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Mother and father differences regarding web camera installation in the early childhood setting

Catherine Susan Mackey

To the Graduate Council:

I am submitting herewith a thesis written by Catherine Susan Mackey entitled "Mother and father differences regarding web camera installation in the early childhood setting." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Child and Family Studies.

Michael Lane Morris, Major Professor

We have read this thesis and recommend its acceptance:

Jan Allen, Priscilla Blanton
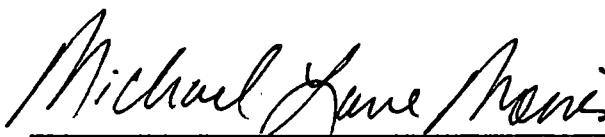
Accepted for the Council:
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Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)
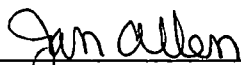
To the Graduate Council:

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Mother and Father Differences Regarding

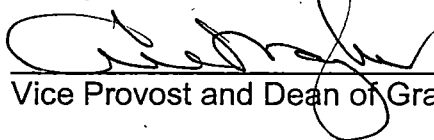Web Camera Installation in the Early Childhood Setting

A Thesis

Presented for the

Master of Science Degree

The University of Tennessee

Catherine Susan Mackey

December 2001

DEDICATION

His intelligence inspired me to learn, his adversity inspired me to persevere, and his legacy inspired me to achieve. This thesis and Master's Degree is dedicated to my late father, Eugene Mackey. With his death I lost my kindred spirit—with his memory I find peace.

Invictus

Out of the night that covers me,
    Black as the Pit from pole to pole,
I thank whatever gods may be
    For my unconquerable soul.

In the fell clutch of circumstance
    I have not winced nor cried aloud.
Under the bludgeonings of chance
    My head is bloody, but unbowed.

Beyond this place of wrath and tears
    Looms but the horror of the shade,
And yet the menace of the years
    Finds, and shall find me, unafraid.

It matters not how strait the gate,
    How charged with punishments the scroll,
I am the master of my fate;
    I am the captain of my soul.

William Earnest Henley

ACKNOWLEDGEMENTS

ABSTRACT

The purpose of the present study was to explore the responses of parents in the Child Development Lab (CDL) regarding the installation of web cameras in the early childhood classroom. The first hypothesis investigated whether answers to eight items selected as predictor variables of support for the web camera project were different for mothers and fathers. The second hypothesis focused on the parents' satisfaction with the CDL, and if their satisfaction predicted their support of the web camera project. The participants in the sample were parents with children in the CDL at the University of Tennessee, Knoxville.

Both hypotheses were partially supported with one strong predictor found in each investigation. The installation of the web camera's ability to enhance the parent's relationship with their child elicited stronger support from mothers than from fathers. As for CDL satisfaction, the possibility that the web camera installation could enhance the parent's relationship with their child's teacher was significant for those parents who were also extremely satisfied with the Child Development Lab. Effects of the web camera installation as a societal and educational tool were given as possible applications for parent responses.

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Chapter One

Introduction

The purpose of this study was to examine the differences in opinions of mothers and fathers concerning the installation of Web cameras in an early childhood classroom. A set of items will be discussed in relation to the overall satisfaction with the proposed project and the entire program. This study is exploratory in nature and deals with attitudinal gender differences in the context of a university child development program.

Arguably, the prime years for establishing a successful career are also the prime years for starting a family. Some employers have traditionally considered marriage and children as burdens to a woman's career (Crosby, 1991). Women who have pursued a professional career in addition to family life face the burden of finding adequate child care in the face of horrendous odds. Many families search for affordable, acceptable, and accessible child care. Additionally, many parents hope that their child will not experience periods of illness enabling them to avoid missing work for necessary doctor's appointments. The lack of child care is still a major barrier to women's entry into the work force. Most working parents have trouble arranging child care, and those with the most difficulty also experience the most frequent work disruptions and the greatest absenteeism (Rodgers & Rodgers, 1999). The United States is the only industrialized nation that does not provide adequate child care and parental leave policies supportive of families in which mothers work (Crosby, 1991). Stephanie Coontz (1997) cites The Economic Policy Institute's estimate that it would take $112 billion a year to

bring our children's health, nutrition, and education up to the standards that currently exist in Europe. Findings such as these do little to ease the anxieties of many mothers and fathers who have carefully considered staying home with a sick child against losing their job—the decision is anguishing at best. The best solution allows parents the freedom to work and assurance of security with their child's care.

When the changes in early childhood education during the last twenty years are coupled with the advances in technology during that same time, the possibilities for the future are greater than ever before. Parents pursue quality child care for their children, seeking curriculum, convenience, and confidence in their child's daily care. Although our society values both business and family, each is at loggerheads to provide for the increasing needs of parents and children. Rodgers and Rodgers (1999) suggest that the number of companies providing child-care support will increase significantly as the competition for labor grows and more members of the labor force seek help with dependent care. Clearly, companies and business are recognizing and investing in family-related amenities that they hope will promote family well-being and enable their employees to contribute profitably to the corporation.

Statement of the Problem

This study began as an effort to determine parental attitudes regarding the installation of Web cameras into the classrooms of the University of Tennessee Child Development Lab (CDL). The first objective of this study was

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to examine gender differences in the level of parental support of the proposed project. The second objective of this study was to determine if a variable measuring satisfaction with the Child Development Lab is related to the support or opposition of the camera installation proposal.

This study contributed to the available literature in numerous ways. First, the literature concerning Web cameras in the classroom is primarily available in the popular press. These publications include weekly or monthly parenting and business journals, and daily newspapers. Literature in parenting journals usually describes the safety features that a Web camera in the classroom can provide parents. Business journals regard the cameras as necessary and useful measures for child care centers hoping to increase both revenue and enrollment. Most newspaper articles detail the increase in usage of Web cameras and the pleasure that parents find in viewing their child across the Internet. Companies market their services regarding available Web camera use and installation to child care providers and parents through the Internet. These websites showcase the advantages of the cameras, using testimonials from users as a marketing tool to sell their products.

Child development literature has yet to study the topic in even its most recent publications. At the most recent annual conference of the National Association for the Education of Young Children (NAEYC), professionals representing countries with an international perspective presented 929 workshops (Annual Conference Final Program, 2000). Not one of these professional sessions discussed the use of Web cameras in early childhood

settings. Very rarely does the literature discuss more than the idea of Web cameras in the classroom, giving no attention to the concerns of parents, staff, and educators who work with these cameras. Finally, in all bodies of scholarly literature, there is no reference to the availability or use of Web cameras in child care settings.

Exploring the variables related to support of the project is crucial, because not all parents have a desire for this service to be part of their child's classroom. As a researcher it is imperative to determine the reasons why parents support or oppose the topic. Because child care centers are constantly encouraged to install Web cameras as both a marketing tool and an extra security measure, early childhood professionals need scholarly research to guide their choices about camera installation. If installation of Web cameras is touted as the next-best-thing to being present in the classroom, parents and child care providers have a responsibility to have all available information close at hand.

Theoretical Framework

There is no single conceptual framework that can guide the present and future study of child care and family development. Because of the uniqueness of this study, a variety of theories might be used to support or oppose the use of web cameras in the early childhood classroom. The theoretical perspective used to guide the present study was ecological systems theory.

Urie Bronfenbrenner, the father of ecological theory perceives the ecological environment as "a set of nested structures, each inside the next, like a

set of Russian dolls" (Bronfenbrenner, 1979). The family is such a complex structure and can be affected by a multitude of outside forces, like the larger dolls in the nested set. The ecology of human development makes a distinct contrast between the person, the environment, and the interaction between them. Bronfenbrenner (1976) describes this ecology as the progressive, mutual accommodation, throughout the life span, between a growing human organism and the changing immediate environments in which it lives. This process is also affected by larger social contexts, both formal, and informal, in which the settings are embedded. In the original ecological theory, there are four structures, each contained within the next.

A microsystem is the relationship between the developing person and the environment in a particular setting. For the present study, the developing person is the parent with a child in the Child Development Lab, with a specific focus on the opinions of parents completing the web camera questionnaire. The mesosystem comprises the interrelations among the major settings of the developing person. The mesosystem for a parent in the Child Development Lab might encompass interactions among family, work, church, and social life—each an individual microsystem. The exosystem is an extension of the mesosystem because it involves the interaction between outside settings. The exosystem refers to the settings in which events occur that affect what happens in the setting containing the developing person. The world of work, the neighborhood, mass media, government, communication, and transportation are all settings in which events affect the developing person even without the person's active

participation. The macrosystem refers to the overarching institutions of the culture or subculture. Macrosystems are conceived as structures and as carriers of information that may motivate particular agencies, social networks, or activities (Bronfenbrenner, 1979; Bronfenbrenner, 1976). For example, a city block may contain a school, park, diner, and post office. Each building functions much like another, but relations between these buildings and people are not the same for well-to-do families as for the poor.

Picturing these four systems as a nested structure, each contained within the next, the second and third structures are of particular concern for the present study. The advent of web cameras in the classroom can extend the existing mesosystem by moving the developing person into a new setting, namely, the world of technology. Technology and computer science involves more than software and hardware, it often changes a person's life for better or worse. The exosystem will impact the developing person as decisions are made by Child Development Lab administration, affecting teachers, parents, and children. The decision to place web cameras in a classroom would affect the parent's workplace (microsystem), the relationship between work and parenting (mesosytem), and area child care centers seeking to upgrade their facilities (exosystem).

The ecology of human development was also salient to the present study in understanding the role, if any, that demographics played in the opinions of parents completing the questionnaire. While the specific variables of education, income, and race are not explored in this study, future analyses might prove their

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significance. The present study will focus on the parent's gender and whether the opinions regarding web cameras vary between fathers and mothers. In considering Bronfenbrenner's theory, the microsystem for males and females is vastly different, thus creating different interrelationships between the other systems.

Conceptual Definitions

For the purposes of this study, the terms listed below are defined using an online encyclopedia for computer technology. (www.pcwebopaedia.com, 1996).

Encryption is the translation of data into a secret code. Encryption is the most effective way to achieve data security. To read an encrypted file, you must have access to a secret key or password that enables you to decrypt it.

Internet is a global network connecting millions of computers. As of 1999, the Internet has more than 200 million users worldwide, and that number is growing rapidly. More than 100 countries are linked into exchanges of data, news and opinions. Each Internet computer, called a host, is independent. Its operators can choose which Internet services to use and which local services to make available to the global Internet community.

Streaming video is a technique for transferring data in a video format that can be processed as a steady and continuous stream. For streaming to work, the client side receiving the data must be able to collect the data and send it as a steady stream to the application that is processing the data and converting it to sound or pictures.

Web Camera/Digital Camera is a camera that stores images digitally rather than

recording them on film. Once a picture has been taken, it can be downloaded to a computer system, and then manipulated with a graphics program and printed.

Website is a site (location) on the World Wide Web. Each Web site contains a home page, which is the first document users see when they enter the site. The site might also contain additional documents and files. Each site is owned and managed by an individual, company or organization.

World Wide Web is a system of Internet servers that support specially formatted documents. The documents are formatted in a language called HTML (*HyperText Markup Language*) that supports links to other documents, as well as graphics, audio, and video files. This means you can jump from one document to another simply by clicking on hot spots. Not all Internet servers are part of the World Wide Web.

User ID/Username is a name used to gain access to a computer system. Usernames, and often passwords, are required in multi-user systems. In most such systems, users can choose their own usernames and passwords. Usernames are also required to access some online services.

Parent is defined as the person or persons who have legal responsibility for a child. The relationship may be of a biological (including grandparents), adoptive, or stepparent nature.

Child is defined as one receiving care from an adult. For the parent questionnaire, "child" was defined as one who attended the University of Tennessee Child Development Lab on a regular enrollment basis.

Chapter Two

Literature Review

In his book <u>New American Reality</u>, Reynolds Farley describes the changing needs for child care by outlining previous forms of child care. When society was dominated by agrarian labor and rural settings, both parents cared for their children, with the family sharing household tasks (Farley, 1996). Farley cites the urbanization of fathers as the impetus for the first child care revolution. As fathers left home to work in factories and offices, women devoted their time to household duties and child rearing. Employer practices of limiting women's wages and working conditions coalesced with strong societal norms to keep most women at home after marriage and childbirth (Farley, 1996). The second child care revolution transpired after 1965 when married women entered the workforce to take jobs in shops, factories, and offices. According to Farley, parents relied upon a barter system or paid someone else to care for their children while they worked.

Maternal Guilt

Among two-parent families, 91% of whites and 85% of blacks are working parents with young children (Bronfenbrenner, McClelland, Wethington, Moen, & Ceci, 1996). Single and married mothers are in the labor market in nearly equal proportions, and over 75 percent of those with preschool children are employed outside the home (Berk, 1996). While women reported a great deal of

satisfaction from outside employment, working mothers still faced the daily burden of guilt. In her 1984 work, *Mother Care/Other Care*, Sandra Scarr suggested that, "Society sends mixed messages about women's rights and about women's proper place," making it difficult women to be both good mothers and good women (cited in Crosby, 1991, p. 114). Juggling multiple demanding roles within the work and family domains has become increasingly difficult for thousands of women. A study at two high-tech companies found that the average working mother has a cumulative workweek of 84 hours between her home and her job. This is compared with 72 hours for male parents and 50 hours for married men and women with no children (Rodgers & Rodgers, 1999). Managing the dueling forces of work and family are difficult, especially for women with young children.

Any event that causes anxiety for a child or indicates less than satisfactory development almost always causes the mother to feel some degree of inadequacy and guilt. Why do these feelings violate mothers more than fathers? For years, women faced the stereotype that everything going wrong with their child's life was caused by their employment. Women felt guilty about working and guilty about not staying home. After reviewing years of research in this area, maternal employment was only one of the many factors that influenced children's well-being, and not the most critical determinant (Crosby, 1991). The reality of today is that women must work, and their work is not universally detrimental to their child. Jacqueline Lerner (1994) summarizes the feelings of a multitude of working mothers: "Women still feel guilty if they must work, guilty if

they desire to work, depressed if they have to go on welfare to support their children, and upset if they cannot afford high-quality child care" (p. 22). It seems that the best of both worlds could be achieved when women can be assured of their child's safety and well-being in child care, while still enjoying a fulfilling career and life as a woman, a wife, and a mother.

Computers

According to data from the Annie E. Casey Foundation's 1997-1998 research, 73% of children in the U. S. live in a household without Internet access. Forty-nine percent of children live in a household without a computer, yet 66% of children under age 6 live with two working parents (Kids Count, 2000). While employers provide technology to their employees, this exposure is limited to the workplace. Children who have technology experiences with computers in child care or school have far fewer opportunities for computer activities in their home settings.

In 1996, the National Association for the Education of Young Children composed a position statement to guide teachers and administrators in their use of technology. "Technology and Young Children—Ages 3 through 8" refers to the use of computer technology and the responsibility of early childhood educators to critically examine the impact and benefit of technology on children. NAEYC suggests that educators use professional judgment in evaluating and using the computer as a learning tool by applying the same criteria they would use for any other curriculum experience (1996). Computers should supplement

and can not replace highly valued early childhood activities and materials such as art, manipulatives, sand, water, books, and dramatic play (NAEYC, 1996). Computers are intrinsically fascinating for young children, leading them into new worlds of sounds, graphics, and digital dimensions. Use of computer software should mirror the collaboration, problem solving, and conversation which occurs when children are engaged in a non-technological activity (Kneas, 1999). Parents are encouraged to collaborate with their child's teacher to discuss choices of software, time spent at the computer, and available alternate activities (Buckingham, 1999; NAEYC, 1996). Of the parents that own home computers, 70% have purchased educational software for their children's use (NAEYC, 1996). While technology in the form of glamorous software can bring excitement to an early childhood classroom, hands-on experiences from learning through play are still the most important lessons for children's development (Kneas, 1999). NAEYC suggests that early childhood educators use technology as "a tool for communication and collaboration" among professionals, as well as a catalyst for teaching children (1996, p. 5).

Web Cameras

A Web camera, also known as Webcams or Netcams, are digital cameras wired to a computer that transmits the captured images across a phone line to a Web page display (Featherly, 1998). The user-friendly design behind these cameras allows anyone with minor computer knowledge to aim a Web camera at anything and display the resulting images on the Internet. The infancy of Web

camera usage began with publicity about the most mundane of camera uses (e.g. watching a cat sunning itself on a rug) (Featherly, 1998). The KittyCam demonstrated the compelling appeal of reality entertainment for the masses. Anyone with an Internet connection could log on and see a black cat's latest moves. This type of attraction propelled government organizations to use a variety of outdoor Webcams to provide continuous reports on news, weather, and traffic. The Web camera images provide raw coverage of any event, coverage available to anyone in the world whenever they care to peek in on the action (Featherly, 1998). A recent Internet article provided links to 1,100 outdoor Web cameras worldwide, including a watering hole on an African wildlife refuge and traffic-filled streets in Atlanta (Biondo, 2000). The Web camera's successful illustration of these unique areas led to further, more practical uses—namely, the early childhood classroom.

Child Care and Internet Cameras

The future is now—with a product marketed as "Big Brother meets Mary Poppins" (Sager & Reinhardt, 1997). Technology, marketing, and parenting combined to create a new form of child care security: Internet cameras. Digital cameras are installed in classrooms where live video feed is transmitted to an audio/video-enhanced computer then through a modem to a Website. From this Website, parents or guardians with a password can log on and see video transmission from their child's classroom at any moment in the child care day (The Gordon Report, 1996). Most companies providing this service use a

system of cameras, placed strategically to capture moments of the child's day (e.g. BeThere Connection, 2001; ParentWatch, 2000; KinderView, 2000). Parents see live streaming video or frozen images, updated every 30 seconds, from across town and across the globe. The interface supports national and local advertising with full sound and motion. The cameras can be adjusted for brightness and color while changing the viewing angle to narrow or wide, capturing the best view of the children at play (The Gordon Report, 1996). Users of the system need a computer and a standard Internet connection. After typing in a user name and a password, the images are then displayed on their personal computer screen (Biondo, 2000).

A Historical Perspective

The use of Internet cameras in the classroom began as a profitable business, blossoming from parents who desired an extra measure of security in their child care environment. Entrepreneurs capitalized on the opportunity to display images from early childhood classrooms to parents who might feel insecure about their child's care or guilty for their hours spent at work. One of the first companies to market this technology was Simplex Knowledge from White Plains, New York, providing "I See You" equipment for early childhood programs (Shellenbarger, 1998). IBM is helping to market and install "I See You" systems and expects worldwide demand of this type of technology. "They may be in Israel, and they want to check in on the child", says Lori Weinstein of IBM (Jenkins, 1997). Jack Martin, a co-creator of Simplex Knowledge says their

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company is, "re-creating the nuclear family from a distance" (Lombardi, 1997).
Martin says that families with two working parents share two primary emotions—
guilt and anxiety, and "I See You" technology can alleviate both (Lombardi,
1997).

One of the first centers to seize the marketing potential of Internet
Cameras was Kids-R-Kids, headquartered in Marietta, GA. The company now
boasts the KinderCam system in all its new and existing centers. Fixed video
cameras are installed in every classroom, the cafeteria, the gym, and the
playground (Jenkins, 1997). The system cost the company $15,000 to install
and parents pay $24.99 a month for the service (Sager & Reinhardt, 1997). As
evidence of the popularity and interest in these camera systems, history from
only three years ago gives a lesson in inflation. When first available in 1997, this
technology sold for $6,500 to participating centers with a monthly maintenance
fee of $20 to parents (The Gordon Report, 1996).

Seth Steinberg, founder of ParentNet, the company that installs
KinderCam cameras, says relief to parents when checking in on their child just
goes "right to the bone" (Sternbergh, 1997). One satisfied parent reports, "It
eased my mind because I could see what was going on. It allowed me to go
back to work" (Bussa, 1998, p. 28). Just as companies have found that offering
on-site child care helps parents rest easier about their children's needs, the
opportunity to view their child at any point of the day by logging on to the
classroom provides a further increase in productivity and employee well-being
(Gross & Veomett, 1997). Adam Aronson, Chairman and CEO of ParentWatch

hatched his business with the proposal, "I want to make sure the mom who drops the kid off who's crying has a way—15 minutes later online—to know that he's okay" (Sessa, 2000). Kids-R-Kids now offers a demonstration of the service to potential clients on its Website, providing a further indication of the marketing potential that these services will have in the future of child care.

Concerns About Internet Cameras

While companies are taking advantage of the partnership between parents and technology, the child care worker has a tiny, but valid voice in the system. It is currently illegal for anyone other than law-enforcement agencies to conduct audio recording without consent, but surreptitious videotaping is legal, depending on where the camera is placed and what type of camera is used (Lombardi, 1997). Cameras can be placed in undisclosed locations, such as department stores or office buildings, without threat to the patron's privacy. Companies emphasize that their business is not spying or surveillance and Simplex Knowledge states they would not install a concealed camera (ParentWatch, 2001; Jenkins, 1997; KinderView, 2000). The cameras are placed in the open and workers, children, and parents are aware of the usage. Instructors may still feel uncomfortable on camera, but parents' comments have made all the difference. In a business that receives little professional recognition, parents better appreciate how hard the teachers work. A testimonial of a BeThere Connection client states:

"Before my center got the cameras, I didn't think about what teachers

have to do in addition to teaching. Now I watch teachers wipe noses, kiss booboos, pass out hugs, hold bugs, and have their skirts tugged. A lot of mothering goes on in preschool" (BeThere Connection, 2001).

Child care center directors see the program as a valuable selling point, and a way to supervise employees who may not meet quality standards. As one director states, "No center is perfect, so this is a check and balance" (Rabinovitz, 1997).

Another primary concern with the installation of Internet cameras in the classroom is the security risks involved with use of the Internet. Critics of the system assert that the camera might turn into a form of Big Brother, infringing on the privacy of employees and children. Others fear that hackers and pedophiles can access the site with less than wholesome intentions (Rabinovitz, 1997). Companies quell these fears by using state-of-the-art security measures, superior to those used by online banking services (KinderView, 2000). Each classroom has a code name and parents use the code name, a personal user ID number, and a password before accessing the pictures (Bussa, 1998). The parent or family that purchases the service can authorize others to use their password, permitting grandparents and friends to also view the children (Sessa, 2000). However, the Website gives no identifying information about the center, so hackers who might access the site have no identification of the child, the center, or the city where the cameras are viewing (Biondo, 2000). To maintain clients' satisfaction, security is a top priority for companies providing the service. Users and centers alike are protected by encrypted images and password

rotation, ensuring privacy and security on all levels (BeThere Connection, 2001; ParentWatch, 2000; KinderView, 2000).

Overview of the Industry

Providing Internet cameras in the classroom is relatively new and more technologically than developmentally based. The available literature exists primarily in popular press articles, business journals, and Website press releases. To date, no empirical research documents the success or failure of these services, especially where parental satisfaction is concerned. To understand the marketing techniques and the intricacies of the service, the following is a review of three companies that provide camera services to child care centers and authorized users.

The *ParentWatch* Website (www.parentwatch.com) is subtitled with the phrase "Keeping Families Connected", a slogan echoed by the founder Seth Aronson's statement, *"ParentWatch* is a keeping-families connected tool, rather than a watch-your-kid and monitoring tool" (ParentWatch, 2001; Sessa, 2000). The company's Website provides a demonstration of how the service operates, detailing security measures and system requirements. The system is advertised as "free to qualifying child care centers", a phrase that is explained through investment capital and advertisements. *ParentWatch* installs the remote-viewing equipment, valued at $15,000, free to a child care center. The center is provided with two to three wall-mounted cameras in each room and high speed Internet access at no charge (Sessa, 2000). The company also provides each center

free network space on the *ParentWatch* Website to post lunch menus, activity schedules, and announcements that parents can view with their user ID and password. The child care industry is "fragmented" in the words of a *ParentWatch* partner. Because about 95% of child care centers are privately owned, *ParentWatch* uses its network and capital as leverage to broker deals with school supply companies and food vendors, passing the savings on to their clients. Participating centers receive advertised discounted prices and *ParentWatch* gets a portion of the sales from vendors (Sessa, 2000). Parents navigating the Website can refer their center and get free service for three years. The site offers links to parenting resources, featured articles, and even shopping. Parents can search for a *ParentWatch* center in their area and read parents and journalists' comments about the service. The company states that their goal is to keep families connected, but also to provide centers with the necessary tools to grow as a business and better communicate with parents and children (ParentWatch, 2001).

The Website for *BeThere Connection* (www.bethereconnection.com) starts with a history that cuts to the core of this blossoming business:

> Progressive Childcare systems was started by a group of working parents, who shared the concerns and frustrations of millions who must begin each work day by leaving their children to someone else's care (BeThere Connection, 2001).

The company boasts that parents can view current and past images of their children through archived images, cached on the same Website. The company staff keeps in touch with needs of parents and centers through Advisory

Committee members across the country. Staff members are affiliated with early childhood professional organizations such as the National Association for the Education of Young Children and the National Child Care Association. *BeThere Connection* provides a unique look at the benefits for teachers who are viewed through the service. "Child care teachers play a critical and pivotal role in our modern hectic society." The company recognizes that parents often notice problems rather than accomplishments; meaning teachers are not given the feedback and praise they deserve (Link-Teachers). Center directors and Administrators are assured they can use the service to document the quality of teaching and supervise classrooms without disturbing the flow of activities. The company's e-mail feature allows administrators to communicate policies and announcements directly with parents, assuring uniformity between the message and the messenger. The system used by *BeThere Connection* is comparable to others in the industry. Each center has an individual Website for posting policies, menus, lesson plans, and schedules, with the security measures employed by other companies. A mother's testimonial states the obvious: "With cameras in the classroom and the lesson plans on the Web, I know what is going on all the time. It feels better" (www.bethereconnection.com/testimonials).

KinderView (www.kinderview.com) is marketed first to the parent, providing the opportunity to "better understand a child's progress and development...the activities and interactions of a child" (KinderView, 2000). Users are offered peace of mind through encrypted images that are updated every one to three seconds, depending on their personal computer's modem

connection speed. The headline "Security Exceeds Military and Financial Standards" is sure to catch the eye of computer-savvy members. *KinderView* uses several different screening levels including 168-bit authentication codes, password rotation, and automatic log-offs. Service is available through remote system diagnosis, allowing *KinderView* professionals to repair problems without entering the center. Staff at *Kinder View* monitors each system from a central location, pinpointing system problems and providing repairs from their location, saving a service visit to each site. Administrators are encouraged to use the system as a revenue and enrollment builder. Offering valuable services makes the center more attractive to current and future parents. Design features are similar to other company profiles. Parents can communicate directly with the center and with other parents through private message centers, while staff can provide parents with private messages regarding their own child's progress reports, disciplinary actions, and health concerns. The site provides access to informative resources on parenting, including a link to "Our Psychologist", providing answers for child care questions. Testimonials and press releases are supplied, including this declaration from a preschool owner:

> "What is in the best interest of the children is best [for the preschool]. We are video taping ourselves. We aren't afraid of that. We wouldn't put cameras in if we didn't think we were doing a great job. This is kind of an insurance to me" (www.kinderview.com/news).

These three companies encourage use of their services as a support for teachers and a safeguard for parents. Security is paramount, touted as exceptional by each company. The lure of increased communication with both

their child and the center staff is a boon for parents in the "Age of Anxiety" (Sternbergh, 1997).

Industry Summary

Characteristics of the leading companies in the industry for viewing child care classrooms with Internet cameras include:

- Encrypted password security systems: 168-bit authentication codes, password rotation, and automatic log-off for unauthorized users.

- Multiple camera mounts display real-time images from the classroom to the Website.

- Average parent cost is between $20 and $25 a month for total access to the classroom cameras and the company Website. For *ParentWatch* the monthly fee includes access for six family members (The Gordon Report, 1996; Sager & Reinhardt, 1997).

- Average installation cost ranges from $6,500 to $15,000 for each center enrolled with a parent company (The Gordon Report, 1996; Sessa, 2000).

- Archived images: images from the camera can be stored for up to two days, allowing parents and teachers to view previous activities.

- Revenue and enrollment builder: participating centers can use the feature as an added inducement for parents to enroll their child.

- Bulletin Board: allows a parent to view upcoming events in the center, notes from the teachers, and necessary information such as policies, menus, closing dates, etc.

Chapter Three

Methods

This study involved the primary analysis of data collected as part of a technology project by Dr. Lane Morris. The population for the study was mothers and fathers with children currently enrolled in the University of Tennessee Child Development Lab.

Sample Characteristics

The sample included mothers and fathers residing in Knoxville, Tennessee and the surrounding counties. A response rate of 67% was achieved from a population size of 198. Of the 133 participants, gender of parents was 71 mothers and 62 fathers. A total of 55 parenting couples {i.e., mother and father of the same child(ren)} returned the questionnaire. Thirteen questionnaires were received in which one parent returned a questionnaire, while the other parent chose not to participate. The remaining 10 questionnaires were received from mothers who have sole custody of their child or who were divorced and have no contact with the child's father. In reporting present marital status, 81% of the participants were currently married, 5% were divorced, and 9% were single. Another 5% reported being married and separated or divorced and remarried. Percentages for each of the demographic variable response categories are presented in Table 1.

Table 1: Demographic Descriptive Statistics

Variable	Response Categories	Percent
Gender	Father	46.6
	Mother	53.4
Legal Guardian	Both mother and father	92.5
	Mother only	6.0
	Other	1.5
Number of Daughters Enrolled	One daughter	43.6
	Two daughters	3.8
Number of Sons Enrolled	One son	51.9
	Two sons	1.5
Location of Enrollment	White Avenue	56.4
	Laurel	22.6
	Golf Range	21.1
Highest Degree Earned	High school 9-12	1.5
	Some college	9.0
	Bachelor's degree	28.6
	Master's degree	33.1
	Doctorate	24.8
	Other	2.3
Present Marital Status	Single	9.0
	Married	81.2
	Divorced	5.3
	Married and separated	.8
	Divorced and remarried	3.8
Occupation	Professional, technical	75.9
	Managers, officials	9.0
	Clerical, sales	3.8
	Craftspeople, crew, kindred	1.5
Personal pre-tax income	Less than $5,000	6.0
	$5,000 to $7,499	3.8

Table 1: Continued

	$7,500 to $9,999	.8
	$10,000 to $14,999	2.3
	$15,000 to $19,999	3.0
	$20,000 to $24,999	6.0
	$25,000 to $34,999	10.5
	$35,000 to $49,999	25.6
	$50,000 or more	33.1
Ethnic/Racial Background	White/American, Caucasian	79.7
	Black American	3.8
	Latin American, Hispanic	3.0
	Oriental American, Asian	12.0

To facilitate generalization from this sample to the surrounding area, demographic data were compared to 2000 U.S. Census data for Knox County, Tennessee. The ethnic backgrounds of this sample were consistent with the regional ethnic distribution and the ethnic distribution of the Child Development Lab. From the sample of 133 parents, 80% were American/Caucasian, 13% were Asian, and 7% were composed of African-American, American Indian, and Latin American, Hispanic. According to the 2000 U. S. Census, the ethnic variation for families with children in Knox County, Tennessee, is as follows: eighty-eight percent white, 9% black, 1.3% Asian-American, 1.3% Hispanic, and 0.7% American Indian (U. S. Bureau of the Census, 2000).

The Child Development Lab enrollment system allows preference for staff and faculty at the University. The sample, as expected, was highly educated, with the majority of parents holding at least one college degree. In reporting highest degree earned, 25% had a Doctorate degree, 33% had a Master's Degree, and 29% had a Bachelor's degree. Two respondents (1.5%) reported their highest education as a high school diploma, with 9% completing some college education.

When categorizing their present occupation, 76% of parents had professional careers, 9% were managers, and 4% held clerical or sales jobs. Of those choosing to respond when asked to report personal pre-tax income, 33% had incomes of $50,000 or more. The average salary was in the range of $25,000 to $34,999.

The most recent U. S. Census data reported 55 million married-couple family households in 2000, representing 77 percent of all households in the U.S. (Fields & Casper, 2001). U. S. Census data reports that 50% of families in Knox County were married couples in 2000. Other households measured were female-headed (11%) and family with children under 18 years old (29%). In the present study, marital status was reported as married (81%), divorced (5.3%), divorced and remarried (3.8%), and married and separated (0.8%).

When questioned about the legal guardianship of their child, 93% reported that both mother and father were legal guardians. Of the remaining participants, 6% or ten mothers reported that they had sole guardianship of their child. At the time of the questionnaire, there were 103 children enrolled in the CDL. Of the parents in the sample, 72 had a son enrolled and 64 had a daughter enrolled. A majority of parents had only one child in the program. Location of enrollment was commensurate with yield of questionnaires. The White Avenue preschool location housed 56% of the sample's children and the largest return of questionnaires were from those parents. The Laurel Infant/Toddler program housed 23% of the children, and the Golf Range Toddler program housed 21% of the children.

Procedures

During the child's enrollment process, parents are informed that their child(ren) may be requested to participate in the ongoing research agenda associated with the Child Development Lab (CDL). Parents sign a release form

to allow their child to act as a participant in occasional research projects conducted by university-affiliated faculty and students. The proposed project to place Internet cameras in two classrooms was previously approved by the Child Development Lab Policy Committee (CDLPC). The current study solicited participation from parents in the three CDL facilities: White Avenue, Laurel, and Golf Range. In each location, parents and children have a mail folder for receiving classroom information and other important documents. Questionnaire cover pages with headings for "Mothers" and "Fathers" were created using colored paper for differentiation. A separate questionnaire for mothers and fathers was placed into each mail folder, with attention given to placing one questionnaire into the folders for those children with one parent. If the parent chose to participate, the completed questionnaire and consent form were to return to a designated envelope in each facility.

Follow-up efforts to encourage parental response began the first week after parents received the questionnaire. Large signs were posted on all the classroom doors, reminding parents to either retrieve or return the questionnaire to their child's classroom. Without follow-up mailings, response rates would be less than half those normally attained by using the survey model of Total Design Method (Dillman, 1978). The present study employed the use of reminder notices placed in each child's mail folder. The notices contained a brief note from one of the principal investigators, appealing for the questionnaire's return and suggesting that parents make contact if they needed assistance. These notices were used each week for four weeks, with changes in color and content

for each "mailing." Each follow-up mailing should be designed as a crescendo with new and more persuasive appeals for stronger attempts at respondent response (Dillman, 1978). Dillman further suggests a replacement questionnaire sent to nonrespondents after three weeks. The present study utilized data management to determine which questionnaires were not returned and supplied replacement questionnaires after five weeks. Because of the limited budget associated with the present study, and the nature of using Child Development Lab parents, techniques such as certified mail, telephone interviews, and face-to-face interviews were not employed. During weekly staff meetings, teachers were asked to encourage parents to complete and return the questionnaires. Toward the end of the survey period, parents who had not responded received two reminder notices each week. After six weeks the parents were given a final reminder that the survey period was nearing its end, and their final responses were needed as soon as possible. The campaign of follow-up mailings yielded a return of 133 questionnaires from a population of 198 parents.

Measures

The questionnaire contained four sections: work-related computer access, home-related computer access, other, and demographics. The "other" section of the questionnaire contained items regarding electronic mail usage, satisfaction with the Child Development Lab, perceptions of the perceived project, and job, parenting, and life satisfaction. The questionnaire also contained a description of the study from the Principal Investigators, and an

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informed consent form (Appendix A). The variables used in the study are defined below and can be found in their entirety in Section II of the questionnaire (Appendix B). The following is a description of the eight items used in this research.

The first item requested that respondents give a "yes" or "no" answer to the question, "If made available by the CDL, would you be interested in observing your child's classroom via the Internet?" Items two through six used a 3-point Likert-type scale of "none", "some", or "a lot", asked respondents to rate their perception of the use of Web cameras in the classroom on five topics. Item two asked respondents to indicate how much the service of Web cameras would interfere with their work. Item three asked respondents to identify if the use of Web cameras would enhance the quality of their relationship with their child. Item four asked respondents to indicate how much the service would improve the quality of their relationship with their child's classroom teacher. The fifth item asked respondents to indicate if the use of Web cameras would make them feel more involved with their child's daily activities at the Child Development Lab. The sixth item asked respondents to indicate if the service would make them feel more secure with the quality of care their child was receiving.

The last items, questions seven and eight, were used to measure the respondent's level of assurance with allowing others to use the Web camera service. The seventh item used in the analysis assessed the respondent's level of comfort with parents of other children in the program accessing the classroom via the Web camera system. Response categories were: "not comfortable at

all", "somewhat comfortable", "very comfortable", and "extremely comfortable." Using the same response categories, the eighth item questioned the use of the Web camera service by grandparents, and significant others who were closely related to children in the Child Development Laboratory. Respondents were given an opportunity to express reactions or questions to the proposed project in an open-ended response directly following these items.

During the process of data collection, some of the returned surveys contained very strong objections to the web camera project. Parents asked questions of the CDL administration and of the principal investigators about the saliency of the web camera project and the security measures that would be used in the installation. To assuage parent fears, a series of meetings were conducted where parents could ask questions and provide suggestions about the camera installation. Participating in these meetings were CDL administrators, the principal investigators of the research, and technical support staff from the University of Tennessee.

Parent attendance at these meetings was lower than anticipated, with between five and ten families represented at each of three meetings. The majority of parent questions concerned the security measures that would be taken to prevent invasion of the children's privacy. UT technical staff assured parents that passwords would be encrypted and images would be sent across a secure server in place in the College of Human Ecology. A staff member from the university would monitor use of the camera images as well as password use and suggest password changes as needed. Those users who supplied incorrect

passwords or failed to follow CDL use and abuse policies would be reported to CDL administration and their rights to use of the camera server would be restricted.

Data Management

The questionnaires were collected and marked with the date received. A separate file was created to identify participants by their code names and also to determine the actual couples that returned the questionnaire. Names were taken from the informed consent form and transferred to a word processing document. The questionnaires were coded with numbers to match the actual questionnaire and the parent's number in the list of participant names. The author performed all data entry. All data analyses were completed using SPSS statistical software, version 10.0.

Data Analyses

Descriptive statistics were utilized to report demographics and sample characteristics. Eight items were selected as items most likely to identify support or challenge to the project. Because each variable involved categorical responses, nonparametric tests were used to compare each of the eight items with each other and with gender of respondent. The independent variables for the hypotheses were the eight items selected from Section II of the questionnaire and can be found in Appendix C. Binary logistic regression was used to identify parental support of the web camera project in relation to satisfaction with the Child Development Lab.

Hypotheses

The hypotheses for this study, stated in the null hypothesis format, were as follows:

1. There are no gender differences in parental attitudes regarding web cameras in the early childhood classroom.

   1a) There are no gender differences in parental responses regarding whether parents would be interested in observing their child's classroom via the Internet.

   1b) There are no gender differences in parental attitudes regarding how the web camera service would interfere with work.

   1c) There are no gender differences in parental attitudes regarding how the web camera service would enhance the quality of the parents' relationship with their child(ren).

   1d) There are no gender differences in parental attitudes regarding how the web camera service would enhance the quality of the parents' relationship with their child(ren)'s classroom teacher.

   1e) There are no gender differences in parental attitudes regarding how the web camera service would make the parents' feel more involved with their child(ren)'s daily activities at the CDL.

   1f) There are no gender differences in parental attitudes regarding how the web camera service would make parents feel more secure with the quality of care that their child(ren) is receiving.

1g) There are no gender differences in parental attitudes regarding how comfortable parents would be in allowing their child(ren)'s classroom to be observed by parents of other children in the program.

1h) There are no gender differences in parental attitudes regarding how comfortable parents would be in allowing their child(ren)'s classroom to be observed by other grandparents and significant others related to other children in the program.

2. The Child Development Lab satisfaction criterion variable (overall satisfaction with the CDL) had no relationship to parents' support of the proposed project.

Chapter Four

Results

Overview of Results

Each of the eight variables posited as critical for identifying support for the proposed web camera project were used in each of the analyses. Hypothesis 1e was accepted because significant differences were found in responses of mothers and fathers regarding the ability of the web camera service to enhance their level of involvement in their child's daily activities. The remainder of the hypotheses for the first analysis were rejected, showing no significant differences between responses of mothers and fathers. The second hypothesis was supported for one of the eight items that was significantly associated with lab satisfaction and support for the web camera project. The variable that appeared to be associated with CDL satisfaction involved the idea of whether the web camera service would enhance the parent's relationship with their child's teacher.

Analysis of Gender and Attitude Variables

Given the exploratory nature of this investigation, eight items regarded as essential for determining overall support for the web camera project were analyzed. Because categorical variables were used, nonparametric tests compared each of the variables with each other and with gender of the respondent. The Kruskal-Wallis test is a nonparametric test of statistical

significance used when testing more than two independent samples (Vogt, 1999). For rank-order data, Kruskal-Wallis (symbolized H) is similar to a one-way analysis of variance. The F test for significance relies on the assumption that the variable has a normal distribution in the population and that the population variances are the same. The data in this analysis did not have a normal distribution, necessitating a comparison of distributions through an analysis of ranks. This approach can be applied without the assumption of normality or equal variances (Anderson & Finn, 1996). The null hypothesis is that the locations of the populations are the same and the alternative hypothesis is that they are not. The first step in the Kruskal-Wallis test is a rank-order of the data values for the entire sample. The test then applies analysis of variance formulas to these ranks (Anderson & Finn, 1996). For each of the eight variables used in the analysis, the mean rank ranged from 57.69 to 68.94. The results of these analyses are presented in Table 2.

The Kruskal-Wallis test tests the null hypothesis that the samples do not differ in mean rank for a criterion variable. In this case, the Kruskal-Wallis test was used to compare males and females to determine if they have significantly different response patterns to the eight items (See Table 3). The variable which proved significant ($p=.002$) at the $p<.05$ level was the question, "How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?" With the mean ranks of mothers=71.16 and fathers=57.69, it is apparent that mothers are consistently and significantly replying to this item with a higher response level. Father's replies tend to the

Table 2. Kruskal-Wallis Response Rankings

Variable	Parent Gender	N	Mean Rank
If made available by the CDL, would you be interested in observing your child's classroom via the Internet?	father mother total	60 70 130	65.42 65.57
How much do you perceive the service would interfere with your work?	father mother total	61 67 128	63.88 65.07
How much do you perceive the service would enhance the quality of the relationship with your child(ren)?	father mother total	59 69 128	59.31 68.94
How much do you perceive the service would enhance the quality of your relationship with your child(ren)'s classroom teacher?	father mother total	59 68 127	59.97 67.50
How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?	father mother total	59 70 129	59.97 67.50
How much do you perceive the service would make you feel more secure with the quality of care your child is receiving?	father mother total	59 70 129	63.37 66.37
If password protected, how comfortable would you be in allowing your child's classroom to be observed by other parents who have children in the program?	father mother total	60 71 131	67.07 65.10
If password protected, how comfortable would you be in allowing your child's classroom to be observed by other grandparents and significant others who are related to or closely associated with other children in the CDL program?	father mother total	60 70 130	68.35 63.06

Table 3. Chi-Square values of Predictor Variables

Variable	Chi-Square	Asymp. Sig.
If made available by the CDL, would you be interested in observing your child's classroom via the Internet?	.002	.966
How much do you perceive the service would interfere with your work?	.047	.828
How much do you perceive the service would enhance the quality of the relationship with your child(ren)?	2.519	.112
How much do you perceive the service would enhance the quality of your relationship with your child(ren)'s classroom teacher?	1.551	.213
How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?	**5.264**	**.022**
How much do you perceive the service would make you feel more secure with the quality of care your child is receiving?	.233	.629
If password protected, how comfortable would you be in allowing your child's classroom to be observed by other parents who have children in the program?	.097	.755
If password protected, how comfortable would you be in allowing your child's classroom to be observed by other grandparents and significant others who are related to or closely associated with other children in the CDL program?	.689	.406

none/some end of the response scale and mother's tend to the some/a lot end of the scale. The summary of responses to this variable by both mothers and fathers is found in Table 4. Mothers felt the presence of web cameras would make them feel "a lot" more involved with their child's daily activities, almost twice as much as fathers. Fathers in turn felt the service would increase their involvement in their child's activities "some"—their most frequent response.

For the first hypothesis, only the level of involvement in their child's daily activities produced significantly different responses for fathers and mothers. Only the hypothesis regarding involvement in the child's daily activities is accepted because among the variables supposed to identify parental attitudes regarding web cameras in the early childhood classroom, gender differences existed on one variable.

Analysis of Child Development Lab Satisfaction

The analysis tested whether the respondent's level of satisfaction with the CDL was in any way related to their support of the web camera project. The CDL satisfaction variable asked parents to rate their overall satisfaction as "not satisfying", "somewhat satisfying", or "extremely satisfying".

A preliminary analysis of this variable indicated that two respondents indicated they were not satisfied with the Child Development Lab (See Table 5).

Table 4. Crosstabulation of Gender by Involved in Child's Daily Activities

How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?		none	some	a lot	Total
Parent gender completing this survey	father	9	24	26	59
	mother	9	14	47	70
Total		18	38	73	129

Table 5. Overall Child Development Lab Satisfaction

Overall, as a parent, I have found my relationship with the UTK Child Development Labs to be:	Frequency	Percent
not satisfying	2	1.5
somewhat satisfying	22	16.5
extremely satisfying	107	80.5
Total	133	100.0

Binary logistic regression analysis was used to derive a predictive variable model that would successfully classify someone's lab satisfaction response as a "yes" or "no" response variable. The two responses of "not satisfying" were too small to be estimated as a statistic and were not included in the analysis.

Before continuing in a logistic regression, a series of Chi-square tests were performed on each of the eight variables with CDL satisfaction to establish a foundation for the results and interpretation of future analyses (See Table 6-13). Since there are eight tests, a Bonferroni adjustment of the criterion alpha (.05) was used reduce the chances of a Type I error. A Bonferroni adjustment of .006 (.05/8) was calculated by dividing the planned alpha by the number of tests. Significant variables were determined from the Fisher's Exact Test, which gives the exact, not estimated, Chi-square value and significance value. It is used when the sample size is small and/or some cell counts are very small or zero. In this case, the Fisher's Exact Test was used because of the disparity in counts of responses in the cross-tabulated tables (Vogt, 1999). With the calculated criterion alpha, enhancing of the relationship with the teacher was the only variable significantly associated with lab satisfaction (p=.002) (See Table 8). While an alpha of p=.05 is conservative for determining significance, use of an alpha of p=.10 would have identified only one other significant variable. If an alpha of p=.10 had been used, the only other variable significantly associated with lab satisfaction would be enhancing the relationship with the child (p=.024) (See Table 8).

Table 6. Chi-square test of Lab Satisfaction and Interest in Camera Project

Crosstab If made available by the CDL, would you be interested in observing your child's classroom via the Internet?		no	yes	total
LABSAT2	Somewhat Satisfying	3	19	22
	Extremely Satisfying	11	93	104
Total		14	112	126

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	.172	1	.710
Likelihood Ratio	.164	1	.710
Fisher's Exact Test			1.00
N of Valid Cases	126		

Table7. Chi-square test of Lab Satisfaction and Work Interference

Crosstab
How much do you perceive the service would interfere with your work?

		none	some	a lot	Total
LABSAT2	Somewhat Satisfying	11	7	2	20
	Extremely Satisfying	70	29	5	104
Total		81	36	7	124

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	1.483	2	.511
Likelihood Ratio	1.366	2	.569
Fisher's Exact Test	1.906		.340
N of Valid Cases	124		

Table 8. Chi-square test of Lab Satisfaction and Relationship with Child

Crosstab How much do you perceive the service would enhance the quality of the relationship with your child(ren)?		none	some	a lot	Total
LABSAT2	Somewhat Satisfying	8	9	4	21
	Extremely Satisfying	13	50	40	103
Total		21	59	44	124

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	8.727	2	.009
Likelihood Ratio	7.690	2	.030
Fisher's Exact Test	7.669		.018
N of Valid Cases	124		

Table 9.   Chi-square Test of Lab Satisfaction and Relationship with Teacher

Crosstab How much do you perceive the service would enhance the quality of your relationship with your child(ren)'s classroom teacher?			none	some	a lot	Total
LABSAT2	Somewhat Satisfying		6	16	2	21
	Extremely Satisfying		13	41	48	102
Total			19	54	50	123

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	10.279	2	.004
Likelihood Ratio	12.331	2	.003
Fisher's Exact Test	11.824		.002
N of Valid Cases	123		

Table 10. Chi-square test of Lab Satisfaction and Daily Involvement

Crosstab How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?					
		none	some	a lot	Total
LABSAT2	Somewhat Satisfying	5	8	9	22
	Extremely Satisfying	10	29	64	103
Total		15	37	73	125

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	4.372	2	.097
Likelihood Ratio	4.069	2	.149
Fisher's Exact Test	4.430		.103
N of Valid Cases	125		

Table 11. Chi-square test of Lab Satisfaction and Quality of Child Care

Crosstab
How much do you perceive the service would make you feel more secure with the quality of care your child is receiving?

		none	some	a lot	Total
LABSAT2	Somewhat Satisfying	6	6	10	22
	Extremely Satisfying	30	33	40	103
Total		36	39	50	125

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	8.727	2	.009
Likelihood Ratio	7.690	2	.030
Fisher's Exact Test	7.669		.018
N of Valid Cases	124		

Table 12. Chi-square Test of Lab Satisfaction with Other Parent Observation

Crosstab

If password protected, how comfortable would you be in allowing your child's classroom to be observed by other parents who have children in the program?

		not comfortable at all	somewhat comfortable	very comfortable	extremely comfortable	Total
LABSAT2	Somewhat Satisfying	4	6	7	5	22
	Extremely Satisfying	8	18	44	35	105
Total		12	24	51	40	127

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	8.727	2	.009
Likelihood Ratio	7.690	2	.030
Fisher's Exact Test	7.669		.018
N of Valid Cases	124		

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Table 13. Chi-square test of Lab Satisfaction with Significant Other Observation

Crosstab

If password protected, how comfortable would you be in allowing your child's classroom to be observed by other grandparents and significant others who are related to or closely associated with other children in the CDL program?

		not comfortable at all	somewhat comfortable	very comfortable	extremely comfortable	Total
LABSAT2	Somewhat Satisfying	6	9	4	3	22
	Extremely Satisfying	15	28	38	23	104
Total		21	37	42	26	126

Chi-Square Tests	Value	df	Exact Sig. (2-sided)
Pearson Chi-square	5.477	3	.147
Likelihood Ratio	5.508	3	.156
Fisher's Exact Test	5.383		.144
N of Valid Cases	126		

Logistic regression was used to develop a model (based on the set of eight variables) that explained a significant amount of the variation in the outcome variable, in this case, lab satisfaction. Backward selection was used to obtain the best predictive model using the set of eight predictor variables. The backward procedure begins with all variables in the model and then starts removing variables based on certain criteria.

The likelihood-ratio (R) test was used to evaluate variable removal. This test considers the change in the function $-(2 \times$ log-likelihood) when each variable is deleted one at a time. This function, called $-2LL$, is a measure of how well a logistic regression model fits the actual data. The R test assesses the change in $-2LL$ from the full model to a reduced model with one variable removed. If a variable is contributing very little to the predictive model, the change in $-2LL$ when it is removed will be very small and its R test will have a non-significant p-value. At each step in the backward selection, the variable with the largest non-significant p-value is removed and then the remaining set is re-evaluated in a subsequent step. These steps are repeated until a set of variables can be found whose individual R test has a p-value of .10 or less. Only variables that significantly increase the fit of the model are retained. The "significant increase" is based on a p-value of p=.10.

The backward selection cycled through six steps before arriving at a set of three variables whose R test p-values were <=.10 (See Table 14). The three variables, found in Table 15, were: (1) "If made available by the CDL, would you

Table 14.   Chi-square Values of Backward Selection Stepwise Logistic

Regression

		Chi-Square	df	Sig.
Step 1	Step	28.169	17	.043
	Block	28.169	17	.043
	Model	28.169	17	.043
Step 2[a]	Step	-.891	3	.828
	Block	27.278	14	.018
	Model	27.278	14	.018
Step 3	Step	-1.883	3	.597
	Block	25.395	11	.008
	Model	25.395	11	.008
Step 4	Step	-1.393	2	.498
	Block	24.002	9	.004
	Model	24.002	9	.004
Step 5	Step	-2.123	2	.346
	Block	27.878	7	.003
	Model	21.878	7	.003
Step 6	Step	-3.243	2	.198
	Block	18.635	5	.002
	Model	18.635	5	.002

a. A negative Chi-square value indicates that the Chi-squares value has decreased from the previous step.

Table 15. Backward Selection Stepwise Logistic Regression of Predictor Variables

	Variable	Model Log Likelihood	Change in –2LL	df	Sig. of the Change
Step 1	CDLAVAIL	-42.503	6.525	1	.011
	WKINTERF	-39.622	.765	2	.682
	CHILDREL	-40.290	2.100	2	.350
	TCHRREL	-42.975	7.469	2	.024
	INVOLVED	-41.236	3.993	2	.136
	QUALITY	-40.209	1.938	2	.379
	PARENTOB	-39.685	.891	3	.828
	GRANDOBS	-40.072	1.66	3	.645
Step 2	CDLAVAIL	-42.613	5.856	1	.016
	WKINTERF	-40.375	1.380	2	.502
	CHILDREL	-40.682	1.993	2	.369
	TCHRREL	-43.218	7.064	2	.029
	INVOLVED	-41.455	3.539	2	.170
	QUALITY	-40.846	2.322	2	.313
	GRANDOBS	-40.627	1.883	3	.597
Step 3	CDLAVAIL	-43.650	6.046	1	.014
	WKINTERF	-41.324	1.393	2	.498
	CHILDREL	-42.402	3.550	2	.170
	TCHRREL	-44.674	8.093	2	.017
	INVOLVED	-42.384	3.514	2	.173
	QUALITY	-41.830	2.405	2	.300
Step 4	CDLAVAIL	-44.075	5.503	1	.019
	CHILDREL	-43.047	3.447	2	.178
	TCHRREL	-45.401	8.155	2	.017
	INVOLVED	-43.084	3.522	2	.172
	QUALITY	-42.385	2.123	2	.346
Step 5	CDLAVAIL	-45.475	6.179	1	.013
	CHILDREL	-44.007	3.243	2	.198
	TCHRREL	-46.530	8.290	2	.016
	INVOLVED	-44.034	3.297	2	.192
Step 6	CDLAVAIL	-46.755	5.496	1	.019
	TCHRREL	-47.429	6.845	2	.035
	INVOLVED	-43.534	5.054	2	.08

be interested in observing your child's classroom via the Internet"; (2) "How much do you perceive the service would enhance the quality of the relationship with your child's classroom teacher;" and, (3)"How much do you perceive the service would make you feel more involved with your child's daily activities at the CDL?" The order of the variables selected in the backward selection is also the order of their R test p-values from smallest to largest.

The reduced logistic regression model used forced entry to include the three retained variables in order of their R test p-value from smallest to largest. Since these variables are categorical, the level of response is recoded as a separate dummy variable to determine if any one level of response has greater odds of a positive outcome than the other levels of response. A difference contrast was used to compare levels within a variable that has more than two responses. This contrast creates dummy variables for comparison. For the "relationship with teacher" variable, contrasts were created to compare response "some" to response "none". A second contrast compared response "a lot" to the average effect of responses "some" and "none" (See Table 16). The item measuring availability of cameras has only two response levels, so the contrast compares a "no" response to a "yes" response relative to the effects on the lab satisfaction response.

Further analysis of the three variables selected in the backward selection stepwise logistic regression occurred in a reduced logistic regression model. This model used forced entry to include the three retained variables in the order of their R test p-value from smallest to largest. Since these variables are

Table 16. Reduced Logistic Regression of Three Significant Variables

		B	df	Sig.	Exp (B)
Step 1	TCHRREL		2	.045	
	TCHRREL(1)[a]	.049	1	.951	1.050
	TCHRREL(2)[b]	2.122	1	.019	8.350
	INVOLVED		2	.951	
	INVOLVED(1)[c]	8.545	1	.759	5140.329
	INVOLVED(2)[d]	4.224	1	.762	68.323
	CDLAVAIL	-8.436	1	.762	.000
	Constant	7.380	1	.692	1603.477

a. TCHRREL(1) contrast for "relationship with teacher" comparing response "a lot" with "somewhat satisfying".
b. TCHRREL(2) contrast for "relationship with teacher" comparing response "none" and "some" with "extremely satisfying".
c. INVOLVED(1) contrast for "involved with daily activities" comparing response "a lot" with "somewhat satisfying".
d. INVOLVED(2) contrast for "involved with daily activities" comparing response "none" and "some" with "extremely satisfying".

categorical, the different levels of predictor variables must be compared in the final model. A difference contrast was used to compare levels within a variable that had more than two levels. For the question of availability of web cameras by the CDL, a "no" response was compared to a "yes" response, relative to its effects on the CDL satisfaction response (See Table 16).

The issue of contrasts is relatively moot because the only predictor item with a regression coefficient (B) that is significantly different from zero was the item that focused on "relationship with teacher". The second contrast for "relationship with teacher" is significant, comparing response "a lot" to the averaged effects of "none" and "some", only for those parents who answered "extremely satisfying" for overall CDL satisfaction. The odds ratio is calculated from logistic regression coefficients to determine the probability of an event occurring given the distribution of a binomial variable. Each possible response on the relationship with teacher variable has its own odds ratio of having a positive outcome. Significant Beta coefficients that are close to one (1) indicate that parent's responses on that contrast are no different from other parents. From Table 16, it is concluded those who responded that the presence of a web camera would enhance their relationship with their child's teacher "a lot" are 8.35 times more likely to have a CDL satisfaction response of "extremely satisfied" than those who respond with "none" or "some" to the teacher relationship variable.

Based on the initial chi-square tests, relationship with child appears to be associated to some degree with lab satisfaction with a likelihood ratio of .021,

significant at the p=.10 level. However, relationship with child does not appear as a significant predictor in any of the logistic regressions. Teacher relationship was the only variable that was strongly associated with lab satisfaction, but relationship with child was hypothesized to also have a high correlation. This may explain the almost significant chi-square test for relationship with child and the failure of the variable to occur as a significant predictor at the p=.05 level in the logistic regression.

The chi-square test in Table 17 confirms preliminary suspicions. Relationship with teacher and relationship with child are very highly associated (p<.001). A response to one variable is almost identical to the response to the second across the entire group. This relationship indicates that a parent's response to relationship with child is almost a mirror to their response for relationship with teacher. Given this relationship, responses to the relationship with child variable should have a significant association with lab satisfaction variable, but the predictive value is not strong enough.

Because the initial relationship between relationship with child and relationship with teacher is so strong, a stepwise logistic regression procedure should retain the latter as a significant predictor. However, after relationship with child has been retained in the model and the variation that it shares with relationship with teacher in predicting lab satisfaction has been removed, relationship with child does not have enough unique predictability to be retained in the model during subsequent steps. A simple explanation for this conclusion is that the two variables measure the same issue. The response pattern

Table 17. Relationship with Teacher and Relationship with Child

Crosstabulation		How much do you perceive the service would enhance the quality of the relationship with your children?			
		none	some	a lot	Total
How much do you perceive the service would enhance the quality of your relationship with your child(ren)'s teacher?	none	17	3	2	22
	some	6	43	5	54
	a lot	1	12	38	51
Total		24	58	45	127

between satisfaction with the CDL and relationship with teacher is much stronger than that with relationship with child, retaining only the former in a stepwise logistic regression model.

Summary

The preceding analysis supports a partial rejection of the null hypotheses. In the first hypothesis, gender differences in parental attitudes do exist in response to the question of whether the presence of web cameras would enhance their relationship with their child. While mothers and fathers answers were generally positive, mother's responses were more positive than fathers. The second null hypothesis is also partially rejected because relationship with teacher proved to be a significant predictor of satisfaction with the CDL. Those who indicated that the presence of a web camera would enhance their relationship with their child's teacher were also those who indicated an extremely satisfying relationship with the Child Development Lab. The predictive value of this variable is marginal though because of the lack of practical significance regarding knowledge of lab satisfaction. The significant value that occurred in the tests for the first hypothesis seems reasonable and may be of some explanatory value in future research. However, the results of the logistic regression, while identifying a significant predictor of satisfaction, have little practical significance in the explanation of overall CDL satisfaction.

Chapter Five

Discussion and Implications

The results of the present study led to several conclusions regarding parental attitudes about web camera usage in the CDL classroom. Eight items were selected as variables that might identify support to the web camera project. Of those eight, mothers and fathers gave similar answers on each of the items with the majority of parents (70%) indicating support of web camera usage. In the first analysis, it was discovered that the question regarding how the web camera would enhance the parent's daily involvement in their child's activities was the only significant variable for differences in gender. Mothers reported that the advent of web cameras in the classroom would significantly enhance their level of involvement. While fathers also reported that the cameras would enhance their involvement in their child's daily activities, their answers were more moderate than mothers (See Table 5).

The second conclusion from the data analysis indicated that the respondent's relationship with their child and with their child's teacher were significantly related to each other. Despite this relationship, the item involving relationship with the teacher was the only significant predictor of satisfaction with the CDL. Satisfaction with the CDL program was very high, with 81% of parents reporting an extremely satisfying relationship with the program. The response of "extremely satisfying" on the CDL satisfaction variable was highly correlated with a response of "a lot" regarding the web camera's usage as an enhancement to the parent's relationship with the teacher. Both sets of analyses indicated that

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enhancement of the relationship with the teacher was the single, strongest predictor of support for web cameras in the classroom.

Because the use of web cameras in the early childhood classroom has had little exploration in the field of early childhood education research, the findings from the present study are notable for several reasons. First, the majority of parents (70%) were in favor of technology that would allow them access to their child's daily activities from a computer screen in a remote location. Second, the majority of parents in this sample reported extremely satisfying relationships with their child care program at The University of Tennessee. In practice, it seems logical to infer that a parent who is satisfied and supportive of their child care program could be naturally supportive of new programs that are sponsored and supported by the child care administration. However, the 30% of parents who responded that they were not in favor of the web camera installation project vocalized strong opinions and questions regarding the safety and security of the camera's use in the classroom. The relationship between satisfaction with a child care program and support of innovative programs should be explored in further research studies.

The implications of the teacher relationship variable are vital not only in the present study but also in overall teacher development. The relationship between the teacher and the parent is much like a business and client association. The teacher supplies a service to the parent, providing quality early childhood education in a safe, supportive atmosphere. Similarly, the parent trusts the teacher to care for a most precious item (i.e., their child(ren)), freeing

the parent's time for employment. In classrooms with infants and toddlers, caregivers often participate in primary caregiving systems in which one caregiver is responsible for a cluster of children and their needs. Having one adult primarily responsible for a parent's child means that parents have one primary contact with whom to communicate and share information (Bernhardt, 2000). While teachers may be considered as vicarious parents, their care is actually an extension of parenting, providing a combination of care for the child's diverse needs. Becoming mutually respecting partners creates a best practice that benefits parents, teachers, and ultimately, the children (Core Concepts, 2000).

Another explanation for the variance in responses between mothers and fathers may involve maternal guilt. Many women experience guilt when they relinquish exclusive care of their children (Crosby, 1991). Women trying to raise their children according to their own values and the suggestions of "experts" have difficulty balancing their own needs with the needs of their children. Child care specialists often have expert knowledge about the developmental needs of children, and their expertise can help a child to grow (Crosby, 1991). While child care providers support parent's needs, they are primarily concerned with the needs of the child. Mothers in the present study may have identified with the web camera system as a method of retaining close ties with their child, even while in another's care.

Yet another explanation for the differences between mothers and fathers in their relationship with their child's teacher may be gender itself. Gilligan (1982) in her landmark study of gender identity development in adolescent

females identifies societal pressures as responsible for creating differences in the relational styles of males and females. From an early age, girls are encouraged to share their thoughts and feelings with others, while boys are discouraged from intimate contact, and encouraged to be independent and isolated (Tannen, 1990). The women in this study have been socialized as Gilligan proposed, into nurturing, more involved, more relational people than men. At the time of this study, all of the teachers in the CDL were female, further enhancing the mothers' ability to form relationships with them. The study did not determine baseline data for parent's current relationship with their child's teacher, so there are few methods to determine the quality of improvement that would occur in the relationship with the installation of the web cameras. The socialization process forces women to become more involved in those around them, namely their child's teacher, while men are socialized to be more autonomous and less involved in daily relationships.

While parents and teachers work in concert for the health of the family, each have areas which need attention and none so much as involvement of parents in the classroom. Traditionally, parent involvement has encompassed a variety of activities from volunteering in the classroom to participating in parent conferences and advisory boards (McBride, 1999). Goals for recent education reforms and developmentally appropriate practices have all come to the same conclusion: "Involving families in the education of young children more aggressively and more respectfully than was done in the past is advantageous to

developmental and educational outcomes for all young children" (McBride, 1999).

Before web camera designers reported that their technology would "recreate the nuclear family", similar sentiments were expressed in early childhood research (Lombardi, 1997). The National Association for the Education of Young Children (NAEYC) calls for programs to support close ties between child and family. Program goals are to be developed in collaboration with families, and teachers are to learn about each child through relationships with the child's family (Bredekamp & Copple, 1997). Head Start programs have long been a model of successful approaches to parent involvement, providing workshops and home visits between parents and teachers (Powell, 1998).

The introduction of web cameras into the classroom provides parents with a view into the day of both their child and their child's teacher. Qualitative benefits not assessed by this research, but necessary for future study, may include increased compassion and understanding for teachers from parents. Parents observing through the web cameras might also gain skill benefits from identifying techniques the teacher employs with their child. While teachers must continue to extend daily verbal and non-verbal communication to parents, web camera usage may work to their advantage in other ways. Wirtz and Schumacher (1998) have reported that curriculum plans that include regular parent involvement opportunities contribute to children's success and benefit the total family interactions. Parents using web cameras may identify opportunities where the classroom can use outside support. Teachers may find services and

donations, which were never before possible, suddenly at the door because a parent took note of a particular need in web camera observations. The delicate balance between parent and teacher support is critical to success in the early childhood programs (Stringer-Seibold, Stanberry, Stanberry, & Seibold, 1996).

The present study indicated that mothers felt the web camera service would enhance their relationship with their child's teacher "a lot", compared with "some" for the majority of fathers (See Table 5). While both parents have the opportunity to experience inherent benefits of web camera observation, it is not known why fathers felt their relationship with the teacher would not be equally enhanced. Perhaps the reason for the disparity is a likewise mirror with early childhood research on father involvement in early childhood education. Just as both *mother* and *father* embody the term *parent*, a study conducted in programs across six states revealed that *father* was defined as any male fulfilling the father role for a child (Turbiville, Umbarger, & Guthrie, 2000). While providers have traditionally taken a female orientation to involving parents in early childhood programs, increased role-sharing between parents has made fathers more visible in child care programs. There is little definitive explanation for the variation between mothers and fathers in the present study. While similar numbers of both mothers and fathers, including 55 couples, returned the survey, it is perhaps the father's lack of involvement both from a parent and provider point of view that accounts for the gender discrepancy. Fathers have consistently reported less ability meet with educational providers than mothers (Turbiville, et al., 2000). While the father may have the traditional role as the

breadwinner, fathers have indicated a desire to participate in child care programs that involve family activities or child development seminars (Turbiville, et al., 2000). Fathers in this survey may have vested interests in their child's development and education that are not supported by the implementation of web cameras. Future research in this area is needed to meet all parents' needs.

Another implication of the findings in the present study entails parents' satisfaction with the CDL. While parents reported overwhelming satisfaction with their child care program, relationship with teacher was significantly correlated with the satisfaction response. The Child Development Lab at the University of Tennessee, Knoxville is an accredited program by NAEYC standards. According to NAEYC's publication, <u>Developmentally Appropriate Practice in Early Childhood Programs</u>, teachers abiding by these standards should work toward reciprocal relationships with families.

> "Teachers work in partnership with parents, communicating daily to build mutual understanding and trust and to ensure the welfare and optimal development of the child. Caregivers listen carefully to what parents say about their children, seek to understand parents' goals and preferences, and are respectful of cultural and family differences" (Bredekamp & Copple, 1997, 89).

While parents indicate support of the CDL, their responses in the present study also indicate that relationships with their child's teacher(s) could be greatly enhanced by the presence of web cameras. Teachers are constantly evolving in their relationships with parents, seeking ways to increase opportunities for parents and families to be a part of a child's learning (Wirtz & Schumacher, 1998). The findings in the present study indicate that teachers in the CDL, as

well as administrators and future teachers, should cultivate new and existing relationships with the clients they serve.

The eight variables selected as predictors of support to the web camera project did not have the predictive strength in the statistical summary. The relationship with the teachers was the only variable which indicated statistical significance as a predictor of support for the web camera project. By sacrificing one level of significance, the variable measuring the web camera's ability to enhance the parent's relationship with their child was also significant. Other factors such as work, daily activities, quality of care, and password protection did not prove statistically significant as a measure of parents' support of the project. These findings provide theoretical support for the ecological systems framework. Bronfenbrenner's later versions of the theory featured the notion of proximal processes, those forms of interactions in the immediate environment between an active human organism and the persons, objects, and symbols it encounters (1995).

The advent of web camera technology in the classroom reaches throughout the ecological systems theory. The use of web cameras would be best-suited to the microsystem, the immediate settings which impinge on the developing person. Use of the camera technology affects the interactions in the mesosystem between the parent and the child, and, as this study affirms, the parent and the teacher. Overall use of technology as an addition to traditional contact would be a facet of the exosystem, affecting those in early childhood education who directly and indirectly affect parents, teachers, and children. Use

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and abuse of web camera technology could ultimately impact the macrosystem in the educational, legal, and political systems of our society (Bronfenbrenner, 1976).

The present study identified only one factor strongly related to parental attitudes regarding web camera usage in the classroom. A multitude of reasons could explain why other factors were not selected in the statistical analysis, research best administered by those with experience in both technology and human ecology.

Limitations of the Study

There are several limitations of this study that should be recognized when interpreting the results. First, the results of this study are not generalizable beyond the Child Development Lab at the University of Tennessee, Knoxville. The results should, however, be interpreted as an illustrative example of parental attitudes at the CDL. The margin of those who chose not to participate in the study (30%) have at least some opinion regarding the web camera installation, but those opinions remain unknown. Concerns regarding privacy, cost, and security were evident in many of the open-ended questions. These responses, however, are not included in the present analysis, creating avenues for future research.

The eight items selected as variables that would indicate support or opposition to the proposed camera project created further limitations. Seven of the eight items were presented in a positive tone, asking parents to rate how the

web camera service would enhance various areas of their lives. These items, in a sense, measure the same type of opinion, without probing for concerns about safety and security measures employed with the web camera service. Future research should involve a broader survey that asks a variety of questions regarding technical use of the cameras and the barriers that camera use could create for parents.

The sample itself created limitations for this study. A sample size of 133 from a population of 198 warrants limited generalizability. Overall, the sample was well-educated and the majority of respondents were married. Compared to the 50% of those in Knox County who report their status as married, 81% of this sample was married. Socio-economic status was middle to upper class and sample ethnicity was predominantly white. One explanation for the disparity in parent income compared to Knox County income figures is the cost of tuition at the CDL. Parents who have incomes at middle to upper class levels are also those who can afford the tuition imposed by the CDL. The child care provided at the CDL is the most expensive in the Knox County area, thereby drawing from a population of high-income parents. While this limited diversity is indicative of both the Child Development Lab and the surrounding Knox County area, it is perhaps most akin to the population of the campus at the University of Tennessee, Knoxville.

The lack of diversity in the sample may represent the ability to access child care for parents in this country. The cost of child care continues to rise, and the burden falls heaviest on those who can afford it least and need it most.

Families who live below the poverty line and single-parent mothers spend 18 and 12 percent of their respective incomes on child care. The average cost for child care in 1993 dollars was $4,108 per year for one child (Bronfenbrenner, et al., 1996). The implementation of web cameras may seem to some like another method of increasing child care fees, but others can only hope for a child care center that is healthy and safe even without cameras.

As a member of the CDL staff and as a principal investigator of this study, the duality of these roles could have contributed to skewing the data. Parents knew that I was responsible for the data collection and data entry, meaning that I would be aware of each parent's responses on the survey. I received numerous questions from parents regarding the actual web camera installation and whether or not their responses would affect the completion of the project. I also received a number of complaints about the project, including suggestions for the format of the survey instrument. The difficulty in maintaining a completely anonymous position as a researcher and a staff member made it more difficult for parents to come to me with questions and comments about other CDL activities. My role as an insider perhaps influenced and skewed parent's survey responses to a more positive slant, increasing their social desirability in my eyes and in the eyes of the CDL. Further research in the CDL should be done with a completely anonymous survey and researcher who has no ties to either children or parents in the CDL, making it easier for parents to give genuine responses.

Recommendations

The present study made several unique contributions to the research in this body of literature, particularly because of the novelty of web cameras to the field of research. The existing literature regarding the use of web cameras in the educational purvey is primarily found in popular press periodicals, merely documenting the existence and use of such products. As the use of web cameras becomes increasingly widespread in child care centers, the need for further research is paramount. The present study used a questionnaire as a form of needs-assessment for the parents in the Child Development Lab. The replication of such a questionnaire would be useful to other child care centers contemplating the installation of web cameras. Other replication of a needs-assessment questionnaire is also needed with a larger, more diverse sample, thereby increasing generalizability of the findings.

With the present findings and existing literature in mind, there are several avenues in which further research could contribute to the field of scholarly literature. Because several child care centers now offer web cameras as part of their services, an evaluative study could determine parental attitudes about the use of the cameras. Evaluation research could also utilize technology data to determine how many parents actually use the service, the average time each parent watches the classroom, and the various locations from which parents use the service. While the sample in the present study included mothers and fathers, only primary analysis of demographic factors as education, income, and race

were completed. Future evaluation research should consider such demographic characteristics in the appeal that web cameras have or do not have to parents.

The majority of existing literature on web cameras extols the virtues of the web camera's use in the child care center. To fully explore this field of study, research should involve both the advantages and disadvantages of this technology. There are two schools of thought when considering the benefits to working parents whose children can be found by a click of the mouse. A web camera promoter touts the service saying, "It increases productivity because you feel better about your children" (Armour, 1999). The other side of the coin comes from those concerned about worker productivity—"The temptation is too strong to watch your kids all day...Employees are already spending an increasing amount of time surfing the Net for non-work reasons" (Armour, 1999). So-called cyber-parenting could become a real productivity issue, especially considering that the employer pays for network time.

An additional issue not considered in the present study is the effect on children. While the use of a web camera might not appear to have any bearing on a child's behavior, parents and teachers are well aware that a child's behavior often changes in the presence of an audience. While parents in the present study were concerned for their child's safety and security as part of a web camera system, few if any concerns were raised regarding children's behavior in front of the camera. As one parent states, "This is just going to teach kids how to act in front of cameras at a younger age" (Kerber, 1997). The same parent asks, "With all this technology, why not stay at home with the kids and

telecommute?" This is the question that future research can explore with further analyses of a related nature.

Finally, the opportunity for research regarding teachers' opinions is virtually boundless. The literature used in the current study had little concern for teacher's opinions and even less concern for the children themselves. While a child care administrator may see only the positives of web camera installation, the classroom teacher may have an entirely different perspective. Teachers may be concerned about their personal as well as professional privacy, as well as for the privacy of the children in their care. Those seeking better working conditions for child care workers call the Internet a quick fix that would not affect the overall quality of most centers. "Installing web cameras encourages parents to view teachers as potential enemies, focusing only on 'the harm they can do'" (Rabinovitz, 1997). Formative as well as summative evaluation research in this field should involve the classroom teachers—those which the installation will impact perhaps most of all.

For future researchers that anticipate studies involving a setting similar to the Child Development Lab, caution should be taken in survey construction and delivery. A pre-test of a set of questions should occur to indicate readability and coherence of the questions to elicit the desired response patterns. For this study, the response rate was difficult to attain and survey return was very gradual over a period of six weeks. The delivery of the surveys to the parent's mailbox in the CDL presented a problem apart from data collection. With the volume of mail that parents receive daily from their child's teachers and CDL

administration, parents are overloaded with items of varying importance. While the topic of study was likely not a barrier to participation for parents, opposition to the project from teachers could have hindered parental response. Many teachers were vehemently opposed to the project, questioning their right to privacy and the possible fallout from any number of scenarios that a parent might witness on camera. While teachers were encouraged to refrain from comments about the study, it is impossible to know how much verbal and nonverbal communication from teachers contributed to parent's response.

As stated earlier, most of the parents in the Child Development Lab are dual-earner married couples with children. These parents are likely consumed with role overload and have little time for thoughtful completion of a research study. Combined with the present lack of research in the CDL, parents are not socialized for their required participation in research projects. These factors combined with a survey that did not adequately address parents concerns are all possible explanations for the difficulty in improving the response rate.

While there are limitless avenues of future research, there exists a definite caveat for the researchers themselves. Journalists who were merely exploring a topic for the interest of the reader completed existing research regarding web cameras. Professionals in the field of human ecology, specifically early childhood education, have a responsibility to determine the impact of this type of technology. The advent of web camera technology will introduce new topics to the field of teacher preparation, adding ethics and privacy to the long list of responsibilities that new teachers currently encounter. The companies that

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market web camera technology to child care centers are a business and have a primary focus on the profit and loss column. While their research may include some of the variables specified earlier, it is doubtful that their motives are as true as implied. The technology companies can support research about types of cameras, use and abuse policies, and maintenance problems. Early childhood educators can support research about teacher concerns, parent evaluations, and classroom effects. Employing a bit of old-fashioned cooperation may be the best solution for the future of research in this field.

Summary

The findings from the present study made some unique contributions to the field of scholarly literature. This study involves an innovative technology that has found its way into the early childhood classroom with little fanfare or research. This findings strongly supported the enhancement of parent-teacher relationships, namely by parents viewing the classroom over the Internet. Mothers in this study indicated that web camera technology could enrich their relationship with their child's teacher more than fathers. This finding is encouraging since fathers are currently not a focus in much of early childhood education research. This study indicates that those 75% of parents working outside the home rely extensively on quality child care to support their families. Respondents in this study appreciate the role of their child care program and are satisfied with their child's level of care. The study suggests implications for practice in the realm of teacher relationships with parents and continuing support

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of quality early childhood education programs. Further research is necessary to fully explore the relationship between parents, their children, and the future of technology in the classroom.

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APPENDICES

APPENDIX A

Consent Form

The purpose of this project is to gather information regarding parental interest in the possible inclusion of Internet-based, live classroom picture transmission. This project is designed to assess initial parental interest as well as concerns regarding the possibility of developing a secured Internet-based, camera transmission of live classroom pictures. Also, the project is designed to allow us to better understand some of the important relationships between work, family, and child care. The UTK Child Development Laboratories (CDL) is designated as a departmental teaching and research laboratory. Having more information of this nature will help us better address the needs of CDL parents, children, and staff as the prospective project is designed and implemented.

Anticipated benefits for you may involve a better understanding of the proposed project. We would like for you to understand our commitment to the following safeguards in your interest:

1. Once the completed surveys are returned, the confidentiality of information about you and your child(ren) will be maintained by the use of code numbers on all materials. We will separate your informed consent form from the survey and attach a number to your survey. For tracking who has responded, we will keep a list of names with the numbers we have assigned to the surveys. The assigned numbers will be used for data entry purposes. All surveys, informed consent forms, and the data collection tracking list will be kept in separate, locked files by the primary investigators of this project. With the exception of

the primary investigators, no one will have access to the names, informed consent forms, and surveys.

2. The data gathered will be entered and reported in summary form with no reference to you or your child(ren) personally. This consent form will be detached from the surveys and a code number assigned to each survey. After detachment, names and code numbers will not be cross-referenced. Individual data and participant identities will not be shared with anyone.

3. We do not anticipate that participation in our project will involve risks for anyone, but if responding to the questionnaire creates concern for you, we will be happy to refer you to a trained professional. The group results from this study may be of interest to you and will be available to you upon your request.

4. Once you have completed the survey, please return it back to CDL office. A CDL staff member will assist you in placing your confidential responses in an envelope.

5. Answers to any questions you may have about the procedures of this study are available from:

Michael Lane Morris	**The University of Tennessee, Knoxville**
Melissa Groves	**115 Jessie Harris Building**
Anne Miller Stott	**Knoxville, TN 37996-1900**
Catherine Mackey	**(865) 974-5316**

6. The time needed to complete the survey is approximately 15 minutes.

YOUR SIGNATURE INDICATES THAT YOU HAVE READ THIS FORM AND AGREE TO PARTICIPATE IN THIS STUDY

Print Name   Signature

Date_____

APPENDIX B

CHILD DEVELOPMENT LAB PARENT SURVEY

PARENTS: <u>Individually,</u> please fill out and return to the Child Development Labs (Place completed surveys in envelopes provided in Lobby)

<u>SECTION I: WORK RELATED</u>

Do you have access to computer usage via your job or employment?
_____yes_____no

   (Note: If no, please go to Section II. Skip the remainder of Section I)

What type of computer do you have and what is its speed?
_____processor at _____MHz _____ Don't know

Do you have Internet access at work? _____yes   _____no

What is your Internet access?
_____ethernet wiring _____modem_____ISDN lines _____ Don't know

What speed modem does your work computer use? _____kbs
_____Don't know

Is your computer able to handle heavily loaded graphic images from the Internet? _____yes_____no _____ Don't know

While at work do you operate on a desktop computer or do you use a computer lab?
_____desktop computer   _____computer lab

<u>SECTION II: HOME RELATED</u>

Do you have a computer at home?
_____yes_____no

   (Note: If no, please go to Section III. Skip the remainder of Section II)

What type of computer do you have and what is its speed?
_____processor at _____MHz _____Don't know

Do you have Internet access at home? _____yes   _____no

What is your Internet access?

_____ethernet wiring _____modem _____ISDN lines _____Don't know

What speed modem does your computer use? _____kbs _____Don't know

Is your computer able to handle heavily loaded graphic images from the
Internet? _____yes _____no _____Don't know

Does your child have access to the computer at home? _____yes _____no

Estimate in hours how often your child uses the computer at home every week:
_____hours

Does your computer have a CD-ROM? _____yes _____no

Please list the software that your child currently uses.

_____

SECTION III: OTHER

Do you have an e-mail account? _____yes _____no

If yes, what is your e-mail address?
    At Work:
    At Home:

Which of the following *best represents* how often you check your e-mail?
_____every hour
_____every day
_____every week
_____every month

When is the *best time* for you to check and read your e-mail while at <u>work</u>?

_____

When is the *best time* for you to check and read your e-mail while at <u>home</u>?

_____

If made available by the CDL, would you be interested in observing your child's
classroom via the Internet? _____yes _____no

Using the scale 0-2 to answer the questions below, how much do you perceive the service listed above would:

| | None=0 | Some=1 | A lot=2 |

_____Interfere with your work?
*Explain how:*_____

_____Enhance the quality of your relationship with your child(ren)?
*Explain how:*_____

_____Enhance the quality of your relationship with your child(ren)'s classroom teacher?
*Explain how:*_____

_____Make you feel more involved with your child(ren)'s daily activities at the CDL?
*Explain how:*_____

_____Make you feel more secure with the quality of care your child(ren) is(are) receiving?
*Explain how:*_____

_____ Other, please comment:

_____

_____

_____

If password protected, how comfortable would you be in allowing your child(ren)'s classroom to be observed by other parents who have children in the program?

_____not comfortable at all
_____somewhat comfortable
_____very comfortable
_____extremely comfortable

Please explain your reactions or questions to this proposed idea.

_____

_____

_____

If password protected, how comfortable would you be in allowing your child(ren)'s classroom to be observed by other grandparents and significant others who are related to or closely associated with other children in the CDL program?

_____not comfortable at all
_____somewhat comfortable
_____very comfortable
_____extremely comfortable

Please explain your reactions or questions to this proposed idea.

_____

_____

_____

_____

Overall, as a parent, I have found my relationship with the UTK Child Development Labs to be:

_____Extremely Satisfying
_____Somewhat Satisfying
_____Not Satisfying

How satisfied are you with your job? (Check one below)

_____ Very Satisfied
_____ Pretty Satisfied
_____ Not Too Satisfied
_____ Not Satisfied at All

How happy are you with your job environment? (Check one below)

_____ Very Happy
_____ Pretty Happy
_____ Not Too Happy
_____ Not Happy at All

Overall, how well do you get along with your supervisor at work? (Check one below)

_____ Very Well
_____ Pretty Well
_____ Not Too Well
_____ Not Well at All

How satisfied do you find being a parent is? (Check one below)

_____ Very Satisfying
_____ Pretty Satisfying
_____ Not Too Satisfying
_____ Not Satisfying at All

How happy are you with the way your children behave? (Check one below)

_____ Very Happy
_____ Pretty Happy
_____ Not Too Happy
_____ Not Happy at All

Overall, how well do you get along with your children? (Check one below)

_____ Very Well
_____ Pretty Well
_____ Not Too Well
_____ Not Well at All

For each of the items given below, please indicate how satisfied you are with your day-to-day life in terms of each item using the following scale:

1= Extremely Satisfied
2= Somewhat Satisfied
3= Not Satisfied

_____ 1. The work you do.
_____ 2. Where you live.
_____ 3. Your way of life.
_____ 4. The things you do for enjoyment.
_____ 5. Your health.

SECTION IV: DEMOGRAPHICS

Parent gender completing this survey: _____father   _____mother

Who is the legal guardian of your child(ren)?

_____Both Mother and Father
_____Mother only
_____Father only
_____Other, please specify_____

Number of children currently enrolled in the CDL:

_____Daughters   Ages: _____
_____Sons   Ages: _____

Location of enrollment: ____White Avenue _____Laurel _____Golf Range

What was the month and year that your child(ren) was(were) first enrolled in the CDL?

Child's first name_____   _____month _____year
Child's first name_____   _____ month_____year

Highest degree earned:

_____Elementary School (grades K-5)   _____Bachelors
_____Junior High (grades 6-8)   _____Masters
_____High School (grades 9-12)   _____Doctorate
_____Some College   _____Other (please specify)

Present Marital Status:

_____Single   _____Married and Separated
_____Married   _____Widowed and Remarried
_____Widowed   _____Divorced and Remarried
_____Divorced   _____Other (please specify_____)

In which of the following categories would you say your current job fits? (Please check only one category)

_____Professional, technical, and kindred workers
_____Managers, officials, and proprietors, except farm
_____Clerical, sales, and kindred workers
_____Craftspeople, crew managers, and kindred workers
_____Machine operators
_____Service workers, including private household
_____Laborers, except farm and mine
_____Farmers and miners
_____Not applicable

What is your personal pre-tax income? Please do not count your spouses income, but do include your other allowance (i.e., car allowance, house allowance, social security allowance)

_____less than $5,000
_____$5,000 to $7,499
_____$7,500 to $9,999
_____$10,000 to $14,999
_____$15,000 to $19,999
_____$20,000 to $24,999
_____$25,000 to $34,999
_____$35,000 to $49,999
_____$50,000 or more

How would you describe your ethnic or racial background? (optional)

_____White/American, Caucasian
_____Black American
_____American, Indian
_____Latin American, Hispanic
_____Oriental American, Asian Pacific

APPENDIX C

MEASURES FOR THE PRESENT STUDY

Using the scale 0-2 to answer the questions below, how much do you perceive the service listed above would:

None=0   Some=1   A lot=2

_____Interfere with your work?

*Explain how:*_____

_____Enhance the quality of your relationship with your child(ren)?

*Explain how:*_____

_____Enhance the quality of your relationship with your child(ren)'s classroom teacher?

*Explain how:*_____

_____Make you feel more involved with your child(ren)'s daily activities at the CDL?

*Explain how:*_____

_____Make you feel more secure with the quality of care your child(ren) is(are) receiving?

*Explain how:*_____

Other, please comment:

_____

_____

If password protected, how comfortable would you be in allowing your child(ren)'s classroom to be observed by other parents who have children in the program?

_____not comfortable at all
_____somewhat comfortable
_____very comfortable
_____extremely comfortable

Please explain your reactions or questions to this proposed idea.

_____

_____

_____

If password protected, how comfortable would you be in allowing your child(ren)'s classroom to be observed by other grandparents and significant others who are related to or closely associated with other children in the CDL program?

_____not comfortable at all
_____somewhat comfortable
_____very comfortable
_____extremely comfortable

Please explain your reactions or questions to this proposed idea.

_____

_____

_____

Overall, as a parent, I have found my relationship with the UTK Child Development Labs to be:

_____Extremely Satisfying
_____Somewhat Satisfying
_____Not Satisfying

VITA

Catherine Mackey was born in Livingston, Tennessee on April 1, 1976. She grew up in Albany, Kentucky and graduated as salutatorian of Clinton County High School in 1994. She attended the University of Kentucky and graduated summa cum laude with a Bachelor of Science degree in Interdisciplinary Early Childhood Education in December 1998. After working as an infant and toddler classroom teacher, Catherine moved to Knoxville, Tennessee in August 1999. While at The University of Tennessee, she worked as a graduate assistant in the Child Development Lab as an infant and toddler classroom teaching assistant and later as an administrative graduate assistant.

After finishing her coursework, Catherine was hired by the Tennessee Valley Authority in Knoxville, Tennessee. She is part of TVA's Public Power Institute, assigned to Stakeholder Relations for External Collaborations & Commercialization. Her Master of Science degree in Child and Family Studies will be conferred in December 2001.