  

3. I can be successful using the Google search engine, or some other search engine, to find the information that I need.  

4. I can use hyperlinks to find information that is important to me.  

5. I can use hyperlinks to find information that is important to others.  

6. I can improve my own well-being through the use of hyperlinks.  

7. I can improve others’ well-being through the use of hyperlinks.  

8. I can find important and interesting information by reading other people’s blogs.  

9. I can offer other people important and interesting information by posting on the Internet.  

10. I can distinguish good information from bad information when I am surfing the Internet.  

11. I can have an impact on the world by being active on the Internet.  

12. I can choose and follow hyperlinks to important and relevant data.  

13. I can organize the information I find on the Internet so that it is coherent and answers specific questions.  

14. I can use the Internet to answer other people’s questions in a productive way.  

15. I can use the Internet to answer my own questions in a productive way.  

16. I can use the Internet effectively and efficiently any time that I want.  

17. I can be very effective communicating using social networking sites like Facebook.  

18. I can be very effective using blogging sites like blogger.  

19. I can write blog posts that other people will read and be
<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>I can use social networking sites as an effective way of connecting with others.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>21</td>
<td>I can use blogging as an effective way of connecting with others.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>22</td>
<td>I can have a positive impact on the lives’ of others through my use of social networking sites.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>23</td>
<td>I can have a positive impact on the lives’ of others through blogging.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>24</td>
<td>I can work effectively with others online.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>25</td>
<td>I can work effectively with others offline.</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
Appendix C: Tables
Table 1

*Descriptive Statistics for Sample (N = 53)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ECR – Anxiety</td>
<td>3.23</td>
<td>1.17</td>
<td>1.00</td>
<td>7.00</td>
</tr>
<tr>
<td>2. ECR – Avoidance</td>
<td>2.65</td>
<td>.96</td>
<td>1.33</td>
<td>5.56</td>
</tr>
<tr>
<td>3. Quantity of Postings</td>
<td>5.75</td>
<td>3.02</td>
<td>1.00</td>
<td>14.00</td>
</tr>
<tr>
<td>4. Quantity of Commentary</td>
<td>13.64</td>
<td>11.82</td>
<td>1.00</td>
<td>61.00</td>
</tr>
<tr>
<td>5. Quantity of Hyperlinks</td>
<td>6.55</td>
<td>6.72</td>
<td>0.00</td>
<td>40.00</td>
</tr>
<tr>
<td>6. Consistency of Postings</td>
<td>2.66</td>
<td>1.73</td>
<td>1.00</td>
<td>8.00</td>
</tr>
<tr>
<td>7. Consistency of Commentary</td>
<td>3.15</td>
<td>2.31</td>
<td>1.00</td>
<td>10.00</td>
</tr>
<tr>
<td>8. Consistency of Hyperlinks</td>
<td>2.25</td>
<td>1.74</td>
<td>0.00</td>
<td>8.00</td>
</tr>
<tr>
<td>9. Average Posting Length</td>
<td>212.88</td>
<td>79.12</td>
<td>92.33</td>
<td>409.00</td>
</tr>
<tr>
<td>10. Average Comment Length</td>
<td>75.57</td>
<td>24.77</td>
<td>31.00</td>
<td>137.88</td>
</tr>
<tr>
<td>11. Relational Motivation for Blogging</td>
<td>4.43</td>
<td>1.42</td>
<td>1.00</td>
<td>7.00</td>
</tr>
<tr>
<td>12. Classroom Community; Week 4</td>
<td>3.80</td>
<td>.51</td>
<td>2.90</td>
<td>5.00</td>
</tr>
<tr>
<td>13. Classroom Community; Week 10</td>
<td>3.94</td>
<td>.54</td>
<td>2.80</td>
<td>5.00</td>
</tr>
<tr>
<td>14. Self-reported GPA</td>
<td>3.10</td>
<td>.54</td>
<td>2.00</td>
<td>3.96</td>
</tr>
<tr>
<td>15. Internet Self-Efficacy</td>
<td>5.53</td>
<td>.81</td>
<td>3.92</td>
<td>7.00</td>
</tr>
</tbody>
</table>

*Note.* ECR = Experiences in Close Relationships Questionnaire; GPA = grade point average
### Table 2

**Intercorrelations Among Study Variables (N = 53)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ECR – Anxiety</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ECR – Avoidance</td>
<td>.36&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Posting Activity</td>
<td>.03</td>
<td>.20</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Comment Activity</td>
<td>-.04</td>
<td>.12</td>
<td>.35&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Hyperlink Activity</td>
<td>.08</td>
<td>.34&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.49&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.52&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Average Word Length</td>
<td>.04</td>
<td>.24&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.02</td>
<td>.10</td>
<td>.25&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Relational Motivation for Blogging</td>
<td>.11</td>
<td>-.14</td>
<td>.12</td>
<td>.26&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.05</td>
<td>-.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Classroom Community; Averaged</td>
<td>-.28&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.21</td>
<td>.02</td>
<td>.23&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.13</td>
<td>.11</td>
<td>.49&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Self-reported GPA</td>
<td>.06</td>
<td>.21</td>
<td>.20</td>
<td>.26&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.52&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.29&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.17</td>
<td>-.25&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>10. Internet Self-Efficacy</td>
<td>-.25</td>
<td>-.24&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.19</td>
<td>.41&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.22</td>
<td>-.13</td>
<td>.57&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.47&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-.04</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note. ECR = Experiences in Close Relationships Questionnaire; GPA = grade point average*

<sup>a</sup> p ≤ .10,  <sup>b</sup> p ≤ .05,  <sup>c</sup> p ≤ .01
Table 3

Hierarchical Regressions Predicting Students’ Observed Community Blogging Activity (N = 53)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Posting Activity</th>
<th>Comment Activity</th>
<th>Hyperlink Activity</th>
<th>Average Word Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>ΔR²</td>
<td>ΔF</td>
<td>β</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reported GPA</td>
<td>.21</td>
<td>.28</td>
<td>7.65</td>
<td>.31</td>
</tr>
<tr>
<td>Internet Self-Efficacy</td>
<td>.17</td>
<td>.42</td>
<td></td>
<td>.22</td>
</tr>
<tr>
<td>Step 2</td>
<td>.04</td>
<td>.92</td>
<td></td>
<td>.08</td>
</tr>
<tr>
<td>ECR – Anxiety</td>
<td>-.00</td>
<td>.00</td>
<td>.99</td>
<td>.02</td>
</tr>
<tr>
<td>ECR – Avoidance</td>
<td>.20</td>
<td>.19</td>
<td></td>
<td>.30</td>
</tr>
</tbody>
</table>

*Note. GPA = grade point average; ECR = Experiences in Close Relationships Questionnaire

a *p ≤ .10,  b *p ≤ .05,  c *p ≤ .01
Appendix D: Figures
Figure 3. The two-dimensional model of individual differences in adult attachment.

Figure 4. The hypothesized indirect effects of students’ attachment anxiety on their observed community blogging activity via their relational motivation for blogging. (a) Illustrates mediation models explaining the quantities/consistencies/lengths of students’ written contributions. (b) Illustrates mediation models explaining the quantity/consistency of students’ hyperlink contributions.
Figure 5. The hypothesized indirect effects of students’ attachment avoidance on their observed community blogging activity via their relational motivation for blogging. (a) Illustrates mediation models explaining the quantities/consistencies/lengths of students’ written contributions. (b) Illustrates mediation models explaining the quantity/consistency of students’ hyperlink contributions.
Figure 6. The hypothesized indirect effects of students’ attachment anxiety on their observed community blogging activity via their relational motivation for blogging examined at varying levels of students’ sense of classroom community. (a) Illustrates moderated mediation models explaining the quantities/consistencies/lengths of students’ written contributions. (b) Illustrates moderated mediation models explaining the quantity/consistency of students’ hyperlink contributions.
Figure 7. The hypothesized indirect effects of students’ attachment avoidance on their observed community blogging activity via their relational motivation for blogging examined at varying levels of students’ sense of classroom community. (a) Illustrates moderated mediation models explaining the quantities/consistencies/lengths of students’ written contributions. (b) Illustrates moderated mediation models explaining the quantity/consistency of students’ hyperlink contributions.