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THE MEANING OF HEALTH-RELATED E-MAIL MESSAGING AT THE WORKSITE AND ITS RELATIONSHIP TO HEALTH BEHAVIOR CHANGE

A Dissertation in

Adult Education

by

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ABSTRACT

This qualitative inquiry was undertaken to explore how employees at two worksites made meaning of health-related e-mail messages in relation to health behavior change. Informed by both health behavior change theoretical frameworks and transformational leaning, this study investigated the ways that participants made meaning of message content, structure, and appearance as a part of the electronic mail modality and within the context of a corporate health promotion program. Seeking to explain the factors influencing individuals’ health behavior, this research examines how change occurs over time and how adult learning leads to desired health outcomes. The findings have implications for adult leaning and health education, two fields that offer insight into how adults make sense of electronic messaging in relation to their health habits, worksite setting, and potentially other venues.
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CHAPTER 1

Introduction

In a time where average sized businesses spend approximately 10.2% of total payroll costs for health costs (Employee Benefits Research Institute, cited in “What Health,” 1994), employers have a vested interest in improving employee health. For the nearly 110 million people who go to work each day, the workplace can be a forum for encouraging healthy behaviors and enforcing supportive policies (U. S. Department of Health and Human Services, 1995). To encourage healthy employee practices, health education programming and related initiatives at the worksite are becoming very common (Association for Worksite Health Promotion, 1999). Sparked by specific national goals (U.S. Department of Health and Human Services, 1990) calling for the increase of worksite-based health education activities that would impact adult health behavior change, educators began to theorize how the use of health messages might be effectively transferred into the workplace. Studies have shown that companies can gain significant health changes with limited intervention programs (Blake & Dehart, 1994). It has been estimated that over 104 studies have been conducted studying the impact of workplace health promotion programs (Pelletier, 2005). Through out this time, researchers have strove to devise methods of capturing data that meet the needs of both health educators and economists.

Although the focus of much of this research has been to demonstrate the cost savings to employers in the areas of reduced absenteeism, increased worker productivity, and decreased health care costs, the changes in health behavior that have resulted in improved worker health underlie the positive outcomes of these lines of investigation. How has health-related messaging been used in the worksite? Worksite health promotion activities studied that have impacted
health behavior and status have generally involved the use of some form of educational intervention activity, such as print materials or classes, that is implemented after a health status and/or employee interest assessment, to encourage workers to adopt healthier lifestyle habits that would result in health risk reductions.

Landmark investigations regarding the impact of corporate health promotion programs have shown a return of investment of 6.47 to 8.81 for every dollar invested (Pelletier, 1999b). These initiatives not only improved the company’s financial health, but also the status of its employees’ well-being, as medical expenditures and absenteeism rates were significantly impacted (Pelletier, 1999a, 1999b). While such research joins the ranks of other such workplace studies done in the past five to ten years that demonstrate moderate to significant health behavior change outcomes, Pelletier (1999a) notes that the effectiveness of such research should be viewed with cautious optimism.

Some reasons for this cautious approach are associated with some criticisms of worksite health education: it has low impact on high utilizers of health care, other competing corporate training initiatives are more important, and some employers are inflexible in allowing worker participation in onsite health education interventions (Glascow & McCaul, 1993; Heaney & Goetz, 1996; Lewis, 1995; & Pelletier, 1999a). How can worksite health educators address these barriers? Kok, van den Borne, and Mullen (1997), referring to the effectiveness of health education, concluded that “The potential effectiveness of interventions in practice may be increased by systematic development of adoption and implementation strategies, including the creation of ‘linkage systems’ between intervention developers and representatives of the target and user systems” (p. 19). One such linkage system would be the use of educational technology for health promotion efforts within the worksite. Harnessing the potentials of computer-based
technology, including such mediums as e-mail messaging, on-line instruction and electronic communications, presents educators with the freedom to deliver educational messages outside the boundaries of time and location. Through these mediums, tailored programming will play a major role in meeting the educational needs of today’s adults (Main & Berry, 1993; McCullough & McCullough, 1994).

This study concerns itself with the meaning and interpretation associated with receiving health-related e-mail messages at the workplace. What is it about how people perceive e-mail messaging at the worksite that brings certain meanings or concepts into their conscious awareness regarding their own health or health behavior? With the growing presence and effectiveness of worksite health promotion efforts, the characteristics and instructional uses of electronic mail technology offers possible solutions to workplace health promoters the success of electronic mail as a message delivery and instructional tool brings a new dimension to how people might receive or seek information to increase health behavior knowledge or change. The theoretical framework of this study is grounded in three intersecting theoretical discussions of the Health Belief Model (HBM) (Janz & Becker, 1984), Stages of Change Model (SOCM) (Prochaska, Norcross, & DiClemente, 1994), and Transformational Learning (TL) (Mezirow, 1991). Health behavior change theories, like the HBM and SOCM provide useful frameworks by which health educators can explore the factors influencing health behavior. The HBM (Janz & Becker, 1984) and the SOCM (Prochaska, Norcross, & DiClemente, 1994) are used predominantly by health education professionals to explore the processes by which individuals’ enact health behavior change. In both of these theoretical frameworks, educational messages are prominently featured as a means to raise awareness, increase knowledge of positive behavioral outcomes, and improve the likelihood that health behaviors will be achieved. These models
involve a person’s progression through a series of understandings and decision making that lead to a choice about a particular health behavior. Although valuable, these theories do not offer much insight into how change occurs over time or how adult learning processes lead to a desired health behavior outcome. While looking outside these traditional health models, it is apparent that the theory of Transformation Learning (TL) (Mezirow, 1991) has some similarities with these two models. TL offers much more insight into the cognitive processes involved in learning, the organization of meaning perspectives, and the role of critical thinking and discourse with others during the change process. More research is needed concerning how different types of health behaviors and societal factors might warrant modifications in these models’ constructs for application at the worksite.

The Use of E-Mail Messaging

The use of electronic mail as an educational tool is a potential strategy linking interventionists and targeted populations. Electronic mail (e-mail) is an interactive, computer-driven technology that facilitates two-way interpersonal communication among individuals or groups, and is fast becoming a pervasive communication medium across the globe (Williams, 1998). “The pace of innovation and imaginative applications of technology in adult education and literacy classrooms are clearly increasing” (Lovell, 1993, p.7). The information age has literally brought educational opportunities to the grasp of most individuals because it can cross the boundaries of time and location. However, even when educational technology such as that just described matches the needs of some adult learners, the “delivery of services” parts of instructional technology presents a barrier to learners in some settings. Despite these barriers, the U.S. Department of Commerce (2002) found the following:
E-mail is one Internet use, however, that transcends all demographic and geographic boundaries. E-mail is clearly the “killer application” of the Internet for the 1990s. Of Americans who use the Internet, nearly 80 percent (77.9%) use it to send e-mail, and over half (53.6%) of people with Internet access outside the home use the Internet for e-mailing. The numbers are consistently high, regardless of income, race, gender, age, or any other characteristic. (p. 5)

The fact that e-mail usage is the most used application among the majority of all kinds of Internet users, that the workplace is the most common place that the Internet is accessed (U.S. Department of Commerce, 1999), and that there are 82.8 million e-mail users at work (Electronic Messaging Association, 1996) presents an interesting opportunity for proponents of educational technology. Knowing that nearly 110 million people go to work each day (U.S. Department of Health and Human Services, 1995) makes e-mail technology, as a potential learning device or instructional supplement, very appealing to educators that want to reach adults in a setting where the tools for information delivery are available and already being used regularly. This kind of flexibility has thrust educators into a new realm of promising instructional delivery.

While initially viewed as a simple means to exchange information, the social interplay between e-mail sender and receiver, in addition to the construction of meaning from electronic text, is becoming a topic of study (Williams, 1998; 1999). A common thread is this work concerns the issues that e-mail increases access to people and information, and that the changes associated with e-mail use are socially as well as technically determined. Further, the use of this technology extends the range of communication and decision-making options available to e-mail users, leading users to extract bits of meaning and interpretation from various aspects of the exchange. There are numerous factors influencing users’ interpretation of e-mail messages,
including: message type, message context, message header (subject line), message priority, message length, message text appearance, contextual relationship between message/sender (Williams, 1999).

Findings suggest that e-mail communicators do not simply exchange messages as electronically linked senders and receivers; users “…perform social acts in action situations that are normatively regulated by, and already have meaning within, the organizational context” (Ngwenyama & Lee, cited in Williams, 1998, p. 7). Thus, senders and recipients are active producers of meaning based on the contextual factors surrounding the e-mail communication, opening many avenues for e-mail to be used as a delivery mechanism for education and training (Barron, 1998).

E-Mail as an Educational Tool

Looking back in the adult education literature, educational technology and eventually, e-mail, was born out of the instructional design field with the investigation of how effective new technologies were in assisting learners acquire desired behaviors (Roblyer & Knezek, 2003). As educators experimented with this new modality, a tension was mounting in the field about the role of technology in learning that was most prominently expressed by Clark stating that “…media are delivery vehicles for instruction and do not influence learning” (1983, p.453). For those that held the opposing view - media and its specific modality of delivery is important to the learning experience – there began a period of research that examined the use of educational technology and its impact on learning. E-mail within higher education and within the worksite was included in this body of research.

As the use of e-mail has evolved into a complex modality of communication, it has been used as an effective instructional tool and online educational adjunct (Zack, 1995), with its use
and effectiveness being studied within the venues of both higher education and worksite health promotion. Basically, learning activities accomplished with electronic mail fits into five categories: online material presentation, online collaborative and project work, online help and assistance, online group discussion, and evaluation (Lowry, Koneman, Osman-Jouchoux & Wilson, 1994; McQuail, 1994; Zack, 1995; Doring, 1996; Garside, 1996; Hawley, 1996; Xu, 1996; Yungbluth & Bertino, 1996; Zolten, 1997; Henderson, 2002). This technology has been most commonly used as an instructional supplement in the usual classroom settings, as an adjunct to distance learning, or as a whole new alternative to traditional learning environments.

Within the venue of higher education, e-mail-related learning activities as referenced above have been received positively by learners and viewed as effective by educational institutions. Generally, learners perceive e-mail components of online courses, for example, feedback from instructors and other students as positive and valuable (Frey, Faul & Yankelov, 2003; Woods, 2002). As a learning tool, e-mail has been effectively used to foster cooperative learning and student reflection, as posted exchanges and electronic discussion boards among students proved productive in creating a sense of community, encouraging debate, fostering compromise, and constructing a shared base of knowledge (Lowry, et al., 1994; McQuail, 1994; Yungbluth & Bertino, 1996;). Messaging among students and between students and facilitators has also been studied as providing a regular forum for personal reflection (Henderson, 2002) and self-assessment regarding the learning process. Additionally, when comparing courses taught entirely via e-mail with those taught partially by e-mail and part by traditional lectures, students receiving both e-mail and lecture components performed better in testing (Smith, Whitely & Smith, 1999).
What are the advantages to using e-mail as an instructional tool in the ways described above? First of all, e-mail messaging is accessible, convenient, instantaneous, easily stored/transmitted and cost effective for both students and teachers because it can be accessed at multiple locations at any time of day (Ahern, Kreslake, & Phalen, 2006; Kahn, 2005). In support of this, 65.6% of Americans have access to the internet at home or at work, with 84% of those users accessing e-mail more readily than all other online activity (U.S. Department of Commerce, 2002). Secondly, e-mail’s use can provide a forum for student/teacher or student/student collaborative work, even when students and instructors might be separated by time and space (Chen, 1994; McQuail, 1994; and Xu, 1996). Further, this kind of project work can maximize the knowledge and experience of all participants, increasing the equity of student participation while assisting more inhibited students overcome social isolation (Lowry et al., 1994; McQuail, 1994; Xu, 1996; Zolten, 1997). Thirdly, e-mail communication can increase the interpersonal bonding between student and teacher because there is ready access to help, support, and bilateral feedback (McQuail, 1994; Zolten, 1997). Lastly, e-mail use by itself can encourage knowledge building and foster reflective writing skills (Xu, 1996; Henderson, 2002).

E-Mail as a Health Promotion Tool at the Worksite

The idea of e-mail as a potential instructional tool has been embraced by medical and educational professionals striving to assist adults in making better health decisions. Web-based strategies, including e-mail messaging, are viewed as a viable communication alternative to face-to-face encounters within the health care system (Hughes, 2003). As these Internet-based tools have emerged, health professionals have discovered that targeted patient e-mails, interactive health education modules, electronically generated reminders to seek care or manage a condition, and online symptom monitoring are potentially effective ways to increase patient compliance,
increase access to care, increase patient satisfaction, and to decrease ineffective utilization of health care resources (Hughes). Within the field of health education, effective strategies have been developed via the computer-tailored and/or computer-generated interventions (de Vries & Brug, 1999; Shea, DuMouchel, & Bahamonde, 1996; Strecher, 1999). For example, health education messages and information are adapted to one specific person or targeted groups through a computerized process in hopes of impacting health behavior change. Research has revealed that these health messages were more likely to be read, remembered and personally relevant to the recipient (de Vries & Brug, 1999). Because this research has focused thus far on the use of computer-generated printed educational materials, the potential uses of other message delivery systems, such as e-mail messaging, presents new opportunities for educators.

In general, the research regarding the use of e-mail messaging as part of a worksite health promotion tool is somewhat limited, with only ten percent of worksites using e-mail for health education message delivery even though this form of communication is available and positively perceived by employees (Association for Worksite Health Promotion, 1999). In addition, when e-mail is used it is often viewed as an adjunct to other web-based content or onsite class delivery. With this in mind, employers and health educators concerned with employee health and implementing health promotion programming need to reconsider the use of e-mail messaging as a feasible means to teach adults about health and behavior change at the worksite.

In reference to educational e-mail effectiveness at the worksite, studies have examined usage of targeted e-mail messaging to affect weight loss, risk of diabetes, or physical activity (Tate, Wing, & Winett, 2001; Napolitano, Fotheringham, Tate, Sciamanna, Leslie, Owen, Bauman & Marcus, 2003; Tate, Jackvony, & Wing, 2003). The content of these messages were constructed to be a short health “tip,” or a recommendation or reminder to pursue a certain health
behavior with option to pursue further information via an embedded weblink. In these studies, employee participants were assigned to either a treatment group (received e-mail) or a control group, with greater changes in positive, physical health indicators among the treatment group.

In regards to the feasibility, reach and preferences of e-mail, a recent study by Franklin, Rosenbaum, Carey, and Roizen (2006) provides evidence that the use of sequential e-mail messages during a six month period to promote healthy behaviors among employees had feasibility, broad reach, and employee acceptance, with a majority opening 50% or more of daily messages. In addition, Kurioka, Muto & Tarumi (2001) examined how health counseling via e-mail was used in the workplace to solve particular health problems as compared to face-to-face, telephone, and ordinary mail. Upon comparison, e-mail counseling, behind face-to-face was the second most preferred method for younger employees (aged 20 – 40), and ranked third among those over 40.

More specific to workplace health promotion, e-mail messaging can provide advantages to address the barriers or criticisms of traditional worksite health promotion programs that have been noted by researchers (Glasgow & McCaul, 1993; Heaney & Goetzel, 1996; Lewis, 1995; & Pelletier, 1999a). Where traditional onsite classes do not reach high-risk employees, e-mail messages can be sent to everyone. In circumstances where retirees, dependents and off-site employees cannot attend onsite activities, e-mail messages can sent to their homes. When companies feel that health education programming might compete with other training or take up too much of workers’ time, e-mail messages can be instantaneously sent to an employee’s desk or home without them having to leave their workstation. Where health education initiatives are not connected to existing health benefits structures, e-mail messaging can be used to inform employees, retirees and dependents about health-enhancing aspects of their particular health
insurance plan. When current health promotion programming lacks adequate incentives, congratulatory or reinforcing e-mail messages can be used to incent participants or communicate upper management support. Where traditional onsite health classes have difficulty targeting health risks of different employee groups, e-mail messages can easily be developed, targeted and sent to specific groups of employees in different locations or who have vastly different job-related health risks. Also, when typical health promotion at the worksite seems disjointed and without a grand plan, e-mail messaging can be used as an educational linkage to reinforce, promote, evaluate, and connect varying health education initiatives occurring within a company throughout the whole year. All these advantages merge together to reinforce what other research has found: electronic mail is becoming an acceptable alternative to face-to-face communication (Garside, 1996) in educational settings, and is not perceived as a superficial means of communicating (Adkins, 1991).

However, despite e-mail’s use as an emerging learning tool, it has drawn some criticisms from those in the instructional and worksite arena. One major disadvantage of using e-mail is similar to other problems that have been traditionally associated with computer use over the years — occasional unreliability of computer systems (Garside, 1996). Other disadvantages can include: email is void of oratory, physical and environmental cues that can hamper message interpretation, some individuals do not have convenient access to e-mail, some learners prefer speaking to writing, and some learners may feel socially isolated by e-mail use (Lowry et al., 1994; Garside, 1996; Xu, 1996).

Despite its drawbacks, it is the unique way of constructing meaning that e-mail offers that has led professionals in diverse fields to explore how it can be harnessed as an instructional tool to disseminate information to more people than could ever be thought possible. A continual
question arises from this review of literature — what is the value of e-mail messaging in an educational context, specifically that of the worksite? In most cases, the literature revealed that e-mail is typically not used alone as the primary communication mode, but used in conjunction with other methods, such as web modules or discussion boards. For example, the addition of an e-mail component to an already existing online learning is perceived as adding "value" to online learning in various settings (Lowry et al., 1994; Zack, 1995; Doring, 1996; Garside, 1996; Hawley, 1996; Xu, 1996; Yungbluth & Bertino, 1996; Zolten, 1997; Smith et al., 1999; Woods, 2002). However, the specific value of an e-mail component is viewed differently depending on why and how it is used within a particular setting.

When comparisons are made between the use of e-mail as an instructional tool in higher education and the use of e-mail at the worksite to affect health behavior change, these differences are apparent. In both higher education and at the worksite there are different outcomes expected from the message receiver when an e-mail message is used. In higher education, e-mail is used more to provide student feedback, increase student collaboration and reflection, and/or convey basic learning concepts (McQuail, 1994; Barron, 1998; Henderson, 2002). When e-mail has been researched at the worksite setting, it is used more as a tool to coach or persuade the message receiver to change something about their health behavior (Ezenkwele, Sites, Shofer, Pritchett & Hollander, 2003; Fox, Creinin, Murthy, Harwood & Reid, 2003; Garr, Ornstein, Jenkins & Zemp, 1993; Lorig, Laurent, Deyo, Marnell, Minor & Ritter, 2002; Marshall, Leslie, Bauman, Marcus, and Owen, 2003; Napolitano, 2003; Ornstein, Garr, Jenkins, Rusk & Arnon, 1991; Tate et al., 2001; Tate et al., 2003). Because the expected outcome is different in these settings, the value of the e-mail message's worth is very closely related to how the outcomes are being measured by that particular research study.
For example, in the higher education literature, the e-mail message's worth is associated with measurements of student perceptions of that message as being favorable and/or its potential impact on increasing student participation. By comparison, the worksite literature also measured employee perceptions of the e-mail intervention to some extent, but there was also a strong desire to associate e-mail with a measurable physical change in a tangible health status (i.e. body fat, physical activity, etc.). Although this observation seems to make sense based upon a worksite's need to justify any health education initiative with proven cost-savings outcomes, it also reveals a weakness of the e-mail literature in general. When e-mail was studied as part of a higher education setting, there seemed to be less focus on tangible results regarding quantitative academic outcomes, and more focus placed on student perceptions and preferences. The exact opposite was seen in the worksite literature. Thus, because of this trend, there was a lack of detailed awareness about employee perceptions, preferences, and message construction concerning e-mail at the worksite, and a corresponding lack of quantifiable student outcome data in the higher education literature. Although bits and pieces of e-mail usage as an instructional tool are revealed as generally positive, a complete picture of its practical implementation is missing due to the differences in how outcomes were measured within the varying settings and lack of detailed awareness about employee perceptions, preferences, reactions to message content, and message construction.

Media Effects

Although e-mail has been studied in both educational and worksite settings, this research does not offer much insight into how people perceive and interact with different forms of messages and what kinds of visual enhancements may positively impact attention, memory, or positive perception of the message itself. Thus, one prominent area of current research is the
construction of electronic media; a next logical question pertains to how the structure and appearance of these communication forms influence the recipient in other ways. Specifically, how does current media effects research regarding graphics, animation, interactivity and media source impact recall, recognition, perception and/or behavioral intent associated with an e-mail message. Within the media effects literature, the impact of source (what is the origin of this information?), interactivity (what options exist to interact with this information?), navigability (how easy is it to navigate through this information?), and modality (what is the mode of delivery of this information?) are often referenced as important factors affecting one’s sensory reactions to a particular media form ((Diao & Sundar, 2004; Heo, Sundar, & Chaturvedi, 2001; Heo & Sundar, 2000a, 2000b; Reeves & Nass, 2000; Sundar, 2000; Sundar & Kalyanaraman, 2004; Sundar, Kalyanaraman, & Brown, 2003; Sundar & Nass, 2001).

In regards to the type of e-mail messaging referenced in this work, the influence of source and modality (and in particular, animation) appear to be the most relevant elements within the limitations of the message design/function itself, that could be modified to affect the potential impact on e-mail recipients. In summary, animation and source have been studied as a means to impact perception, orienting responses and memory enhancements in web advertising (Diao & Sundar, 2004; Heo & Sundar, 2000a, 2000b; Sundar & Kalyanaraman, 2004), and online news (Sundar, 2000; Sundar & Nass, 2001). Based upon this research, it is reasonable to hypothesize that the addition of these and previously mentioned educational elements in an e-mail message should impact recall, recognition, perception, behavioral intent and positive learning outcomes among recipients at the worksite. By integrating of these elements, it is feasible to construct a series of health education e-mail messages targeted to decrease a major employee health indicator among a high risk population at the worksite.
Statement of the Problem

The characteristics and instructional uses of electronic mail technology offers possible solutions to workplace health promoters that want to expand existing modalities for health information dissemination. The fact that e-mail is already perceived positively by most people, that it is the most frequently used Internet application, and that most persons have access to e-mail at work certainly form a strong basis for its use in health education tool at the worksite and calls for innovation in the field of worksite health education. E-mail transcends time and place, it can be sent anywhere (high risk utilizers, retirees/dependents, and offsite employees), it can be targeted and customized to meet the needs of employees at different worksites, e-mail can be used as a promotional and evaluative tool for existing health education services, it can be used as a way to integrate a personal touch to a program that helps build a corporate culture that supports health-enhancing employee behaviors, and e-mail is an important educational linkage between selected health promotion activities and current health benefit structures. The measure of e-mail’s success as an instructional tool at the worksite needs to be studied in more detail, particularly in relationship to foster health behavior change. The need to prove tangible physical behavioral changes associated with e-mail use will probably continue, but much waits to be answered concerning how e-mail could be used for reflection on behavior change or collaborative learning among employees to affect health improvements among a workforce. Understanding outcomes, whether positive or negative, is so closely linked to understanding the processes by which the outcomes evolved.

Overall, the research seemed to indicate that e-mail messaging made sense from an outcomes perspective, in that employees used this mode to affect tangible health behavior change. A logical question and implication for future research would be — why did e-mail
succeed or fail at the worksite? Knowing that an employee did lose weight or did not increase physical activity while receiving e-mail messaging does not explain how this method impacted the health behavior change process. Three areas paramount for future research are message construction, message outcomes, and message integration into a more detailed model of learning.

There is much to be learned about how messages could be constructed. Variables such as message frequency, message length, message appearance, and message literacy levels are critical elements in understanding the interplay between sender and receiver. Additionally considered here would be how e-mail could be combined with other learning tools to maximize effectiveness. The literature portrayed e-mail as being combined with numerous other modes of information delivery. How might e-mail be studied as an adjunct to these components? How might the effects of individual components be untangled in future research? What educational sequence of delivery modes might be most useful? Health education practitioners working to impact employee health behavior have positive evidence to begin utilizing e-mail messaging at the worksite. How the success and effectiveness of e-mail is studied will be driven in part by business interests in reducing employee health risks, and hopefully in part by a desire to understand the factors impacting health behavior change and associated quality of life issues.

Purpose of Research

The purpose of this study is to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings relate to current and future health behavior.
Research Questions

The goal of this study was to explore how employees at the worksite make meaning of e-mail messaging targeted at providing information regarding risk factors and positive health behaviors. Specific questions related to this issue are as follows:

1. What is the meaning and effect of the overall health e-mail message as it relates to an employee’s current and future health behavior?

2. How do employees at the worksite make meaning of the actual e-mail message content regarding suggested practices to effect health behavior?

3. What aspects of the message appearance and construction are related to an employee’s process of meaning making as it relates to their health behavior?

Theoretical Framework

With an awareness that increased knowledge can lead to better health decisions (Leavenworth, 1995), health educators have long been curious about how people use health information to change their health habits and behavior. The success of electronic mail as a message delivery and instructional tool brings a new dimension to how people might receive or seek information to increase health behavior knowledge or change. The theoretical framework of this study is grounded in three intersecting theoretical discussions of the Health Belief Model (HBM) (Janz & Becker, 1984), Stages of Change Model (SOCM) (Prochaska, Norcross, & DiClemente, 1994), and Transformational Learning (TL) (Mezirow, 1991). Health behavior change theories, like the HBM and SOCM provide useful frameworks by which health educators can explore the factors influencing health behavior. The HBM attempts to explain health behaviors among individuals that maintain health and prevent or detect disease, as well as guide frameworks for health education interventions (Janz & Becker, 1984; Janz, Champion, &
Strecher, 2002; Rosenstock, 1974; Rosenstock, Strecher, & Becker, 1988). Historically, the HBM was used to explain the wide failure of people to participate in disease prevention programs and later, peoples’ responses to disease symptoms, actual illness, or adherence to medical regimens (Rosenstock). The model outlines four basic variables or dimensions of belief that influence individuals’ health behavior. The variables are: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Janz & Becker).

While perceived barriers, perceived susceptibility, and benefits are consistently associated with health behavior choices, information given about these HBM constructs can act to influence a person’s decision to enact positive health changes, as well as inform health behavior change interventions. Theoretically, researchers strive to predict what types of information/message might impact each of the HBM’s constructs in ways to motivate healthy behavior. Several studies that have specifically examined perceived barriers to preventive health screenings have cited lack of health knowledge or misinformation as major barriers to obtaining screening (Burack, 1989; Fischera & Frank, 1994; Melnyk, 1988; Womeodu & Bailey, 1996), with increased health information and knowledge overcoming some aspects of patients’ perceived barriers and increase awareness of susceptibility.

A second health behavior change theoretical framework is The Stages of Change Model, or Transtheoretical Model, developed by Prochaska, Norcross, and DiClemente (1994). After extensive study of individuals’ health behavior, Prochaska and colleagues found that people consistently tend to progress through a series of stages in reaching desired behavioral goals (for example, quitting smoking, increasing physical activity, changing diet, etc.). Their model outlines six stages of progression that represent an individual’s progression through increasing levels of personal readiness or willingness to initiate healthy behavior change:
precontemplation, contemplation, preparation, action, maintenance, and termination. At the precontemplation stage, people have no intention of changing their behavior, usually measured as the next six months, and typically deny having a problem. The contemplation stage is characterized by a person’s shift from no intention to changing a behavior to having intention to take behavioral health action in the next six months (Prochaska, Norcross, & DiClemente, 1994; Prochaska, Redding, & Evers, 2002). The preparation stage represents that point when individuals are ready to move forward with a behavioral change, usually measured in the next month, but may still have some ambivalence about when and why the particular health action is best for them (Prochaska, Norcross, & DiClemente). Typical health behavior change programs are targeted at individuals in the preparation stage or the stage immediately following — the action stage (Prochaska, Redding, & Evers). The action stage is marked by an individual’s having made overt, observable changes in their lifestyles within the last six months that meet criteria set by health professionals demonstrating sufficient change and modification to reduce disease risks (Prochaska, Redding, & Evers) associated with that particular behavior. The action stage persists until an individual has continued to demonstrate the targeted health behavior from six months to five years, at which point the person is said to have progressed to the maintenance stage. When persons achieve total confidence in their ability to cope with barriers and temptations regarding their new health behavior, and very little effort is required to maintain the change, the termination stage has been reached. Some argue that at this stage, it is as if the person never acquired the original, negative behavior in the first place; others believe that a complete 100 percent change is unrealistic for most people and that lifetime maintenance of the new behavior is more likely (Prochaska, Redding, & Evers).
Although the Stages of Change Model (Prochaska, Norcross, & DiClemente, 1994) has been used successfully to assess persons’ progression in achieving changes in health behavior, it has also been widely used as a theoretical framework in designing health behavior change interventions that are targeted at encouraging individuals’ movement through the stages. Numerous studies have addressed how the Stages of Change Model has been used to guide health behavior change interventions and outcomes. The most common use of the model has been to tailor targeted communication (written or electronic) to match the message to the individual’s particular stage of change in hopes of encouraging stage progression (Brug, Campbell, & van Assema, 1999; Brug, Steenhuis, van Assema, & de Vries, 1996; de Vries & Brug, 1999; Marcus, Owen, Forsyth, Cavill, & Fredinger, 1998; Prochaska, Redding, & Evers, 2002; Rakowski, 1998; Strecher, 1999). In general, materials matched to a particular stage of change were more effective in encouraging progression in targeted behaviors.

In summary, the HBM (Janz & Becker, 1984) and the Stages of Change Model (Prochaska, Norcross, & DiClemente, 1994) are used predominantly by health education professionals to explore the processes by which individuals’ enact health behavior change. In both of these theoretical frameworks, educational messages are prominently featured as a means to raise awareness, increase knowledge of positive behavioral outcomes, and improve the likelihood that health behaviors will be achieved. Even though neither model provides in-depth insights into how learning occurs during health behavior change, both models have been used successfully to predict and/or guide health behavior change and intervention. More research is needed regarding both models concerning how different types of health behaviors and societal factors might warrant modifications in the models’ constructs. Although valuable, these theories do not offer much insight into how change occurs over time or how adult learning processes lead
to a desired health behavior outcome. While looking outside these traditional health models, it is apparent that the theory of Transformation Learning (TL) (Mezirow, 1991) has some similarities with these two models. TL offers much more insight into the cognitive processes involved in learning, the organization of meaning perspectives, and the role of critical thinking and discourse with others during the change process.

Transformational Learning (TL) is rooted in the belief that the meanings people derive from experience can be revised to reveal new ways of thinking. Mezirow (1991) more fully developed the concept of TL and defined it “….as a process of construing and appropriating a new or revised interpretation of the meaning of an experience as a guide to awareness, feeling, and action” (p. 35). He noted that people give meaning to their experiences and interpret new situations through their specific meaning systems. Thus, sets of assumptions structure the way we interpret experience. Experience encompasses construed meaning schemes, meaning perspectives, and distorted assumptions. By virtue of every individual’s limitations of experiences across the course of time, a meaning perspective places boundaries on the totality of information that is available in making assumptions about meaning. These inevitable limitations lead to distorted assumptions that impede the awareness of, or openness to, new or different information that might potentially lead to a questioning of meaning schemes or perspectives.

Critical reflection can occur concerning the content or description of a problem, the process of one’s problem solving, and/or the assumption upon which the problem is predicated (Mezirow, 1995). Further, perspective transformation (Mezirow, 1991) is defined as “the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world; this process makes possible a more inclusive, discriminating, and integrative perspective and potential choices or action” (p. 167).
Mezirow (1995) explains that the process of perspective transformation can occur very suddenly, as with a major life-changing event, or through gradual shifts in meaning schemes that eventually challenge an existing worldview. Whether through major events or gradual exposure to varying sources of information, questions exist as to how peoples’ change processes interrelate to perception of messages in the environment.

Although TL has been used as a theoretical base to study a number of health-related concepts, the study of e-mail messaging, health behavior change and TL has not been specifically addressed in the literature. A group of studies have addressed TL within a health context (Boshier, 1992; Courtenay, Merriam, and Reeves, 1998; Hunter, 1980; McDonald, Cervero, & Courtenay, 1999) or within online environments (Aviv, Erlich, Ravid, & Geva, 2003; Cranton & Lin, 2003; Glassman & Barbour, 2004; Gould, 1991; Jamieson, Kajs, & Agee, 1996; Kasl & Elias, 1997; Motteram & Teague, 2000; Parker, 2003; Smith & Farrell, 2001; Ziegahn, 2001). As a whole, this research provide support that TL can inform the understanding of health beliefs and associated behavior or how TL might be enhanced or encouraged via different modes of computer technology, including: e-mail, on-line synchronous dialogue (“chat rooms”), postings in electronic forums, video conferencing or asynchronous review of stored content. Specifically, these modes were used by educators to foster critical reflection and rational discourse among students. In general, this research showed that these mediums provided positive conditions for learning that have distinct similarities with e-mail messaging.

Overview of Methodology

A qualitative methodology is most appropriate for this study because understanding the subjective experiences of the e-mail recipients and their interpretations of meaning are central to the study’s purpose. Morse (1994) notes that the goals of qualitative research are to describe,
explain, and understand a particular phenomenon. Qualitative research explores interpretations, with researchers striving to understand and describe the meanings that people construct in their specific social contexts. Merriam (2002) notes that this understanding, by itself, is the focal point for the researcher, allowing insights into the nature of what it means to be a participant in a specific setting. Because of its emphasis on the socially constructed nature of meaning, the uniqueness of context, and the rich description of experience, the qualitative research paradigm serves the study’s purpose.

With constructivism being an underlying assumption of qualitative research (Phillips, 1997), a social constructivist research type was chosen to study the perceptions that participants’ constructed regarding the experience of receiving e-mail messaging at the worksite. Although the use of e-mail at the worksite is a common, everyday experience, this study denotes its importance as a socially constructed phenomenon that has the potential to impact individuals’ meaning regarding health and health behavior. Social constructivism posits that knowledge is constructed by individuals and groups as they attempt to make sense and meaning of their experiences; this meaning-making occurs within a backdrop of societal context that is in constant flux based upon members’ interpretation (Gergen, 1999; Phillips, 1995). What is it about how people perceive e-mail messaging at the worksite that brings certain meanings or concepts into their conscious awareness regarding their own health or health behavior?

Foundational to this work is the belief that meanings of events are socially constructed by individuals in interaction with their world (Marshall & Rossman, 2006; Merriam, 2002; Patton, 2002). Via computer mechanisms, information delivery through the web can become a common tool for constructivist learning (Huang, 2002). Social constructivism is concerned with “…explicating the processes by which people come to describe, explain, or otherwise account
for the world (including themselves) that they live in” (Gergen, 1985, p.266). As such, several key assumptions are associated with the social constructivist approach: peoples’ ways of understanding the world have no meaning except within a socially constructed context and value system, thus taken-for-granted observations of the world must be critically assessed (Burr, 1995; Gergen, 1999); the ways we understand the world are historically and culturally specific; (Burr, 1995; Gergen, 1973, 1985; & 1999); knowledge is sustained via social processes (Burr, 1995; Gergen, 1985, 1999); and knowledge represents the potential beginnings of broader patterns of practice or action. The meaning individuals’ assign to health related e-mail at the worksite is a reflection of relationships experienced in numerous paths of life. Interpretation is inherently social; shared meanings, activities and other cultural tools are integral to understanding how these messages are conceived at the individual and worksite level (Palinscar, 1998).

Overall, the research type of social constructivism is appropriate for the purpose of this study. To understand that lived experience and meaning that individuals’ give to health-related e-mail messages that the worksite, there must be descriptive information collected that is free of predetermined categories of analysis. The examination of these socially constructed meanings allows the researcher to explore the multi-faceted contexts at work in the message experience. It is the related interplay between the human subject, context, social relationships, and potential action that provides a view of the phenomena that respects the wholeness of the experience and depth of understanding critical to this study’s purpose.

In qualitative research, a small sample is selected purposefully to ascertain the most information about the phenomenon under study (Merriam, 2002; Patton, 2002). In this type of inquiry, it is the researcher’s goal to understand the meaning of a phenomenon from the participants’ perspective; to do this, a sample should be chosen that provides the most that can be
learned about the experience under investigation (Merriam). To achieve this, criterion sampling, a type of purposeful sampling, was used in this study in order to “…select information-rich cases whose study will illuminate the questions under study (Patton, 2002, p.46). The usefulness of criterion sampling is that it allows examination and/or in-depth follow up to cases that meet some kind of preplanned criterion that set them apart from other similar cases (Marshall & Rossman, 2006; Patton, 2002). In order to study the lived experience of employees receiving e-mail massaging at the worksite, a determination was sought via criterion sampling to select a sample of employees that not only receive these messages at work, but also read these messages regularly. To this end, the sample for the study was obtained by recruiting participants from a worksite setting via e-mail.

The main method data collection for this study was through in-depth, face-to-face interviews, a method typically associated with the study of lived experience (Marshall & Rossman, 2006). This method closely matches the kind of information needed to determine the experiences of employees who read health-related messages at the worksite. This study used semi-structured interviews based on inquiries related to the research questions and included in an interview guide (Appendix C). Using the interview guide, each study participant completed a tape-recorded, primary interview at the employees’ place of work lasting 1 ½ - 2 hours, and was later transcribed. Each transcript was delivered back to each study participant for their comment and verification. A secondary interview, of 1 hour in length, was scheduled with each participant at their convenience to review the initial transcript, clarify information discussed, and allow expansion of content or other additional information deemed pertinent to the study’s purpose. All second interviews were tape-recorded and transcribed for use in the next part of the data collection.
Following both the first and second interviews, the researcher conducted a one-hour, tape-recorded focus group with study participants in order to clarify information shared in the interview processes, as well as promote further analysis by participants. Using Marshall and Rossman’s (2006) seven major data analysis procedures, as well as a constant comparative method of data analysis (Patton, 2002), and referring to cognitive processes inherent in data analysis (Morse, 1994), significant themes and categories emerged from these interviews, observations, and focus group data.

Significance of Study

Learning about healthy behavior is critical in an era when the most common chronic diseases, like heart disease and cancer (Aldana, 2005), are strongly linked with personal lifestyle choices such as diet, exercise, and stress. Effective messages regarding healthy choices are significant because the rising cost of treating disease is a crucial social and financial issue. These issues particularly concern the business community because employers have a vested interest in pursuing educational strategies that work to improve employee health and decrease health care utilization.

With the growing presence and effectiveness of worksite health promotion efforts, the characteristics and instructional uses of electronic mail technology offers possible solutions to workplace health promoters that want to expand existing modalities for health information dissemination considering the time constraints of current educational initiatives, as well as adult educators using e-mail as a part of or as an adjunct to other educational endeavors. While electronic mail messaging has been used as an effective educational tool in and outside of organizations (Zack, 1995), the specific use of e-mail messaging at the worksite to affect health behavior is just beginning to be examined, with preliminary studies suggesting that it is an
Effective means to encourage positive health behavior (Kurioka, Muto, & Tarumi, 2001; Napolitano, Fotheringham, Tate, Sciamanna, Leslie, Owen, Bauman, & Marcus, 2003; Tate, Wing, & Winett, 2001).

Outside the evidence that suggests the e-mail may promote positive health behavior, a bigger issue pertains to how these communication forms impact learning and eventual change in health practices at the worksite. At present, theoretical frameworks like the Health Belief Model (Janz & Becker, 1984) and Stages of Change Model (Prochaska, Norcross, & DiClemente, 1994) leverage the use of educational health messages to impact health behavior and disease prevention. In these frameworks, messages are targeted to produce and encourage a sequential series of behavioral outcomes that are judged to be desirable based upon current medical criteria. Although targeted behavioral outcomes are of heightened financial interest to businesses, the time and effort associated with the acquisition of desirable results frustrate employers. The theory of Transformation Learning (TL) (Mezirow, 1991) has some similarities with these two models, but offers much more insight into the cognitive processes involved in learning, the organization of meaning perspectives, and the role of critical thinking and discourse with others during the change process. Because health behavior change tends to occur as a process rather than a singular event, the processes, interpretations, and meaning-making associated with health messages that encourage behavior change are of particular interest to both employers and adult health educators. Insights gained through this exploration of e-mail via a TL lens enhanced the understanding of its use alone or in tandem with other interventions and encourage critique of current health behavior change theories.

Additionally, this study holds significance because the increased understanding of this phenomenon help shed light onto current and future health behavior change efforts at the
worksite, as well as provide insights into how TL might occur in health or online settings. A group of studies have addressed TL within a health context (Boshier, 1992; Courtenay, Merriam, & Reeves; Hunter, 1980; McDonald, Cervero, & Courtenay, 1999) or technology environment (Cragg, Plotnikoff, Hugo, & Casey, 2001; Cranton & Lin, 2003; Gould, 1990; Jamieson, Kajs, & Agee, 1996; King, 1999; Parker, 2003; Ziegahn, 2001). This research discussed how TL can inform the understanding of health beliefs and associated behavior or be enhanced via different modes of computer technology, including: e-mail, on-line synchronous dialogue (“chat rooms”), postings in electronic forums, video conferencing or asynchronous review of stored content. However, the study of e-mail messaging the worksite, health behavior change and TL has not been specifically addressed in the literature. If the impact is significant or otherwise, what part did the e-mail play over time as health awareness levels among people are shifted or altered?

Further, learning what role the information plays in one’s overall health beliefs, meaning schemes, and perspective changes give insights into how e-mail message content and structure interrelate with the processes associated in TL.

Knowing that e-mail is the most widely used internet tool, its numerous and emerging technological applications across the world present a growing opportunity for information access and impact. As a health educator, this is significant for me because I used health-related e-mail messaging in my practice with a variety of companies because of limited access to onsite class sessions. Anecdotally, I have been told that these messages have a significant impact on individuals’ perceptions and health decision making. As a creator of these messages, I was curious to learn how this electronic information relates to the meaning-making and cognitive processes involved with these worksite recipients. However, I was also intrigued by how the appearance and design of the message itself may create positive perception and attention to the
message content. Research in this realm shows that structural elements of online media have significant correlations with attention and positive perception. As this study explored the meaning-making regarding the experience of health e-mail messaging at the worksite, potential insights gained from the potential interplay between message content and structure helped to inform media effects research.

Assumptions
1. Most people have access to e-mail at their worksite or via some other venue.
2. It is beneficial for people to be aware of recommended health practices.
3. The reading of information leads to increased understanding of that information.
4. People are capable of changing health habits and behaviors.

Limitations
1. The participants in this study were limited to adults at the worksite.
2. The participants in this study were limited to adults who use e-mail regularly to send and receive information
3. The findings of this study should not be generalized due to the small sample size, limited choice of worksites, and the use of semi-structured interviews.

Definition of Terms

*Electronic Messaging (E-Mail)*: Electronic mail is an interactive, computer-driven technology that facilitates two-way interpersonal communication among individuals or groups, and is fast becoming a pervasive communication medium across the globe (Williams, 1998).

*Health*: A dynamic state of complete physical, mental, spiritual and social wellbeing and not merely the absence of disease of infirmity (World Health Organization, 1998)
**Workplace:** The environment (as place, tools, social connections, physical well being) enabling work to be done (PDK High Performance Workplaces, 2006)

**Health Prevention:** An action taken to decrease the chance of getting a disease or condition (National Institutes of Health, 2006).

**Health Education:** “A broad and varied set of strategies to influence both individuals and their social environments, to improve health behavior, and to enhance health and quality of life” (Glanz, Rimer, & Lewis, 2002, p.10).

**Health Behavior Change:** “…refers to the actions of individuals, groups, and organizations as well as their determinants, correlates, and consequences, including social change, policy development and implementation, improved coping skills, and enhanced quality of life” (Parkerson, 1993).

**Transformational Learning:** “… the process by which we transform our taken-for-granted frames of reference to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (Mezirow & Associates, 2000, p. 7).
CHAPTER 2
REVIEW OF THE LITERATURE

The purpose of this study is to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings relate to current and future health behavior. This literature review will inform this investigation by providing a better understanding of the bodies of research pertaining to the theoretical perspectives framing this study, the instrumental uses of e-mail messaging, e-mail’s role in a learning environment, and worksite health promotion strategies incorporating e-mail. The following main sections will be presented:  the theoretical framework, including health behavior change models and transformational learning; an empirical review of transformational learning with emphasis on health behavior change and online learning; e-mail technology, including sections pertaining to e-mail as an instructional tool, e-mail’s use in a health context, email use and health behavior change at the worksite, and the use of e-mail and media effects. These main sections are included to provide insights into the multiple bodies of research that meet at the intersection of theory, e-mail usage, educational intentions, media effects, and the practical implementation of an innovative worksite health promotion tool.

Articles of this review were located by searches performed through several databases including:  ERIC, CINAHL, ProQuest, PubMed, Sciencedirect Elsevier, and Wilson. The key search terms initially used were "electronic mail," which yielded 1,040 articles. To narrow the search, the descriptors "e-mail and health behavior," "e-mail instruction," and "e-mail, health behavior and the workplace" were used. In addition to this, reference lists located in previously found articles were reviewed for pertinent citations. Excluded from this review were articles
pertaining to children and k-12 instruction. Articles relating to e-mail technology software and instructional technologies not including e-mail as an educational component were also excluded.

The Theoretical Framework: Health Behavior Change Models and Transformational Learning

Behavior change theories, such as the Health Belief Model (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002; Rosenstock, 1974) and Stages of Change Model (Prochaska, Norcross, & DiClemente, 1994), have provided useful frameworks by which health educators can explore the factors influencing health behavior and design educational programming to affect positive change at the workplace. The descriptions and empirical evidence associated with these models will be presented in the first section. In addition to these models, Transformational Learning (TL) (Mezirow, 1991) has emerged from the adult education field as a theory applicable to understanding adult learning within a health education context. Although traditional health behavior change models have been used successfully to explore behavior and develop educational interventions, neither model provides in-depth insights into how change occurs over time or how adult learning processes lead to a desired health behavior outcome. To address this gap, the theory of Transformational Learning (TL) is included in a subsequent section as a way to bring understanding into how learning might occur during the behavior change process, as well as serve as a model for health behavior change, and as a theoretical framework for this study. The similarities and differences between TL and these health behavior change theories provide an interesting context to explore how these different bodies of literature might inform the practice of health education and adult learning at the worksite. In the following, the basic constructs and researched theoretical applications of these theories will be assessed in an effort to increase understanding of these models, as well as explore their applicability to e-mail and health promotion implementation.
Health Behavior Change Theories

Traditionally within both the health care and health behavior change fields, there is a tendency to view peoples’ health as a series of behavioral steps that lead to the attainment of a preferred state of health that is measured by an established set of specific medical criteria. There has been much effort put forth in hypothesizing how a course of treatment or application of a health behavior change theory increases understanding of the “cause and effect” regarding a particular health issue. Although it is quite functional in the medical realm to evaluate and diagnose a person’s health via the use of quantifiable ranges and thresholds of physical evidence, it lends little understanding to the way individuals define and make sense of a health status or behavior itself. The health behavior change theories discussed in the next section are commonly used within the educational field to provide understanding to the processes involved.

The Health Belief Model (HBM). The HBM attempts to explain health behaviors among individuals that maintain health and prevent or detect disease, as well as guide frameworks for health education interventions (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002 Maiman & Becker, 1974; Rosenstock, 1974). The origin of the HBM is related to both the settings in which health research was required as well as the background of the researchers that contributed to the Model’s development. A group of social psychologists, Hochbaum, Leventhal, Kegeles, and Rosenstock devised the HBM to provide insights and possible solutions to health issues confronted by the United States Public Health Services between 1950 and 1960 (Maiman & Becker; Rosenstock). During this time period, the emergence of preventive care or screening tests for early detection of asymptomatic disease presented a dilemma for a population used to seeking treatment for a disease after sickness and symptoms were present. Specifically, a study (Hochbaum, 1956) examining the challenges involved with a free tuberculosis (TB) health
screening program, led the researchers to question why individuals failed to seek this and other available screenings that were free or at very low cost. In their desire to develop a model that would be applicable to a variety of public health challenges, the HBM originators were heavily inspired by the theories of Kurt Lewin and other similar works hypothesizing that behavior depends mainly on two variables: the value placed by an individual on a specific outcome and the person’s estimate of the likelihood that a particular action will result in that outcome (Maiman & Becker). The Model’s developers leveraged a host of socio-psychological variables to further explain prevention health behavior. Although the HBM was adjusted over time to understand emerging issues surrounding immunizations and more broadly to peoples’ responses to public health measures, it attempted to “analyze an individual’s motivation to act as a function of the expectancy of goal attainment in the area of health behavior” (Maiman & Becker, p. 348).

The model outlines four basic variables or dimensions of belief that influence individuals’ health behavior: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Janz & Becker, 1984). Perceived susceptibility is one’s subjective perception of the risk of contracting or being diagnosed with a health condition, and perceived severity concerns one’s perceptions of the seriousness and/or consequences of getting an illness or leaving a condition go untreated. Perceived susceptibility and severity together encompass what has been labeled as perceived threat. This threat includes one’s personal evaluation of both medical consequences and social consequences (Janz, Champion, & Strecher, 2002). While a person’s perception of perceived threat is important in predicting a health behavior, the particular course of action that is considered is driven by third and fourth dimensions of the HBM — perceived benefits and perceived barriers (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002). Perceived benefits describe one’s perception that the strategies used to decrease the threat
or severity of illness will be effective, and perceived barriers represent the potential negative consequences that might result because of a particular health action. In reference to the HBM, Janz, Champion, and Strecher (2002) state that:

In general, it now is believed that people will take action to prevent, to screen for, or to control ill-health conditions if they regard themselves as susceptible to the condition, if they believe it would have potentially serious consequences, if they believe that a course of action available to them would be beneficial in reducing either their susceptibility to or the severity of the condition, and if they believe that the anticipated barriers to (or costs of) taking the action are outweighed by its benefits. (p. 47-48).

Two other variables have gained importance within the constructs of the HBM and are believed to represent critical markers in one’s decision to adopt or seek a health action. These variables are cues to action and self-efficacy (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002; Rosenstock, Strecher, & Becker, 1988). Cues to action are triggers in the decision making process or strategies to activate one’s readiness to attempt the health action. It is believed that readiness to take action (high perceived susceptibility and benefits) can be increased by cues in the environment (Janz, Champion, & Strecher). Research conducted by Meillier, Lund, and Kok (1997) provide insights concerning cues to action that link their importance to the second variable, self-efficacy, mentioned above:

Cues to action seem to arise from social influence, experiences, or underlying shifts in the possibility of change. Experiences and social influence due to the health behavior in question seem to initiate changes in confidence, attitude and thereby motivation to change. (p. 37)
Self-efficacy is defined as a person’s confidence in their ability to take action successfully to produce the desired outcomes (Janz, Champion, & Strecher, 2002). Rosenstock, Strecher, and Becker (1988) recommended the addition of self-efficacy be added to the HBM as a separate construct impacting susceptibility, severity, benefits, and barriers. The importance of self-efficacy has grown in recent years as the HBM has been applied to the understanding of more complex health behaviors, required long-term lifestyle changes. The continuous effort and confidence involved in eating a healthy diet or maintaining an exercise regimen is much different than a one-time decision to acquire an immunization or health screening. Regarding the attempt and maintenance to enact long term health behavior change, a person must not only feel threatened by their current behavior patterns and believe that the benefits of change are valuable, but must also feel competent and confident enough (self-efficacy) to overcome barriers to the behavioral course of action (Janz, Champion, & Strecher, 2002).

The constructs of the HBM have been used to study numerous areas of health behavior, being most widely applied to study the influences affecting preventive health screenings. In their report of the HBM and a review of 46 health research studies pertaining to health screenings and other preventive health behaviors, Janz and Becker (1984) found that perceived barriers were found to be most significant in predicting health behavior, followed by perceived susceptibility, perceived benefits, and perceived severity. Of these areas, preventive health research regarding mammography screening and AIDS-protective behaviors demonstrate how HBM components have been applied to understanding health behavior. In these studies, perceived susceptibility, perceived benefits, perceived barriers, and cues to action were particularly important predictors in mammography usage and AIDS protective behaviors (Champion and Menon, 1997; Kalichman, Carey, & Johnson, cited in Janz, Champion, & Strecher, 2002; Stein, Fox, Murata, &
Morisky, 1992), with those reporting higher perceived susceptibility and benefits and lower perceived barriers being more likely to seek screening or take preventive action.

While perceived barriers, perceived susceptibility, and benefits are consistently associated with health behavior choices, information given about these HBM constructs can act to influence a person’s decision to enact positive health changes, as well as inform health behavior change interventions. Theoretically, researchers strive to predict what types of information/message might impact each of the HBM’s constructs in ways to motivate healthy behavior. Several studies that have specifically examined perceived barriers to preventive health screenings have cited lack of health knowledge or misinformation as major barriers to obtaining screening (Burack, 1989; Fischera & Frank, 1994; Melnyk, 1988; Womeodu & Bailey, 1996), with increased health information and knowledge overcoming some aspects of patients’ perceived barriers and increase awareness of susceptibility. In other work, effective strategies have been developed via the use of computer-tailored and/or computer-generated interventions whereby health education messages and information are adapted to specific persons or targeted groups through a computerized database in hopes of impacting health behavior change. This type of technology has been successfully used to motivate people to stop smoking, increase their level of exercise, and to increase adherence to preventive screening recommendations (Brug, Campbell, & van Assema, 1999; de Vries & Brug, 1999; Ornstein, Garr, Jenkins, Rust, & Arnon, 1991; Strecher, 1999).

While the HBM continues to be studied as a major framework for predicting and/or influencing health behavior, critical review of current research, including the model’s weaknesses has been a natural outcome of its in-depth scrutiny. In regards to research, criticisms surround the inconsistent measurement of HBM constructs, and a lack of reliability and validity
of measures prior to model testing (Janz, Champion, & Strecher, 2002). Related to this, more specific HMB component measurements have been suggested for use with the specific health behaviors under study. The model clearly identifies the components that emerge as strong determinants of health behavior, but the relationships between the constructs themselves are less clear (Janz, Champion, & Strecher). For example, although the construct, perceived barriers, has emerged as a significant factor in predicting health behavior, the interplay between other variables, such as perceiving severity and susceptibility is unclear. Interpreting these constructs as independent versus interdependent variables or as elements that may take on different meaning when measured concurrently versus longitudinally is a challenge. Lastly, the HBM has been criticized for being too “individually” focused, not including an explanation of how individual learning occurs or considering contextual factors in its underpinnings, such as diverse cultural factors, including socioeconomic status, ethnicity, demographics, and other factors known to influence health behavior directly and indirectly to impact the HBM constructs (Janz, Champion, & Strecher). Interventions meant to attack faulty belief systems are not likely to impact permanent change without consideration of the variety of cultural factors that impact health behavior.

The Stages of Change Model (SOCM). A second health behavior change theoretical framework is The Stages of Change Model (SOCM), or Transtheoretical Model, developed by Prochaska, Norcross, and DiClemente (1994). After extensive study of individuals’ health behavior, Prochaska and colleagues found that people consistently tend to progress through a series of stages in reaching desired behavioral goals (for example, quitting smoking, changing diet, etc.). Their model outlines six stages that represent an individual’s progression through increasing levels of personal readiness or willingness to initiate healthy behavior change:
precontemplation, contemplation, preparation, action, maintenance, and termination. At the
precontemplation stage, people have no intention of changing their behavior, usually measured
as the next six months, and typically deny having a problem. The contemplation stage is
characterized by a person’s shift from no intention to changing a behavior to having intention to
take behavioral health action in the next six months (Prochaska, Norcross, & DiClemente, 1994;
Prochaska, Redding, & Evers, 2002). Most health behavior change interventions (traditionally
targeted to persons ready to take action) are usually unsuccessful for contemplaters because of
their lack of readiness to proceed forward in the health action at that particular point in time
(Prochaska, Redding, & Evers). The preparation stage represents that point when individuals are
ready to move forward with a behavioral change, usually measured in the next month, but may
still have some ambivalence about when and why the particular health action is best for them
(Prochaska, Norcross, & DiClemente, 1994). Typical health behavior change programs are
targeted at individuals in the preparation stage or the stage immediately following — the action
stage (Prochaska, Redding, & Evers). The action stage is marked by an individual’s having
made overt, observable changes in their lifestyles within the last six months that meet criteria set
by health professionals demonstrating sufficient change and modification to reduce disease risks
(Prochaska, Redding, & Evers). The action stage persists until an individual has continued to
demonstrate the targeted behavior from six months to five years, at which point the person is said
to have progressed to the maintenance stage. Although six months to five years appears to be a
wide range of time to determine a movement to maintenance, it is thought to allow for the
variability seen among individuals regarding behavioral setbacks. When persons achieve total
confidence in their ability to cope with barriers and a temptation regarding their new health
behavior, the termination stage has been reached. Some argue that at this stage, it is as if the
person never acquired the original, negative behavior in the first place; others believe that a complete 100 percent change is unrealistic for most people and that lifetime maintenance of the new behavior is more likely (Prochaska, Redding, & Evers).

There are several assumptions undergirding the six stages just described that guide how the SOCM is used to describe action and guide intervention. First, although each stage doesn’t inevitably lead to the next (for example, some people never progress to the desired behavior), people tend to follow the stages in a predictable pattern, completing a series of tasks (mental or otherwise) before progressing to the next stage (Prochaska, Norcross, & DiClemente, 1994). Secondly, Prochaska emphasizes that linear progression through the stages is rare; those attempting change typically move back and forth through the stages three or four times before achieving their desired new health behavior. Thirdly, behavior change is not an event, but rather a series of incremental events, changes, and successes that form the stages of change process. This awareness can assist those attempting change because it provides a degree of success for the individual at each stage in the model, rather than the expectation that only “true” success is recognized when the new behavior is maintained over time. The last assumption of the model is that specific processes and principles of change can be applied at each stage of the model to encourage progression through the stages, as well as increase individuals’ sense of self-efficacy to proceed (Armitage, Sheeran, Conner, & Arden, 2004; Prochaska, Norcross, & DiClemente).

Although the SOCM (Prochaska, Norcross, & DiClemente, 1994) has been used successfully to assess persons’ progression in achieving changes in health behavior, it has also been widely used as a theoretical framework in designing behavior change interventions that are targeted at encouraging movement through the stages. Numerous studies have addressed how the SOCM has been used to guide behavior change interventions and outcomes. The most
common use of the model has been to tailor targeted communication (written or electronic) to match the message to the individual’s particular stage of change to encourage stage progression (Brug, Campbell, & van Assema, 1999; Brug, Steenhuis, van Assema, & de Vries, 1996; de Vries & Brug, 1999; Marcus, Owen, Forsyth, Cavill, & Fredinger, 1998; Prochaska, Redding, & Evers, 2002; Rakowski, 1998; Strecher, 1999). In these studies participants that received educational materials matched to their particular stage of change were more effective in obtaining in progressing in targeted behaviors, such as exercise frequency or smoking cessation than participants receiving no materials or generic materials.

The study of stage-based health education interventions to encourage individuals’ behavioral progression has revealed weaknesses in the model. Critics argue that the model is more of a description of how people should change than how they actually do change (Strecher, 1999). The fact that most people studied via this theory showed progression through discrete stages as they adopted new health behaviors, does not preclude the fact that others might have different experiences outside an invariant sequence of stages. Some studies have shown fewer stages or found evidence of one or two additional processes (Prochaska, Redding, & Evers, 2002), bringing to light the difficulties associated with stage measurement. Further, placing individuals into discrete categories can potentially lead to very different people being evaluated as being in the same stage of readiness. For example, those being categorized as precontemplators could include people who are strongly opposed to adopting a new behavior as well as those who are not adopting the behavior because they have little knowledge of its existence. Additionally, researchers argue that the model doesn’t explain change across a wide range of behaviors; for example, perhaps action associated with getting a one-time health screening might involve very different (or fewer) processes than the change sequences associated
with long-term behavior change like improving diet (Prochaska, Redding, & Evers). Lastly, the model tends to focus on individual change, with a lack of emphasis on cultural or relationship factors.

In summary, the HBM (Janz & Becker, 1984) and the SOCM (Prochaska, Norcross, & DiClemente, 1994) are used predominantly by health education professionals to explore the processes by which individuals’ enact health behavior change. Health behavior determinants appear to be related to attitudes, experiences, knowledge, self-efficacy, and numerous environmental factors. In both of these theoretical frameworks, educational messages are prominently featured as a means to increase knowledge of positive outcomes, and improve the likelihood that the behaviors will be achieved. However, more research is needed regarding both models concerning how different types of health behaviors and societal factors might warrant modifications in the models’ constructs.

Both of these models involve a person’s progression through a series of understandings and decision making that lead to a choice about a particular health behavior. Although both models have been used successfully to guide health behavior change and intervention, neither model provides in-depth insights into how change occurs over time or how adult learning processes lead to a desired health behavior outcome. To address this gap, the theory of Transformational Learning (TL) is included in the next section as a way to bring expanded understanding into how learning might occur during the behavior change process, as well as serve as a model for health behavior change as well as the theoretical framework for this study. TL offers much more insight into the cognitive processes involved in learning, the organization of meaning perspectives, and the role of critical thinking and discourse with others during the
change process. For this purpose, specific reference to this theory’s applicability to health behavior change is integrated into the description of TL’s basic constructs.

**Transformational Learning (TL)**

Transformational Learning (TL) is rooted in the belief that the meanings people derive from experience can be revised to reveal new ways of thinking. This belief is also central to the health behavior change process. The meaning that people derive from their experiences regarding an aspect of their health can be revised as circumstances or new information serve as vehicles to unveil new ways of thinking and associated behavior. Mezirow and Associates (2000) more fully developed the concept of TL and defined it “….as the process by which we transform our taken-for-granted frames of reference to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (p. 7). He noted that people give meaning to their experiences and interpret new situations through their frames of reference. Thus, sets of assumptions, or habits of mind (Mezirow & Associates, 2000) structure the way we interpret experience. Further, assumptions or habits of mind we have about our health are constantly used as filters to interpret our health experiences and potentially guide the choices we make. By virtue of every individual’s limitations of experiences across the course of time, a meaning perspective places boundaries on the totality of information that is available in making assumptions about meaning. Likewise, lack of experiences or knowledge related to health beliefs place limits on the information used in drawing assumptions about the meaning of a particular health belief or action. These inevitable limitations lead to distorted assumptions that impede the awareness of, or openness to, new or different information that might potentially lead to a questioning of meaning perspectives. Thus, distorted assumptions about our health can be
the consequence of bounded meaning perspectives; this impacts our openness to new health information that might challenge our current health perspectives and encourage behavior change.

There are three themes to Mezirow’s (1991) TL Theory: experience, critical reflection, and discourse. These main constructs can also be viewed within a health behavior change lens. Experience, viewed as socially constructed, is seen as the starting point for TL (Taylor, 1998). Experience encompasses construed meaning schemes, meaning perspectives, and distorted assumptions. Our health experiences over time also carry meaning perspectives and accompanying distorted assumptions. The second theme to TL theory, critical reflection, only occurs if one happens to run into difficulty understanding a new experience or assimilating the new occurrence into their existing worldview. Critical reflection refers to questioning the reliability of one’s assumptions and beliefs based on prior experience (Taylor, 1998); it is a search for the justification of current meaning perspectives, as well as an investigation and awareness of how these current views might be outdated or out of place. Thus if someone encounters new health information or experiences that are outside the realm of their current assumptions or beliefs, a period of questioning can occur whereby prior health perspectives are altered and defined to assimilate the updated belief. Critical reflection can occur concerning the content or description of a problem, the process of one’s problem solving, and/or the assumption upon which the problem is predicated (Mezirow, 1995). If an individual critically reflects on assumptions and arrives within a newly defined perspective, validation of the new belief is sometimes sought via the third key element of TL — reflective discourse.

Discourse is a process where one puts aside bias, prejudice, and personal concerns, allowing alternate beliefs or evidence to be critically evaluated in an objective venue (Mezirow and Associates, 2000). Validation of health beliefs via discourse could occur in many venues
where openness to differing health beliefs is invited; it could be a part of a doctor’s appointment, a discussion with a co-worker, or with a nurse during a hospital stay. Within these climates, one can assess the reasons for and against a problematic assumption, arriving at some kind of internal consensus about possible belief system revisions. For this to occur, Mezirow and Associates outline ideal conditions that allow participants to engage in rational discourse more fully.

The process of rational discourse can lead to perspective transformation — the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world, making a more inclusive, discriminating, and integrative perspective and potential choices or action” (Mezirow, 1991). This transformation has direct relation to health behavior change in that actions related to health can be altered based upon a critical awareness of distorted assumptions and the subsequent process of expanding our health perspectives to be more inclusive of newly defined meaning. Mezirow (1995) describes the phases of this process that leads to the development of a new meaning perspective: a disorienting dilemma or circumstance leads to a critical questioning of assumptions, the exploration of options, planning a course of action and a reintegration dictated by one’s new perspective. Further, transformation is irreversible and never complete until observable action demonstrates that the new perspective is more than a cognitive insight.

Mezirow and Associates (2000) explains that the process of perspective transformation can occur very suddenly, as with a major life-changing event, or through gradual progressions in meaning perspectives that eventually challenge an existing worldview. Health behavior change can mirror perspective transformation in this regard. For example, a sudden health crisis (diagnosis of cancer) could lead to the critical questioning of prior assumptions with subsequent exploration of new treatment options, perspectives and courses of action. Or, regular exposure to
cancer prevention and screening information could result in a gradual progression or change in
current meaning perspective related to cancer that lead to critical questioning, discourse, and a
new integrated perspective that results in a different health behavior (obtaining a cancer
screening).

Continued scrutiny of TL has revealed criticisms — many of these critiques pertain to the
assumptions and lack of context included in TL. Specifically, TL fails to maintain a link
between the meaning of experience and the context in which it arises or how it is interpreted
(Clark & Wilson, 1991; Collard & Law, 1989). Further, TL is placed within a Western-based,
democratic, rational thinking venue (Clark & Wilson, 1991), with the role of emotions (Neuman,
1996), other ways of knowing, and social critique being deemphasized. These issues would
apply to health behavior whereby context and emotion are inextricably tied to the multitude of
venues in which health perspectives are formed, questioned, altered, and possibly leveraged for
behavior change. This has led to a questioning of TL’s stated ideal conditions of rational
discourse; although Mezirow (1991) states that the ideal conditions are never fully realized in
practice, he never really describes how discourse can occur or what it “looks like” under less-
than-ideal conditions. In later works, Mezirow and Associates (2000) begin to validate and
discuss the cultural and historical factors that mitigate reflective discourse, recognizing that
adults are unable to participate freely under oppressive conditions.

Other Perspectives in Transformational Learning

Closer examination of the criticisms of transformative learning theory and continued
contemplation of the theory has brought forth a number of varying perspectives regarding how
TL might occur among different settings and individuals. One such perspective is expressed by
Dirkx (1997) who emphasizes the transformative learning process that occurs outside one’s
awareness. Traditionally, TL has been viewed as a rational process of learning, whereby frames of reference are changed and/or modified via critical reflection, occurring within an individual’s conscious awareness. Dirkx contends that contextual factors outside of awareness such as emotion, intuition, symbolism and imagination, referred to as the inner world, represent important factors in the process of TL (Dirkx, Mezirow & Cranton, 2006). These less “rational” factors are often not recognized within our direct awareness, but play a role in meaning-making as they seemingly break through to conscious awareness in a haphazard and fragmented way. Dirkx looks to validate the interplay between these inner and outer worlds of consciousness and explore how this relationship influences meaning-making. By recognizing the presence of such factors outside awareness, individuals can learn of and leverage the strengths of their inner world views to foster transformation.

Another TL perspective embraces the constructive-developmental theory and the gradual processes by which subject-object changes in perspective occur (Kegan, 2000). Kegan postulates that TL occurs in conjunction with changes in learners’ form of knowing and how they know. In this view, transformation occurs gradually across different stages of development, leading to a shift from “subject” (something or a belief that we are fused with and hold innate to our very being) to “object” (something or a belief that can be reflected on as separate from ourselves and modified). This type of “object” conceptualization is closely linked to varying kinds of development that occur across the lifespan. Thus, Kegan outlines the presence of five increasingly complex epistemologies to describe the progression of subject/object shifts that can lead to the types of thought process associated with TL. This shift does not always occur naturally and may require fostering a set of circumstances that draws a distinction between subject/object for the learner.
Related to differences in development and personalities, Cranton (2000) describes a facet of TL directly related to varying learning styles and personality traits. When examining how experiences are filtered through existing meaning perspectives to make sense of the world, Cranton emphasizes the role of psychological type predispositions in TL processes and how educators may use these differences to guide methods in the learning environment. Referencing the linkages between psychological type and learning styles, Cranton describes how the introverted/extroverted attitude preference, combined with the rational/irrational thinking functions impact analytical and judgment processes involved in TL. These preferences impact how people interpret experience, process information, and approach the typical boundaries of the educational system. Thus, educators have a role in assisting learners to become more self-aware of their preferences, utilizing a variety of educational methods suitable to a variety of preference types, and to encourage learners to individuate themselves from the uncritically accepted views of the mainstream.

Looking to the intricacies of relationships, Kasl and Elias (2000) and York and Marsick (2000) explore the idea that learning can occur within groups and at the organizational level in addition to the prevailing belief that learning is an individual process. Kasl and Elias emphasize that TL is the expansion and transformation of meaning perspectives that can occur in a collective as well as within an individual. Drawing from Kegan’s (as cited in Kasl & Elias, 2000) model of successive orders of more complex thinking, Kasl and Elias cite examples of how groups as entities can move through these progressions of thought together to transform the entity’s meaning perspectives. Building upon the thought that organizations, “…..can learn as discrete entities in a way that transcends individual learning within a group” (p. 253), York and Marsick describe two group processes, collaborative learning and action learning, that can foster
TL in organizations. Action learning is an approach that can be used in organizational settings whereby a group of people develop a solution to an actual work problem as a way to learn and help the organization grow. Although action learning often generates practical solutions to problems, it often does not lead to true organizational transformation at a systems level that can occur with collaborative learning. In this forum, participants are placed in venue of repeated episodes of reflection and action whereby a democratic atmosphere encourages participants to shape collective meaning, question existing structures, and move towards a mutually agreed upon direction for organizational transformation.

As a group these alternate perspectives have emerged as the process of TL has been much more closely examined among different settings and within varying psychological points of reference by researchers. Some of these viewpoints, like the role of the unconscious and less rationale mind, have been in part derived from the set of criticisms that have made pertaining to the basic tenets of TL. Others have taken the direction of expanding the role of individual personality in the TL process or how the theory may apply to individual’s role among a larger system of change. Overall, the growth of these varying perspectives have served to challenge, stretch, and augment the basic foundation of TL, while recognizing its potential transferability to other settings and mindsets.

Theoretical Intersection: Health Behavior Change Theories and TL

Thus far, the basic constructs of two health behavior change theories (HBM and SOCM) with their accompanying empirical literature, as well as TL, a theory of adult learning, have been presented. Because no single theory is likely to explain all of the complexities of health behavior change, the similarities and differences between TL and these health behavior change theories provide an interesting context to explore how these different bodies of literature might inform the
practice of health education and adult learning at the worksite. All the theories listed above are used to understand and design interventions for health behavior change; all recognize the need to customize interventions for people in various processes of change. All theories identify the possibility that a disorienting dilemma or incident of some kind may be a critical element to the change process, as well as an opportunity for a “teachable moment” for feedback from practitioners. Further measurement challenges have been identified for each theory; inconsistent measurements of constructs, as well as a questioning of the variables being measured, are often referenced in critiques of the theories. Also, research within each theory base has highlighted that these theories need to be applied to populations of varying socioeconomic status and culture, to long term health behavior maintenance, and to the study of the role of emotions in how behavior change evolves over time.

Within a typical worksite wellness program, information is provided to employees in a number of different ways: onsite classes, informational flyers (for example, via interoffice mail, mailing to employees’ homes, paycheck stuffers, etc.) e-mail messaging, company newsletters, and intranet postings among others. Practitioners working within one or more of the theories might consider where these models intersect and how they could be used in tandem to enhance behavior change interventions. These theories make frequent mention of perceived barriers, benefits, and other variables such as critical reflection; thus it would be useful to see how the different variables relate to each other over the course of behavior change. For example, if someone is said to be in the contemplative stage of the SOCM or experiencing a disorienting dilemma (TL) regarding the commencement of an exercise program, it might be useful to see what perceived barriers, benefits, and susceptibilities (HBM) are common to individuals in the contemplative stage, and incorporate these constructs into a multi-week exercise class at the
worksite. Some of the interventions associated with the separate theories might be effective when combined or applied in a different way to another theory. It might be a challenge to observe how a worksite intervention exerted impact when using multiple theory bases; however, the synergy of multiple interventions may offer an effective solution for individuals not quite fitting the “mold” of one theory in particular.

The concept of self-efficacy and fluidity is also an important element in the HBM and SOC theories. The HBM uses the term “self-efficacy” most readily, while the SOC refers to “readiness.” In these three theories, this concept is critical to understanding whether or not change will take place. In situations where other theoretical constructs are equal in weight for an individual’s decision, self-efficacy is seen as a determining factor in the change process. Interestingly, TL does not address this concept directly; subsequently TL has been criticized for its lack of importance placed on contextual and power-related elements. TL also looks at transformation as a uni-directional, irreversible process, while the HBM and SOC see change as fluid over time, with targeted health behaviors seeing progressions and regressions occurring with varying life circumstances. For example, an individual striving to quit smoking may eventually quit and regard the behavior as being terminated; however, under periods of life crisis or stress, that same individual may revert to smoking, with relatively little motivation to quit every again. In this situation, TL practitioners would say that the smoker never really experienced a complete “transformation.”

An area where TL informs health behavior change is in the realm of learning. The HBM and SOCM describe stages or phases that occur during the health behavior change process. Although valuable, these theories do not offer much insight into how change occurs over time or how learning processes lead to a desired health behavior outcome. TL offers much more insight
into the cognitive processes involved in learning about health and the choices associated with that learning. TL offers a framework to understand how a set of specific health experiences over time lead to the organization of meaning schemes and assumptions that bound or limit one’s interpretation of health information and associated behavior. Further, TL emphasizes the role of critical thinking and discourse with others during the change process. Critical reflection on existing health beliefs and associated discourse with others regarding alternate beliefs or health practices are crucial aspects to how individuals may modify meaning schemes and come to make different health behavior choices. These insights are critical when striving to address a particular risk factor at the worksite because encouraging a specific behavioral health outcome cannot be successfully achieved without the steady reinforcement of self-awareness, reflection and social interaction known to foster health behavior change.

The discourse surrounding the intersection of these theoretical constructs is important to the realms of adult and health education, as well as the purpose of this study. First, as evidenced in the prior section, TL, the HBM and SOCM provide an interesting context to explore how these different bodies of literature inform each other in a theoretical sense. Further, each is valuable in varying venues, but the consideration of the applied constructs impacts the practice of health education and adult learning at the worksite.

Transformational Learning: Empirical Review

As health behavior change theories have been readily used to design instructive programs, the theory of TL is also recognized as providing insights into the development of educational interventions. Mezirow and Associates (1990) put forth a collection of specific practices aimed at assisting adults in fostering critical reflection so crucial to the TL process. Some of these techniques include: critical incidents (Brookfield, 1990), action learning (Marsick,
1990), consciousness raising (Hart, 1990), engaging emotions in learning (Dirkx, 2006), therapeutic learning programs (Gould, 1990), the inclusion of spirituality (Tolliver & Tisdell, 2006), and education biographies (Dominice, 1990). In a review of empirical studies of Mezirow’s theory, Taylor (1998, 2000) found that although studies suggest that TL is a model of learning that explains the process of how personal meaning perspectives evolve and expand, there is a lack of substantial empirical inquiry regarding how well these techniques work in practice. Conceptually, this review revealed important factors to be considered regarding the practice of fostering transformative learning: group cohesiveness, shared experiential activities, promoting value-laden course content, connecting critical reflection and emotion, emphasizing personal and social contexts, and recognizing time demands (Taylor, 1998; 2000).

In a more recent review of TL empirical research, Taylor (2003) found that current research in the field is focusing on the gaining of new insights and concepts regarding the theory as opposed to seeing verification of the TL processes themselves. These emerging studies point to continued themes of TL that warrant additional research, including readiness and resistance to change, unintended consequences of TL, the role of culture, and the process of TL among nonformal settings. To provide further insights into this study’s purpose pertaining to the meaning of health-related e-mail messaging at the worksite, two specific areas of pertinent empirical research are covered here in more depth. First, research regarding TL and health behavior is included to highlight how the theory’s basic constructs have been applied to health, meaning-making, and behavioral outcomes. Next, the newly emerging field of online experiences and TL are presented to explore how the implementation of varying electronic learning contexts have been linked to TL processes.
In regards to TL, health behavior, and meaning-making, several studies have looked at the ways the TL can be applied to understand changes in meaning perspectives in reference to health beliefs and behavior, Courtenay, Merriam, and Reeves (1998) and Boshier (1992) studied TL in regards to meaning-making and rational discourse surrounding HIV/AIDS. The centrality of meaning-making in how HIV-positive adults make sense of their lives was the focus of the first study. After conducting interviews with a sample of HIV-positive individuals, the study revealed a process for meaning-making that was initiated by a catalytic diagnosis that triggered an intense period of meaning analysis, critical reflection and activity. This process uncovered an expansion of Mezirow’s (1991) “disorienting dilemma,” as well as role exploration phases of the perspective transformation experience. This expanded understanding portrayed the TL process as less rational and ego-centered and more centered on service and caring of others. Three distinct factors were found: increased need to explore options, the role of altruistic activism in facilitating meaning, and the connection of self to a broader world and purpose (Courtenay, Merriam, & Reeves, 1998). These findings suggest that in the case of a devastating health diagnosis, the meaning-making phase of TL is central and, perhaps, more expansive than transformation occurring in other contexts of change. This awareness would be a critical aspect for adult educators working with this population to consider.

Boshier’s research (1992) focused on rational discourse surrounding HIV/AIDS and how educators’ awareness of existing discourses might impact their ability to encourage critical reflection among their adult clients. Specifically, Boshier (1992) found that there are varying discourses concerning HIV/AIDS that exist concurrently in Western culture, most of these a reflection of existing hegemonic power structures. He identified four separate discourses that
have an important influence over how individuals gather information and critically reflect/define their disease: the gay plague discourse, the contaminated-other discourse, the innocent victim discourse, and the heterosexual risk discourse (Boshier, 1992). The study revealed the criticality of adult educators’ awareness of varying discourses surrounding a disease in facilitating the TL process. Armed with this awareness, both educators and patients can examine how different discourses might impact distorted meaning-making, as well as introduce the existence of counter-hegemonic discourses into the critical reflection process.

Two studies (Hunter, 1980; McDonald, Cervero, & Courtenay, 1999) addressed TL and nutritional health choices. Hunter (1980) explored the learning processes of individuals who radically changed their nutritional beliefs and behavior. The study found that relationships, emotions, spiritual growth and self-responsibility were significant for study participants in reaching a stage of readiness for TL. Although this work supported Mezirow’s (1991) model of perspective transformation in general, it also showed that the transformation progression is more complex and may include other essential processes not initially included in the model. Likewise, McDonald, Cervero, and Courtenay (1999) found that the concept of power should be more central to TL regarding their study of ethical vegans. These researchers questioned how vegans transform and adopt veganism as a generalized norm, when existing discourse surrounding the topic is counter to vegan beliefs. In this case, the dominant ideology was a powerful constraint in how vegans could engage in rational discourse supporting their practices. Over time, power relations at multiple levels block TL, with vegans finding that they were empowered to transform personally, but finding roadblocks in their efforts to integrate new beliefs into the mainstream worldview. This type of experience is not addressed in Mezirow’s (1991) model, but must be
considered as an important factor to educators working to encourage critical reflection and
discourse among learners whose belief are not readily supported by the dominant culture.

As a group, these health-related studies provide evidence that TL can inform the
understanding of health beliefs and associated behavior. In this research, meaning-making and
health status generally reflected Mezirow’s TL concepts (1991) with some studies portraying an
expansion of his foundational constructs to include the less rational thinking or power dynamics
highlighted among other TL perspectives. Also, these works demonstrated that TL could be used
as a guide for adult educators in working with various populations who are experiencing a health
crisis or navigating through processes associated with changing health perspectives and eventual
behavior.

*Online Transformative Learning*

Although TL has been used as a theoretical base to study a number of health-related
concepts, the study of e-mail messaging and health behavior change and TL has not been
specifically addressed in the literature. However, a group of studies have addressed TL and
computer technology (Cranton & Lin, 2003; Gould, 1991; Jamieson, Kajs, & Agee, 1996; Kasl &
Elias, 1997; King, 1999; 2002a; 2002b; 2003; 2004; Parker, 2003; Ziegahn, 2001). As a
whole, this research examined how TL might be enhanced or encouraged via different modes of
computer technology, including: e-mail, on-line synchronous dialogue (“chat rooms”), postings
in electronic forums, video conferencing or asynchronous review of stored content, or even
learning how to use technology itself. Specifically, these modes were used by educators to foster
critical reflection and rational discourse among students.

Cranton and Lin (2003), Jamieson, Kajs, and Agee (1996), Parker (2003), and Ziegahn
(2001) highlighted how online discussion, posted content, and asynchronous dialogue can be
leveraged within a higher education setting to enhance the processes suggested for TL to occur. In these cases, the modalities just referenced were used to pose prompts or questions regarding course topic areas that would encourage critical reflection of assumptions, reflective discourse via online collaboration, and acquisition of revised meaning schemes. Specifically, for example, Cranton and Lin referenced the introduction of provocative text — a potential disorienting dilemma — meant to assist students question assumptions, the creation of online learning environments familiar to students (virtual coffee house) to establish comfort, and the use of a storytelling forum to share and reflect on the online community’s learning.

Within the realm of the online experience, students in these studies referenced the benefit of collaborating and dialoguing with students of varying background not normally able to meet in a traditional classroom. Other advantages cited were the partial anonymity of online discussion, the ability to have voice in a synchronous environment, the opportunity to reflect on posted content over time, and the chance to focus on reading and thinking without the pressure of responding verbally (Jamieson, Kajs, & Agee, 1996; Parker, 2003; Ziegahn, 2001).

In general, this research noted that these mediums provided positive conditions for TL and included dialogue, critical reading of online comments and thoughtful reflection for interpersonal response. In one study (Cragg, Plotnikoff, Hugo, & Casey, 2001) evidence of transformation was noted. This research indicated that RN-to-BSN students obtaining their degree by distance education achieved higher scores in professional transformation, measured via a survey tool, than did their traditional classroom counterparts. In most cases, the role of an educator in these environments were critical, their role being to pose questions to generate critical thinking, to encourage equal expression among students, to structure activities to help
students question assumptions, and to interject disorienting topics areas to trigger rational discourse.

The use of this technology is not without challenges. Some perceive the computer, along with interactive Internet activity, to be a cold and distant tool that can be a barrier to learning because of individuals’ unfamiliarity with technology and lack of face-to-face interaction (Parker, 2003). That being stated, the continued presence of computer-mediated learning environments is likely to increase, and as these studies reveal, can be a powerful impetus to foster TL if designed appropriately.

King (1999), in a research study regarding how educators learn technology, alter practice, and change perspectives, describes a similarity between the multiple stages of TL as described by Mezirow (1990) and phases of development experienced by the learners in the study. In this work, a sample of 47 educators engaged in technology education including such methods as hands-on experience, reflection and dialogue, were assessed to determine how their training experiences may have encouraged perspective transformation. A clear majority (91.5%) of this sample experienced perspective transformation, with the following themes in participant responses emerging regarding changes in practice and thought: employ different learning activities, encourage self-directed learning, encourage critical thinking skills development, and change in research methods and preparation of classes (King). Since this initial research, King (2002a; 2002b; 2003; 2004) has proceeded to utilize similar research designs to study over 200 educators experiencing educational technology training.

Using these results, as well as pulling from concepts within the educational technology professional development and TL literature, King developed the Journey of Transformation Model (King, 2002a; 2002b; 2003). This model is a framework from which to view and
facilitate a progressive experience of creating and discovering new perspectives that some educators experience while learning educational technology (King, 2004, p. 5). The model includes four stages that describe TL within the context of educational technology education: fear and uncertainty (hesitancy and fear regarding a new skill set), testing and exploring (confidence building via testing new ideas), affirming and connecting (connecting new ideas to education), and new perspectives (applying new perspective to educational strategy).

King aligns these four stages with Mezirow’s (1990) ten steps of perspective transformation (2002a; 2003; 2004), drawing a clear connection between the two processes, but stating that the Journey of Transformation Model “…goes further to define complex dimensions of experience where Mezirow’s theory (2002) stops” (King, 2004, p.9). Specifically, King elaborates on the four stage model by describing six changes learners can experience via educational technology professional development. These changes include: emphasis on self-directed learning, use of new teaching methods, incorporation of critical thinking skills development in learning, employment of problem-based learning, preparation and research, and confidence and empowerment (King, 2002b; 2003; 2004). In this same research, King also identifies several concurrent strands or dimensions (cognitive, affective, power, and action) that appear to impact educators’ transformation experience while learning technology. Apparently, as learners progress through the phases and changes outlined in the model, there are emotional reactions that accompany the new skills; these new skills represent a form of power in the educational setting that lead to the confidence to proactively take action in implementing technology into their practice. King’s model and associated dimensions offer a different viewpoint of TL and technology that echo some of the core concepts included in the perspectives discussed earlier within adult education.
Interestingly, researchers outside the field of adult education make reference to TL or other similar learning processes situated around the use of technology lending further support to the use of online modalities to foster TL. In looking within the fields of educational technology and computer science, several studies examined the use of computer mediated communication as potential ways to promote transformative thinking (Aviv, Erlich, Ravid, & Geva, 2003; Glassman & Barbour, 2004; Motteram & Teague, 2000; Smith & Farrell, 2001). For example, Motteram and Teague (2000) examined case studies of students participating in a distance education course run entirely online via asynchronous and synchronous communication. Referencing the work of Mezirow, these researchers wanted to examine the processes of the online course construction to see how participants might be encouraged to make links between ideas presented, while demonstrating a high level of critical analysis and reflection indicative of TL. Through analysis of the case studies, Motteram and Teague, proposed that is it possible to implement an online learning experience that takes students beyond basic knowledge acquisition and goes further to encourage critical reflection that leads to TL.

Elaborating on this same premise, Smith and Farrell (2001) examined how the use of MUDs (multi-user domains) can foster the kinds of processes linked to the TL process. A MUD is a text-based virtual environment in which participants create imaginary worlds characterized by collaborative learning, the testing of new assumptions and perspectives within a social context, and the construction and reconstruction of the meaning of their experience (p. 1). MUDs exist on the Internet and are commonly referred to as virtual communities where participants engage in learning through role-playing via different motifs and threaded discussion designed to foster creativity. Through their case study of MUD users, these researchers found that MUD participants regularly engaged in collaborative learning, testing new assumptions and
perspectives, and the construction of meaning reflecting the conditions necessary to foster TL. The authors also emphasized the opportunity for MUD users to explore alternate aspects of self through imagination and symbolism referenced by afore mentioned theorists within the adult education literature (Cranton, 2000; Dirkx, 2000).

Further examining views from information technology and computer science, other researchers have referenced a model of knowledge construction that shares similar features to TL. In studying structured asynchronous learning networks (ALNs), Aviv, Erlich, Ravid, and Geva (2003), explored the ability of such networks to foster high level critical thinking and student collaboration and discourse. In these networks, transcripts of messages can be used to assess how participants’ contributions impact the learning process. In their work, they utilize the Interaction Analysis Model of knowledge construction to classify phases of critical thinking (Gunawardena, Lowe, & Anderson, 1997). This model outlines a five phase process of knowledge construction: sharing/comparing knowledge, discovering/exploring disagreements, synthesis via negotiating meaning, testing/modifying proposed synthesis versus schemas, theory, facts, beliefs, and proofs of reaching agreements or meta-cognitive admitting change of knowledge. Within this framework, these researchers found that those students utilizing the structured ALN achieved statistically significant progression through the knowledge construction model, reaching high levels of critical thinking and meta-cognitive changes of knowledge.

Using this same model, Glassman and Barbour (2004) found similar evidence when analyzing participants’ learning via an electronic conference presented in the ALN modality. Although not identical, the Interaction Analysis Model shares a fair amount of similarity to Mezirow’s model of TL. The two models use varying terminology to describe a process or a progression through multiple phases of higher order thinking and questioning of assumptions.
Considering that this model was developed in a parallel, but different field of study lends support to the notion that online modalities can be structured in ways to increase the mental processes associated with TL.

As a group these studies describe learning contexts and/or online environments where networks of participants are exchanging ideas and collaborating towards an educational goal. These studies employed two different types of methodologies that involved smaller sample sizes, and the online experiences researched (virtual environments, learning about technology, and online message exchanges) were somewhat different. Despite these differences, all of these studies analyzed asynchronous communication patterns observing that participants exhibited higher level thought processes indicative of higher order thinking and critical reflection of assumptions. Generally, this supports the notion that asynchronous exchanges, similar to e-mail messaging, can be utilized in ways that encourage and support thinking consistent with TL.

Thus far, health behavior change theories and TL have been discussed in this section as ways to conceive of understanding how people might change in a health-related context. TL as described by Mezirow (2000) and others have been analyzed, modified, and expanded to include a host of numerous perspectives. Along the way, researchers within and outside the field of adult education have explored how TL processes and concepts might be applied to learning in the online realm. Discussions of how TL has been studied in the field of health, meaning-making, and behavior, as well as in the online realm provide support to the notion that online learning modalities addressing health-related issues could provide an environment that supports reflection, questioning of assumptions and gradual and/or sudden shifts in meaning perspectives. Many of these online environments have involved electronic exchanges among learners and facilitators that support learning processes.
E-Mail Technology

Electronic mail is an interactive, computer-driven technology that facilitates two-way interpersonal communication among individuals or groups, and is fast becoming a pervasive communication medium across the globe (Williams, 1998). From typewriters to telephones and on to the computer age, the last 150 years have seen remarkable advances that have extended the range of communication as it exists today. In this section of the review, literature pertinent to understanding e-mail, its basic characteristics, and how it has been used as an instructional tool is covered first. Next, e-mail’s usage within varying health contexts to impact behavior, as well as how it is beginning to be used at the worksite as part of employee health promotion strategy will be examined. Lastly, media effects literature and potential linkages between e-mail construction and memory will be explored. Understanding how this technology has evolved in the instrumental, social, educational, and communication realms brings valuable insights into how employees might make meaning of this modality in relation to their health.

As computer usage developed and the demand for faster communication and information access increased, a new form of communication was created – electronic mail. E-mail transmissions from one person to another began to emerge in the 1960s, with the first e-mail program transmitting messages between computer systems being written in 1971 (Distefano, Rudestam, & Silverman, 2004). Several articles in the literature outside the realm of education examined common characteristics of e-mail and its placement within the larger field of computer-mediated communication (Rudy, 1996; Williams, 1998; U.S. Department of Commerce, 1999). These authors list the following characteristics associated with e-mail: allows for asynchronous exchanges, has digital storage capabilities, can be linked with multi-node networks such as the Internet, can inform the sender when the mail recipient has opened
(and read) the message content, can inform the sender if a message was delivered successfully, allows for rapid exchange of large amounts of information, offers an unobtrusive form of communication as compared to face-to-face contact, and has the potential to contribute to information overload and/or a decrease in face-to-face conversations.

The U.S. Department of Commerce conducted survey research with a stratified random sampling of approximately 48,000 households in the United States. The survey revealed that e-mail usage data is associated with information describing Internet access and use. People with incomes over $35,000 are most likely to have Internet access at home. Thirty-seven percent of Whites, 19% of Blacks, and 16.6% of Hispanics actually use the Internet, with Blacks and Hispanics more likely to have access outside the home. Both sexes use the Internet more at home than elsewhere, with Internet usage rising with age until people reach their senior years. Fifty-three percent of Americans that access the Internet outside of home do so at work.

In regards to e-mail, the U.S. Department of Commerce (2002) found that e-mail is the most common and easiest application of the Internet:

E-mail is one Internet use, however, that transcends all demographic and geographic boundaries. E-mail is clearly the “killer application” of the Internet. In support of this, 65.6% of Americans have access to the internet at home or at work, with 84% of those users accessing e-mail more readily than all other online activity. Of Americans who use the Internet, nearly 80 percent (77.9%) use it to send e-mail, and over half (53.6%) of people with Internet access outside the home use the Internet for e-mailing. The numbers are consistently high, regardless of income, race, gender, age, or any other characteristic. (p. 5)
The pervasiveness of e-mail usage has prompted research about different areas of this type of technology. In his analysis of electronic mail research, Rudy (1996) highlights a variety of areas of e-mail research currently being considered. This analysis includes investigating the choice to use e-mail over other forms of communication, describing the pros and cons of e-mail use as perceived by users, examining the social influences of e-mail on human relationships, and investigating how e-mail can be a source of information overload for users. An article by Lantz (2003) provides results from a longitudinal study conducted over five years that examined how the use of e-mail changes over time concerning problems experienced with e-mail, the flow of messages, and the time to handle mail. Results showed that problems experienced by e-mail users, such as reading, sorting, finding, and saving messages, decreased during the five-year time. Additionally, even though the time spent handling e-mail was at least 30 minutes per day over time, the amount of sent and received e-mail messages doubled over the study’s five years.

The social interplay between e-mail sender and receiver, in addition to the construction of meaning from electronic text, was addressed in two articles by Williams (1998; 1999). A common thread in these articles concern the issues that e-mail increases access to people and information, and that the changes associated with e-mail interactions between sender and recipient are socially as well as technically determined. Further, the use of this technology extends the range of communication and decision making options available to e-mail users. In absence of explicit norms concerning the “norms” of e-mail communication, users tend to extract bits of meaning and interpretation from various aspects of the exchange, which can help or hinder message interpretation. For example, a study by Williams (1999) looked at factors influencing users’ interpretation of e-mail messages. To begin, message threading, the practice of combining groups of similar messages (e-mail and/or face-to-face) to enable a particular e-
mail message to be interpreted is noted as an important factor because e-mail messages are
generally part of a larger communication message vs. an isolated thought or question.
Additionally, message type, message context, message header (e-mail subject line), message
priority, message length, message text appearance, and contextual relationship between sender
and recipient are all equally critical to message interpretation. Study participants’ (Williams,
1999) comments about these elements provide insights concerning interpretation:

“I spoke to a guy about it yesterday. So the information that I have here I already
knew and he’s actually, there’s nothing for me to do on this e-mail, it was done. It was
basically done yesterday. I opened it and hey, it’s a nothing e-mail.” (p. 3)

“…the urgency of the e-mail... So if it’s got a little red flag next to it, obviously I’ll
read those ones first.” (p.5)

“because I can see who it was from, which everyone obviously can, I know that it was
really going to be quite important because she’s the [X] manager.” (p. 7)

“She told me basically in the message header what it was going to be about.” (p. 6)

“He’s giving me a hard time because I did a computer smile at him, which I’ve never
done before.” (p. 8).

These findings suggest that e-mail communicators do not simply exchange messages as
electronically linked senders and receivers; users “…perform social acts in action situations that
are normatively regulated by, and already have meaning within, the organizational context”
(Ngwenyama & Lee, cited in Williams, 1998, p. 7). Thus, these articles indicate that senders and
recipients are active producers of meaning based on the contextual factors surrounding the e-mail
communication.
A different facet of e-mail and social construction and interpretation of meaning was addressed by four articles. These articles looked at e-mail and internet access issues through a critical lens, pointing to the persistent ethical issues associated with unequal computer and Internet access that seems to accompany uneven distribution of educational resources. This set of literature is included here to address how computer access can impact a groups’ ability to receive e-mail in any form. This issue, referred to as the “digital divide” separates the “haves” and the “have nots” along lines of race, education, and socioeconomic issues (U.S. Department of Commerce, 1999; Parent, Coppieters & Parent, 2001). These authors state that although e-mail and the Internet have increased peoples’ access (see statistics on p.10) to information and communication methods, the “digital divide” prevents projected globalization of information and furthers a system of knowledge creation that favors those with computer access and of certain socioeconomic traits, such as higher annual income and education. Further, even for those with some access to the Internet and e-mail, numerous issues exist that contribute to unequal distribution of information: lack of easy-to-access sources of high-quality relevant information on the Web, low literacy, unlimited access to poorly organized information on the Web, few quality control mechanisms (no standardization in for information accuracy), and technical failures with computer hardware (Eysenbach & Jadad, 2001). Rudy (1996) suggests that future areas of research address these issues along with potential unforeseen social consequences for organizations and cultures.

E-mail as an Instructional Tool

Thus far, e-mail has been presented as a major form of communication commonly accessed via computer systems, used for a variety of purposes, and as seen as a pervasive means of social interaction, as well as a means of rapid exchange of information. In this section, e-
mail’s growing use as an instructional tool will be explored to bring insight into how this modality is used within an educational context. In the past, educators primarily used two-way interactive video or prerecorded video to reach students in remote areas of access (Barron, 1998). However, the Internet has grown to offer many methods for disseminating information for education and training. Research found that the delivery of education can include a wide range of options that utilize the Internet to provide both synchronous and asynchronous modes of communication. For example, facilitators can create their own web pages with relevant course instructions, stored content, tests, and web links that students can access at any time; instructors can project a live web cast over the Internet to remote students; or educators can build an electronic discussion room for students via an interactive web page (Barron). In all of the above methods, e-mail correspondence was used by both instructor and student to facilitate and enhance communication and learning during the online course.

Because electronic mail messaging has been used as an effective instructional tool and online educational adjunct (Zack, 1995), its educational applications have grown along with its accessibility. Ten studies were identified that researched specific ways that e-mail is being used as an instructional tool, along with a discussion of pros and cons associated with its use. Basically, learning activities accomplished with electronic mail fit into five categories: online material presentation, online collaborative and project work, online help and assistance, online group discussion, and evaluation (Lowry, Koneman, Osman-Jouchoux & Wilson, 1994; McQuail, 1994; Zack, 1995; Doring, 1996; Garside, 1996; Hawley, 1996; Xu, 1996; Yungbluth & Bertino, 1996; Zolten, 1997; Henderson, 2002). This technology has been most commonly used as an instructional supplement in the usual classroom settings, as an adjunct to distance learning, or as a whole new alternative to traditional learning environments.
Other studies focus on e-mail as instructional tool to foster cooperation and reflection. These studies, mostly qualitative, specifically examined the use of e-mail as an instructional strategy to build electronic discussion groups among students and course facilitator, or foster cooperative learning and personal reflection. As a tool to create electronic discussion groups, student e-mail users were able to communicate about coursework in the discussion group in the same way that they would when they interact face-to-face in a classroom; students were also able to create a sense of community among themselves through the discussion group outside of traditional academic topics (Lowry et al., 1994; Yungbluth & Bertino, 1996). Both of these studies noted that technological support and instruction among students were critically important to the discussion groups' success.

E-mail has also been used to foster cooperative learning and student reflection. One qualitative case study (McQuail, 1994) examined how an educator had used e-mail to challenge and expand student beliefs. Students' electronic journal entries concerning course issues were e-mailed to the instructor and then posted anonymously for all students to read and respond. The e-mail exchanges among students proved productive in encouraging debate, compromise, and shared construction of knowledge. Along these same lines, educators have also used e-mail messaging between students or between students and facilitator to provide a regular forum for personal reflection (Henderson, 2002). In this use, e-mail is not used as an assessment tool for grading student participation or comprehension, but as a way to develop skills of self-assessment and awareness through reflection upon learning.

What are the advantages to using e-mail as an instructional tool in the ways described above? First of all, e-mail messaging is convenient, instantaneous, and cost effective for both students and teachers because it can be accessed at multiple locations at any time of day.
Secondly, e-mail’s use can provide a forum for student/teacher or student/student collaborative work, even when students and instructors might be separated by time and space (Chen, 1994; McQuail, 1994; and Xu, 1996). Further, this kind of project work can maximize the knowledge and experience of all participants, increasing the equity of student participation while assisting more inhibited students overcome social isolation (Lowry et al., 1994; McQuail, 1994; Xu, 1996; Zolten, 1997). Thirdly, e-mail communication can increase the interpersonal bonding between student and teacher because there is ready access to help, support, and bilateral feedback (McQuail, 1994; Zolten, 1997). Lastly, e-mail use by itself can encourage knowledge building and foster reflective writing skills (Xu, 1996; Henderson, 2002). All these advantages merge together to reinforce what other research has found: electronic mail is becoming an acceptable alternative to face-to-face communication (Garside, 1996) in educational settings, and is not perceived as a superficial means of communicating (Adkins, 1991).

However, despite e-mail’s use as an emerging learning tool, it has drawn some criticisms from those in the instructional arena. One major disadvantage of using e-mail is similar to other problems that have been traditionally associated with computer use over the years — occasional unreliability of computer systems (Garside, 1996). For instance, students and teachers alike may have difficulty gaining access or maintaining the appropriate Internet connections to exchange mail messages, there can be slow system responses, or users may find e-mail technology intimidating and uncomfortable. Other disadvantages can include: email is void of oratory, physical and environmental cues that can hamper message interpretation, some individuals do not have convenient access to e-mail, some learners prefer speaking to writing, and some learners may feel socially isolated by e-mail use (Lowry et al., 1994; Garside, 1996; Xu, 1996).
Recognizing that e-mail has instructional advantages and disadvantages, it is important for learners, teachers, and organizations to examine the effectiveness of its use regarding student performance and satisfaction. One study (Smith et al., 1999), employing both qualitative and quantitative methods, compared two similar courses — one taught entirely via e-mail (72 students received and responded to all course materials, lectures, and assignments via e-mail), and one taught part by e-mail and part by traditional lectures (129 students received and responded to e-mail as in the first course, but also had approximately one-half of the course content delivered via traditional lecture). This study showed that students in both courses were generally satisfied with the e-mail modality of both courses, although a sizeable minority expressed levels of dissatisfaction. When comparing student performance between groups on a multiple choice test, only the weakest students seemed to benefit from the e-mail-only format, while overall student performance was better in the group that received both e-mail and traditional lecture formats. The researchers explain that these results are consistent with prior findings suggesting that e-mail-only instruction is typically neutral or moderately beneficial to students, and that weaker students seem to benefit most from e-mail instruction, perhaps because it allows students with special needs and learning styles to complete work at a slower pace. Positive performance outcomes for students receiving both lecture and e-mail components speak to the need for more research to unravel the mechanisms at work here.

In this same vein, a second study by Woods (2002) examined the impact of teacher-initiated e-mail to students in an online course on student participation in required discussion formats. The hypothesis of this study was that more frequently initiated e-mails from the instructor outside of required class discussion format would result in favorable student perceptions about learning, as well as promote higher levels of student participation in the
required group discussion formats. Even though most students responded positively to the instructor-initiated e-mail, the results showed that, regardless of the number of e-mails sent to students by the instructor, no statistically significant difference was found between students on measurement of favorable student perceptions or participation in discussion formats. As a potential explanation, Woods noted that students were not screened prior to the study concerning previous online experience or computer literacy, and this may impact student perceptions and learning, as well as age, ethnicity, and socioeconomic class. Additionally, Woods added that perhaps "…faculty-student and student-student communication within required discussion group formats is just as (if not more) significant when it comes to positively influencing student perceptions of and participation in online learning than personal communication that occurs outside such formats" (pg. 6). If so, combinations of different online methods involving electronic mail and discussion groups would be a good choice for future research.

One last group of articles specifically addressed student perceptions and attitudes concerning the value, effectiveness, and comfort level associated with the e-mail components of online courses. One quantitative study examined student and instructor perceptions and preferences for varying kinds of e-mail used with online courses (Frey, Faul & Yankelov, 2003). Overall, students perceived posting of online grades, e-mail feedback from instructor about assignments, and e-mail submitted assignments as valuable, while noting that instructor homepages and discussion groups were not as valuable. Interestingly, the online tools that instructors' felt were most valuable to students' communication (homepages and discussion groups), were perceived as least valuable to students. This research provides insights into the examination of student preferences for online communication modes (including e-mail as a
preferred component) and the future development of online classes for instructors and educational institutions.

Another quantitative study by Chen (1994) examined the impact of using e-mail as an online debate tool between students to increase student cultural sensitivity and student comfort levels during an online course. Using two separate pre/post test survey instruments to measure these variables, results showed that significant positive changes between pretest and posttest scores, showing that e-mail can be integrated in a constructive way as an instructional tool.

Lastly, one unique qualitative study (Russel, 1995) identified a six stage model describing how adult learners' develop increasingly deeper comfort levels and positive perceptions of e-mail during an introductory teacher-education online course project. Many of the 200 students in the study were naïve e-mail users, having anxieties about using e-mail as part of a course. The online course project involving e-mail required adult students to participate in an e-mail dialogue with an elementary school student over the course of three weeks in a semester. During that time, the adult student took on the role of a pre-determined fiction character that the child would communicate. The course instructor required adult students to keep an informal daily journal concerning their use of e-mail and associated technologies. By analyzing the themes contained in these journals, Russel identified a six stage process describing how these adults became increasingly comfortable with e-mail technology: (1) Awareness, (2) Learning the process, (3) Understanding and application of the process, (4) Familiarity and confidence, (5) Adaptation to other contexts, and (6) Creative application to new contexts. This study's model stands out as unique because it attempts to describe qualitatively how adults develop perceptions and effectiveness with e-mail versus raw pre/post test score outcomes of e-mail instruction. Although a limitation of this study would be that the e-mail exchanges occurred
between adults and children, a natural progression for this model would be research that applies or tests it in other adult learning situations involving e-mail and associated technology, as well as understanding how to assist adults move through a learning progression involving e-mail instruction in a more effective way.

Overall, these studies describe how e-mail is used in an instructional setting and then examine how e-mail is perceived and its relationship to student preferences. First, learning activities accomplished with electronic mail fit into five categories: online material presentation, online collaborative and project work, online help and assistance, online group discussion, and evaluation (Lowry, Koneman, Osman-Jouchoux & Wilson, 1994; McQuail, 1994; Zack, 1995; Doring, 1996; Garside, 1996; Hawley, 1996; Xu, 1996; Yungbluth & Bertino, 1996; Zolten, 1997; Henderson, 2002). Most commonly, e-mail was used as an instructional supplement in the usual classroom settings, as an adjunct to distance learning, or as a whole new alternative to traditional learning environments. Since this literature does not examine e-mail apart from its use as an instructional adjunct, any independent effect associated with its use is not described. Thus, tangible student performance outcomes associated with e-mail’s use are weak and mostly tied to preferences. However, these findings do suggest that e-mail can be perceived positively by both students and facilitators, can be a preferred instructional adjunct, and can be used to foster cooperative learning and reflection.

**E-mail and Health Behavior Change**

The idea of e-mail as a potential instructional tool has been embraced by medical and educational professionals striving to assist adults in making better health decisions. "E-health" is an emerging term used to describe e-mail messaging along with numerous other Internet-based tools that are meant to help patients maintain or change health behavior. Web-based strategies,
including e-mail messaging, are viewed as a viable communication alternative to face-to-face encounters within the health care system (Hughes, 2003). As these Internet-based tools have emerged, health professionals have discovered that targeted patient e-mails, interactive health education modules, electronically generated reminders to seek care or manage a condition, and online symptom monitoring are potentially effective ways to increase patient compliance, increase access to care, increase patient satisfaction, and to decrease ineffective utilization of health care resources (Hughes). The ultimate goal of these computer-based modalities is the improvement of clinical outcomes or the prevention of disease among patients. But what factors may foster or hinder the success of these modalities?

The pros associated with e-health technology are numerous: increased availability to computer technology, increased ability to disseminate information to many people (including those not having easy access to health care or in sparsely population locations), enhanced ability for patients to retrieve critical health information in little time, and increased ability to tailor information to the individual, and increased ability of health professionals to monitor or modify patient health behavior (National Cancer Institute & Robert Wood Johnson Foundation, 2001). The barriers to these types of interventions are a cause of concern to many health professionals across the world. Not everyone has equal access to the computer equipment needed to access the information, and those that have computer access may lack understanding of how to use or navigate the system components. Further, those with computer experience may have technological difficulties with the flow of information or may not be able to understand or interpret the information due to low literacy or health awareness (National Cancer Institute & Robert Wood Johnson Foundation, 2001). Despite the drawbacks, health professionals still see the use of e-health technologies, including e-mail, as a viable and developing option. Most
recently, research exploring the use of text messages among mobile-phone systems has proved both promising and effective in smoking cessation and wellness behavior diary tracking (Gillotti, 2008; Yang, 2008). Much more research is needed in the future to study the effectiveness of these types of intervention along with discovering what kinds of variables and combinations of tools have the greatest impact.

Effective e-health strategies have been developed via the use of computer-tailored and/or computer-generated interventions whereby health education messages and information are adapted to specific persons or targeted groups through a computerized database in hopes of impacting health behavior change. This type of technology has been successfully used to motivate people to stop smoking, increase their level of exercise, change their diet, and increase individuals’ understanding about medical conditions and diseases, and increase adherence to preventive screening recommendations (de Vries & Brug, 1999; Ornstein, Garr, Jenkins, Rust, & Arnon, 1991; Lenert, Munoz, Perez & Bansod, 2004; Tate, Jackvony, & Wing, 2008). For example, two studies examined the success of this technology in changing health behavior among patients by looking at the preventive health screening rates of five different tests for two groups of patients: those receiving computer-generated reminders and those not receiving reminders. For a 12-month study period, these researchers found that adherence to four of five recommended screenings increased significantly for those receiving periodic reminders (Ornstein et al., 1991; Garr, Ornstein, Jenkins & Zemp, 1993). Another two studies examined computer-automated e-mail messages as tools to improve smoking cessation (Lenert et al., 2004) and improved weight loss in an existing Internet program (Tate et al., 2008). In both studies, experimental groups receiving automated e-mail messages with behavioral intervention information showed greater improvements in the targeted behavior change variable. This line of
research has revealed that computer-generated educational health messages were more likely to be read, remembered and personally relevant to the recipient (de Vries & Brug, 1999).

Other areas of research have focused on the specific use of e-mail to evoke health behavior change among patients was the focus of five quantitative studies in the review. Some of these studies addressed the feasibility of e-mail messaging to increase the compliance of oral contraceptive pills (OCP) in order to avoid an unplanned pregnancy (Fox, Creinin, Murthy, Harwood, & Reid, 2003) or patient compliance in attending follow up physician visits after an emergency room visit (Ezenkwele et al., 2001). In the first study, after receiving a daily e-mail reminder for three months, 84% of the 50 OCP users found the reminder to be somewhat or very helpful, with 70% of the users missing no pills or one pill during the study period (Fox et al., 2003). In the study comparing the success of e-mail messaging versus phone calls to increase recommended appointment rates after emergency room visits, these results showed that telephone calls were nearly two times better than e-mail in encouraging follow up visits (Ezenkwele et al., 2001). These researchers noted that study participants were not screened before hand to determine whether or not they had e-mail access, pointing to the possibility that the demographics of emergency room patients may play a role in the effectiveness of varying communication modes. A third study examined the use of daily physician e-mails to patients in a drug addiction treatment program (Collins, McAllister, & Ford, 2007). Here, frequent e-mail communication was utilized between patients and their addictive specialist as an adjunct in a substance dependency program. Patients receiving messages reported enhanced accountability, frequent self-assessment, decreased isolation, and a sense of continual access to care.

A fourth study examined the effectiveness of e-mail discussion groups on the health status and utilization of 580 patients (from 49 states) with recent back injuries (Lorig et al.,
A pre and post survey was provided to equally numbered treatment and control group. Researchers were hoping to discover how the support provided by an e-mail discussion group among patients with similar health ailments might impact positive clinical outcomes. After one year, subjects in the study compared with controls demonstrated improvement in disability, role function and health distress, and physician visits, while mean hospital stays declined nearly .20 days for the treatments group. The researchers concluded not only that it is possible for an e-mail discussion group to positively impact health status and potentially health utilization, but also be used as a legitimate treatment of other chronic conditions (Lorig et al.). More recently, a related study found similar results when examining improvements in migraine headache management among patients receiving personalized feedback from a web-based computer program (Sciamanna, Nicholson, Lofland, Manoccia, Mui, & Hartman, 2006).

As a group, these studies demonstrate that when e-mail is used within the context of a clinical setting to impact a specific health behavior (screening or medical regimen), those receiving these messages had more favorable outcomes, in general. Another finding supported the notion that an e-mail discussion group among those with a specific health concern could positively impact healthy status over time. However, this literature also demonstrates that e-mail used in these venues is subject to the same limitations as indicated in prior sections — e-mail access and computer familiarity are confounding issues that impact e-mail’s reach and impact.

**E-mail as a Health Behavior Change Tool at the Worksite**

To fully understand the specific use of e-mail as a health behavior change tool at the worksite, it is important to describe the use of e-mail at the worksite, as well as how this modality fits into the realm of corporate health promotion efforts. In this section, the general use of worksite e-mail is explored, followed by a brief review of worksite wellness and the
leveraging of health messages. Lastly, empirical studies looking at health-related e-mail in a corporate wellness context are examined with emphasis on research intent and observed outcomes.

E-mail usage is the most used application among the majority of Internet users, and the workplace is the most common place that the Internet is accessed (U.S. Department of Commerce, 2002). As time has passed, e-mail has only become more prevalent at the worksite with over 82.8 million users at work (Electronic Messaging Association, 1996). Even as far back as 1984, a quantitative study by Hellweg indicated that 56% of businesses had available e-mail services. Other than word processing, e-mail was the most pervasive technology used; it affected a moderate increase in employee productivity, a slight increase in employee satisfaction, a slight to moderate increase in corporate information dissemination capability, and an increase in employee apprehension regarding technology use (Hellweg). Although Rudy (1996) and Williams (1998, 1999) mentioned the importance of studying information overload, sender/recipient construction of knowledge, and unforeseen social consequences of e-mail among individuals and organizations, very few empirical studies exist that examine these issues specifically at the worksite. One older study by Singarella, Baxter, Sandefur, and Emery (1993) studied employee perceptions of e-mail on work productivity, perceived effect of e-mail relative to other forms of communication, and perceived advantages and disadvantages of e-mail. The following results from this study were considered statistically significant: e-mail increased the number of messages received, but not messages send; employees respond more quickly using e-mail than paper mail; e-mail has a positive influence on employee communication; e-mail positively effected job efficiency; e-mail was considered cost-effective when compared to paper mail; e-mail was perceived as being very valuable in the workplace; e-mail did significantly
change employee workload; communication styles are more relaxed with e-mail; employees preferred e-mail over paper; and employees did not have significant concern with e-mail confidentiality.

Other research (Rosenblum, 1997) has conceptually disagreed with the point that employees do not have significant concern with e-mail confidentiality at the workplace. Using references to several court cases, this author felt that concerns over confidentiality might change employee behavior in the workplace dramatically. Although e-mail is thought to be “private,” potential lack of privacy may cause employees to limit the kinds and amounts of information shared in an organization. These issues may impact communication flow or organizational efficiency; the continued creation of formal policies and procedures regarding e-mail use will likely be a growing trend (Rosenblum).

Still, the fact that most individuals have access to electronic mail at the worksite (U.S. Department of Commerce, 2002) is beginning to alert companies to the many benefits and opportunities availed by e-mail usage. These additional modes of delivery are of high importance to health educators working in a variety of settings and searching for more effective means of health communication. Employers have reason to be heavily invested in educating employees about good health because medical care costs are skyrocketing and most corporate health issues have a direct connection to personal employee health habits (Leavenworth, 1995). In 1990, the U.S. Department of Health and Human Services published *Healthy People 2000: National Nation Promotion and Disease Prevention Objectives*. Sparked by specific goals in the publication calling for the increase of worksite-based health education activities that would impact adult health behavior change, educators began to theorize how the use of health messages might be effectively transferred into the workplace.
Studies have shown that companies can gain significant health changes with limited intervention programs (Blake & Dehart, 1994). It has been estimated that over 104 studies have been conducted studying the impact of workplace health promotion programs (Pelletier, 2005). Throughout this time, researchers have strove to devise methods of capturing data that meet the needs of both health educators and economists. Although the focus of much of this research has been to demonstrate the cost savings to employers in the areas of reduced absenteeism, increased worker productivity, and decreased health care costs, the changes in health behavior that have resulted in improved worker health underlie the positive outcomes of these lines of investigation.

How has health-related messaging been used in the worksite? Worksite health promotion activities studied that have impacted health behavior and status have generally involved the use of some form of educational intervention activity, such as print materials or classes, that is implemented after a health status and/or employee interest assessment, to encourage workers to adopt healthier lifestyle habits that would result in health risk reductions.

For example, a recent investigation regarding the impact of a three-year health management program involving over 23,000 Citibank employees has been touted as a landmark study in health promotion research (Pelletier, 1999b). With a return of investment of 6.47 to 8.81 for every dollar invested, Citibank’s health promotion programming not only improved the company’s financial health, but also the status of its employees’ well-being, as medical expenditures and absenteeism rates were significantly impacted (Pelletier, 1999a, 1999b, 2005). While the Citibank research joins the ranks of other such workplace studies done in the past five to ten years that demonstrate moderate to significant health behavior change outcomes, Pelletier (1999a) notes that the effectiveness of such research should be viewed with cautious optimism.
Some reasons for this cautious approach are associated with some criticisms of worksite health education: it has low impact on high utilizers of health care, other competing corporate training initiatives are more important, and some employers are inflexible in allowing worker participation in onsite health education interventions (Glasgow & McCaul, 1993; Heaney & Goetzel, 1996; Lewis, 1995; & Pelletier, 1999a). Interestingly, “…extant data about employee participation in wellness programs provides us with statistics, but do little to explain what forms of communication influence individuals’ decision about whether or not to utilize health benefits and services offered by the company” (Geist-Martin, Horsely, & Farrell, 2003). As one way to possibly address these concerns, the educational benefits of electronic mail messaging are beginning to be explored by worksite health promoters as a viable communication tool and instructional adjunct to existing health education initiatives. As it stands currently, only ten percent of worksites are using Internet/intranet e-mail for health education message delivery even though this form of communication is available and positively perceived by employees (Association for Worksite Health Promotion, 1999).

The study of health-related e-mail messaging at the worksite is very limited, and in the studies found, the effectiveness of e-mail to promote health behavior change was used as an adjunct with other web-based content. This body of literature fell into two categories based upon the purpose of the research. One area of inquiry pertained to the effectiveness and feasibility of e-mail in reaching a broad worksite audience. The second category of research aimed to measure how e-mail in conjunction with related website content impacted physical health behavior change. In regards to the feasibility, reach and preferences of e-mail, recent studies by Franklin, Rosenbaum, Carey, and Roizen (2006), and Franklin, Ploutz-Snyder, Rosenbaum, Carey, Smith, and Roizen (2006), provide evidence that the use of e-mail messages during a six month period
to promote healthy behaviors and/or completion of an online health risk assessment among employees had feasibility, broad reach, and employee acceptance. These outcomes were measured by the number of e-mails opened daily and across the course of the study (for example, with a majority opening 50% or more of daily messages) and/or the frequency of website page views from recommended sites included in the e-mail message. From these results the authors suggested that the use of e-mail to disseminate information or urge completion of an online assessment has value in the worksite in an overall venue of a workplace health promotion strategy. This same theme was also seen in research comparing the web visits and visit duration between websites containing just stored content versus websites incorporating interactivity with e-mail messaging components (Danaher, Boles, Akers, Gordon, & Severson, 2006), as well as a study comparing the preferences and frequency of e-mail messaging as a health counseling delivery tool (Kurioka, Muto, & Tarumi, 2001). That is, study participants preferred to visit websites the incorporated e-mail messaging interactivity and preferred e-mail counseling in some age groups.

Overall, this first grouping of studies emerge from the curiosity of worksite health educators to investigate the feasibility and sustainability of e-mail as a tool to reach employees as a communication method. Although there was a health education element to the content of the websites and e-mail messages used, these researchers were mainly concerned with the exposure and engagement of employees pertaining to this particular modality. The use of e-mail in this venue was seen in a positive light because it accomplished its purpose in regards to typical quantitative measurements associated with electronic usage: number of e-mails delivered and opened. IT Help Desk complaints, page view frequencies and duration, as well as overall sustainability over time. However, these investigations did not address whether or not the
message content was read or understood and if there was a connection made between message exposure and associated changes in health attitudes, knowledge or behavior. Therefore, within a health-related context, this literature demonstrates that e-mail is a feasible way to disseminate information, with a majority of employees opening messages at work over time.

Within the second category of studies regarding health-related e-mail messaging at the worksite, a grouping of similar quantitative studies examined the effectiveness of targeted e-mail messaging in combination with web-based information modules to affect weight loss, risk of diabetes, or physical activity (Block, Block, Wakimoto, & Block, 2004; Napolitano, Fotheringham, Tate, Sciamanna, Leslie, Owen, & Bauman, 2004; Tate, Jacknony, & Wing, 2003; Tate, Wing, & Winnett, 2001). In all of these studies, employee participants were assigned to a treatment group that received Internet-based information modules and targeted e-mail (additional stored content or personal feedback from a health professional), or a control group that only received the Internet-based resources. Behavioral and clinical measurements were taken at one, three, six, and 12 months during the study period. All these studies showed that those in the treatment group receiving both interventions as described above had greater positive health behavior changes. For example, more employees in the treatment group in the Tate et al. (2001, 2002) studies achieved a five-percent weight loss goal, greater decreases in percent body fat and greater decreases in waist circumference. Likewise, the treatment group in the third study (Napolitano et al., 2003) had higher rates of physical activity; however, statistical significance of difference between the two groups decreased over time, lending support for the possibility of a shorter term impact on increased exercise.

Another worksite-based study examined the effectiveness of educational print material versus web-based instructional material (including regular e-mail messaging to increase physical
activity (Marshall et al., 2003). The results of this study were mixed. Even though there were no increases in total reported physical activity within or between groups, there was a significant increase in total physical activity reported by the print participants who were inactive at the study's start, and a significant decrease in the average time spent sitting on a weekday in the web-based group.

Overall, in this second grouping of studies, researchers examined how the addition of e-mail messaging components to a web-based educational program positively impacted physical health changes in the areas of personal preference, weight, body measurements, and reported physical activity. This body of work takes the understanding of e-mail messaging a step further than the previous studies by linking the use of e-mail with intended behavioral outcomes that bring value to a particular worksite's goals in regards to employee health. Although these are welcome outcomes based upon a worksite's need to justify any health education initiative with proven cost-savings outcomes via employee risk factor reduction, it does little to actually explain the learning processes associated with e-mail and health behavior change. Knowing that someone increased physical activity over time because of a message sheds little understanding regarding why or how they arrived at that outcome. In addition to this lack of insight about the change process, there is also not much know about how the actual content of the messages themselves and the associated interplay between content and the meaning of the information to the recipient.

In summary of this literature section, studies revealed that e-mail is typically not used alone as the primary communication mode, but used in conjunction with other methods, such as web modules or discussion boards. Although it is insightful to consider how e-mail has been combined with other learning tools to maximize effectiveness, the individual impact of e-mail is
not discernable in these studies. Additionally, there are different outcomes expected from the message receiver when an e-mail message is used among the different contexts reviewed; it is observed that the specific value of an e-mail component is viewed differently depending on why and how it is used within a particular setting. When e-mail has been researched at the worksite it is studies more as a means to disseminate information effectively across an employee population or as a tool to coach or persuade the message receiver to change something about their health behavior. Because the expected outcome is different in these settings, the value of the e-mail message's worth is very closely related to how the outcomes are being measured by that particular research study.

Although the worksite literature incorporated some regard for employee perceptions of the e-mail intervention to some extent, there was mainly a strong desire to associate e-mail with a measurable physical change in a tangible health status (i.e. body fat, physical activity, etc.) or as a means to disseminate information to a wide employee audience. Thus, because of this trend, there was a lack of detailed awareness about employee perceptions, preferences, reactions to message content, and message construction concerning e-mail at the worksite. Additionally, the investigation of the learning process surrounding the e-mail message is generally missing from this literature, as well as any meaningful inclusion of an applicable theoretical framework.

The need to prove physical behavioral changes associated with e-mail use will probably continue, but much waits to be answered concerning how e-mail could be used for reflection on behavior change or collaborative learning among employees to affect health improvements among a workforce. It is critical to gain insights into how e-mail messaging impacts the varying stages and processes noted in TL and existing health behavior change theories.
E-Mail Messaging and Media Effects

Although e-mail has been studied in both educational and worksite settings, there is a lack of detailed awareness about employee perceptions, preferences, reactions to message content, and message construction concerning e-mail at the worksite. Knowing about an employee’s health behavior change while receiving e-mail messaging does not explain how this method impacted the behavior change process or potential perception of the e-mail based on its actual appearance or delivery. Also, the research does not offer much insight into how people perceive and interact with different forms of messages and what kinds of visual enhancements may positively impact attention, memory, or positive perception of the message itself.

Looking back in the adult education literature, educational technology and eventually, e-mail, was born, in part, out of the instructional design field with the investigation of how effective new technologies were in assisting learners acquire desired behaviors (Roblyer & Knezek, 2003). As educators experimented with this new modality, a tension was mounting in the field about the role of technology in learning that was most prominently expressed by Clark stating that “…media are delivery vehicles for instruction and do not influence learning” (1983, p.453). For those that held the opposing view - media and its specific modality of delivery is important to the learning experience – there began a period of research that examined the use of different educational technologies and their impact on learning. One area of literature that has informed this concept comes from the field of health communication. Derived from foundational conceptions arising from communication theory and health education, health communication as a discipline encompasses the study of how communication modalities and strategies are used to inform individual and community decisions about health (Kreps & Thornton, 1992; U.S. Department of Health and Human Services, 2000).
Drawing from Craig’s (1999) work regarding communication theory, health communication developers posit that the delivery of health messages are meant to raise awareness, give instruction, or provide persuasion regarding a particular health issue (Salmon & Atkin, 2003). Using a combination of stimuli, motivational variables, environmental appraisals, and outcome factors (Murray-Johnson & Witte, 2003), health communication specialists consider a number of variables when contemplating media channels and modes of dissemination. These basic dimensions include: access (degree of message accessibility to numerous channel distribution), reach (amount of public exposure), target (proportion of audience segment reached), depth (capacity of conveying message content), credibility (believability of content), and agenda-setting (ability to impact targeted topic significance) (Salmon & Atkin, 2003). When examining the multitude of health communication modalities, the delivery channel chosen reflects advantages and disadvantages across the spectrum of these dimensions.

In their assessment of key strengths and weaknesses of varying message channels, Salmon & Atkin (2003) denote internet and/or e-mail messages as having high to medium strength across the majority of dimensions. Related to this assessment, Rimal and Adkins (2003) discuss the effectiveness of computer technology to narrowcast messaging to particular populations, highlighting numerous research examining the benefit of targeted messaging across numerous health domains. Further, in their examination of available cancer-related interventions, the Community Preventive Services Task Force (2008), found strong evidence to support the use of small media to increase recommended cancer screenings in the population. These insights from both the health communication and medical realm lend support to the nature and purpose of the use of health-related e-mail messaging at the worksite.
In the context of this study, the next logical question pertains to how the structure and appearance of e-mail might influence the recipient. Specifically, how does current media effects research regarding graphics, animation, interactivity and media source impact recall, recognition, perception and/or behavioral intent associated with an e-mail message.

Within the media effects literature, the impact of source (what is the origin of this information?), interactivity (what options exist to interact with this information?), navigability (how easy is it to navigate through this information?), and modality (what is the mode of delivery of this information?) are often referenced as important factors affecting one’s sensory reactions to a particular media form ((Diao & Sundar, 2004; Heo, Sundar, & Chaturvedi, 2001; Heo & Sundar, 2000a, 2000b; Reeves & Nass, 2000; Sundar, 2000; Sundar & Kalyanaraman, 2004; Sundar, Kalyanaraman, & Brown, 2003; Sundar & Nass, 2001). In regards to the type of e-mail messaging referenced in this work, the influence of source and modality (and in particular, animation) appear to be the most relevant elements within the limitations of the message design/function itself, that could be modified to affect the potential impact on e-mail recipients.

There are a variety of theoretical constructs and empirical studies that support the use of animation as a means to increase recall, recognition, perception and behavioral intent. For example, the onset of motion is a basic perceptual cue and orienting response that prepares people for potential action; the movement requires maximum attention, and represents a part of the message that is most likely to be remembered (Reeves & Nash, 2000). This onset of motions and accompanying attention reflects the “motion effect theory” (Diao & Sundar, 2004; Heo & Sundar, 2000a, 2000b; Sundar & Kalyanaraman, 2004). In the online realm, research supports this theory, suggesting that animated ads, particularly those placed in the left or right periphery
appear to be more effective than static ones (Heo & Sundar, 2000a, 2000b; Sundar & Kalyanarman, 2004). Related, “distinctiveness theories” propose that animation is an attention-getting visual stimulus that represents a unique feature in the visual field of the viewer (Heo & Sundar, 2000a, 2000b; Heo, et al., 2001). Animation, along with other characteristics such as color, position, and vividness (Sundar & Kalyanaraman, 2004), are more emotionally interesting and appealing and lead to enhanced attention and memory regarding the stimulus object.

Further, the limited capacity theory (Diao & Sundar, 2004; Heo & Sundar, 2000a; Heo, et al., 2001; Sundar, 2000) also provides a conceptual framework that explains why animation may elicit great arousal. The way that information is stored, encoded and attended to affect the involuntary allocation of mental resources; greater allocation of resources for one process or another can impact the amount of information recalled or recognized. For example, if animation or vivid color is included in a visual field, the mind involuntarily assigns greater mental resources to those elements, thus encoding it more efficiently into memory. Also, two other theories, the dual-coding theory and cue-summation theory (Sundar, 2000), provide support for the concept that information presented in multiple modalities has better likelihood of being stored in memory. In these views, visual information, when combined with visual images provide additional learning cues that increase cognition and memory retrieval. Overall, these studies support the notion that movement and vivid color included in an email message could positively impact mental processes related to memory and cognition and serve to enhance the impression of health-related information at the worksite.

From a consumer learning perspective, message construction can impact consumer behavior, relating to cognitive, affective, and conative dimensions (Li, Daughery, & Biocca, 2003). In this work, colorful, three-dimensional, and vivid messaging in consumer advertising
are thought to correlate with consumer response behavior and better decision making and confidence. Directly related is media effects research regarding online news that examines the stated source of the message content (Sundar & Nass, 2001) and potential positive perception of messaging in combination with visual elements formally discussed. Message recipients are asked to give their perceptions of information quality and favorability based only upon the stated source (for example, news editors, their own computer terminal, other similar readers or themselves as based on their own past preferences of information) of the information included in the message. Thus, when presented with multiple information source choices, recipients will rate message content as chosen by their peers or their own computer as higher quality than other sources of message content. In this light, e-mail messages that include the source of information as coming from peers or the recipient’s personal preferences might increase the reader’s perception of information quality and favorable decision-making.

In summary, animation and source have been studied as a means to impact perception, orienting responses and memory enhancements in web advertising (Diao & Sundar, 2004; Heo & Sundar, 2000a, 2000b; Sundar & Kalyanaraman, 2004), and online news (Sundar, 2000; Sundar & Nass, 2001). Based upon this research, it is reasonable to hypothesize that the addition of these and previously mentioned educational elements in an e-mail message should impact recall, recognition, perception, behavioral intent and positive learning outcomes among recipients at the worksite. Table 1 contains a list of each included design and educational element with its associated advantage as cited in literature. By integrating these elements, it is feasible to construct health-related e-mail messages targeted to address employee risk factors at the worksite that might increase a recipient’s attention, cognitive response, memory, and favorable perception.
Table 1

*The Advantages of Select Design and Educational Elements for E-mail Inclusion*

<table>
<thead>
<tr>
<th>Design/Educational Element</th>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visual images with text</td>
<td>Learning cues for enhanced memory and cognition</td>
</tr>
<tr>
<td>2. Color and vividness</td>
<td>Increase positive perception and response behavior</td>
</tr>
<tr>
<td>3. Graphical animation (would be animated in the actual e-mail)</td>
<td>Increase arousal, recall, recognition, perception and behavioral intent</td>
</tr>
<tr>
<td>4. Placement of animation in left or right visual periphery</td>
<td>Increase recognition and memory</td>
</tr>
<tr>
<td>5. Information source reflected as being chosen by peers</td>
<td>Increase reader perception of quality</td>
</tr>
<tr>
<td>6. Invitation to share with peers via hyperlink to electronic discussion board</td>
<td>Increase collaborative learning among peers</td>
</tr>
<tr>
<td>7. Question posed to reader</td>
<td>Increase critical thinking and reflection</td>
</tr>
<tr>
<td>8. Health information/tip/reminder/web link regarding topic area</td>
<td>Increase critical thinking, awareness, and behavioral intent/outcomes regarding content area</td>
</tr>
<tr>
<td>9. Health insurance and overall wellness program linkage information</td>
<td>Increase reader connected to other educational elements of comprehensive worksite health promotion program effectiveness and continued participation</td>
</tr>
<tr>
<td>10. Option to receive feedback or report outcomes to coordinator</td>
<td>Increases positive perception, provide support, or gather targeted behavioral outcomes data</td>
</tr>
</tbody>
</table>
In this review of literature, health behavior change theories and TL have been discussed as ways to understand how people might change in a health-related context. TL offers additional insights into the meaning-making and associated learning processes involved with health behavior change. Discussions of how TL as been studied in the field of health, meaning-making, and behavior, as well as in the online realm provide support to the notion that online learning modalities addressing health-related issues could provide an environment that supports reflection, questioning of assumptions and shifts in meaning perspectives.

Further exploration regarding e-mail messaging as a prominent communication medium and online tool provides additional insights into how e-mail might impact educational processes in numerous settings. These instructional opportunities have been leveraged in the health community and have brought attention to the ways that efficient information delivery could enhance worksite communication targeted at addressing employee health knowledge and accompanying risk factor reduction. Further, worksite health educators have moved forward in specific investigations of how e-mail might be used in conjunction with other online modalities to reach the workforce and provide specific health behavior change outcomes that are typically associated with lower employee health costs. Although this literature incorporates some regard for employee perceptions of the e-mail intervention to some extent, there was mainly a strong desire to associate e-mail with a measurable physical change in a tangible health status or as a means to disseminate information to a wide employee audience. Thus, because of this trend, a continued discussion of media effects and employee perceptions, preferences, reactions to message content, and message construction, as well as recipient’s attention, cognitive response, memory, and favorable perception concerning e-mail at the worksite is valuable.
Overall, the literature potentially suggests that e-mail messaging could be used as a tool to foster critical reflection or discourse and encourage TL. Although it is possible for a message of this kind to pose a disorienting dilemma, it is more likely to influence gradual shifts in individuals’ meaning schemes and eventual meaning perspectives. As was described in the former section, e-mail could also be used by a facilitator to increase critical reflectivity and rational discourse among individuals or groups of people in an online environment. Yet to be examined is the focus of this research — how do employees make meaning of health-related e-mail at the worksite? This investigation provides insights into how this meaning-making provides insights into learning about health, associated change, TL, and the relationship to current health behavior change theories.
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings relate to current and future health behavior. A qualitative methodology was most appropriate for this study because understanding the subjective experiences of the e-mail recipients and their interpretations of meaning are central to the study’s purpose. With constructivism being an underlying assumption of qualitative research (Phillips, 1997), a social constructivist research type was chosen to study the perceptions that participants’ constructed regarding the experience of receiving e-mail messaging at the worksite.

Qualitative Research Methodology

Traditionally within both the health care and health behavior change fields, there is a tendency to view peoples’ health as a series of behavioral steps that lead to the attainment of a preferred state of health that is measured by an established set of specific medical criteria. There has been much effort put forth in hypothesizing how a course of treatment or application of a health behavior theory increases understanding of the “cause and effect” regarding a particular health issue. Although it is quite functional in the medical realm to evaluate and diagnose a person’s health via the use of quantifiable ranges and thresholds of physical evidence, it lends little understanding to the way individuals define and make sense of a health status or behavior itself.

Instead of the precise testing of a hypothesis, Morse (1994) notes that the goals of qualitative research are to describe, explain, and understand a particular phenomena. Because the
world is not the fixed, agreed upon system of measurable outcomes that are persistent in the health behavior change field, it is helpful to see that “…..there are multiple constructions and interpretations of reality that are in flux and that change over time” (Merriam, 2002, p. 4). Qualitative research explores these interpretations, with researchers striving to understand and describe the meanings that people construct in their specific social contexts. Merriam notes that this understanding, by itself, is the focal point for the researcher, allowing insights into the nature of what it means to be a participant in a specific setting. These insights are not seen as a way to predict future behavior, but to increase the depth of understanding of a phenomena occurring in a particular context. Because of its emphasis on the socially constructed nature of meaning, the uniqueness of context, and the rich description of experience, the qualitative research paradigm serves the purpose of this study.

How individuals make meaning of health-related e-mail messaging at the workplace is the central focus of this study. For every event that is experienced, people express meaning about that aspect of their lives (Marshall & Rossman, 2006; Patton, 2002). As an every-day event, receiving e-mail is no exception to this process. Qualitative research strives to understand the meaning that people have constructed regarding an event and how they, in turn, make sense of that event (Merriam, 2002). The meaning that employees assign to the content and appearance of a health-related e-mail message is a critical element and first step in understanding the connection between how people define something (health information) and how they organize that definition into a more global perspective about health or health behavior in general. Without this beginning understanding of individuals’ meaning of an event, there can be no insights gained regarding the processes involved in how people learn about health. As Denzin and Lincoln (2003, p.5) note, “…..attempting to make sense of, or to interpret, phenomena in terms of the
meanings people bring to them…” allow the qualitative researcher to view the event as a series of representations reflecting individuals’ realities and associated importance.

So, it is an important assumption that a qualitative researcher values the process by which participants make meaning of an event. However, the researcher also is aware that these events realistically occur in natural settings, within a particular context(s), and that the meanings of these events are socially constructed by individuals in interaction with their world (Marshall & Rossman, 2006; Merriam, 2002; Patton, 2002). Human experiences of events do not occur in a vacuum or controlled laboratory settings; qualitative research attempts to capture individuals’ meaning in relation to the context, setting, and social forces that are so intimately tied and inseparable from the definition of a particular experience. These critical assumptions of qualitative research are the driving force behind the depth and understanding of the uniqueness of a particular event such as health-related e-mail messaging.

This study examined the medium of e-mail messaging as a delivery mechanism for health information to adults at a workplace and the meaning that those employees associate with the messages content and appearance. The context and setting are important because e-mail at the worksite is different than other contexts. How might the workplace context and setting impact the meaning-making of the experience of receiving e-mail? Further, health information received at the worksite is potentially viewed and interpreted differently than information received in other settings. Only through qualitative methods were the nuances of these elements explored in a way that reveals meaning and interaction within a specific setting.

The importance of context and setting in the qualitative paradigm is wrapped within the idea that meaning is always socially constructed (Denzin & Lincoln, 2003; Merriam, 2002). As study participants interact with their world, the definitions assigned to events happen within the
frame or filter of a social backdrop. This social frame of reference is certainly a reflection of larger societal beliefs, but also of the daily social interactions, expectations, and parameters that are particular to a specific setting. This premise is of legitimate value to this study because of the dynamics surrounding the social factors of e-mail communication, the constructed meaning of the use of e-mail at the worksite, and the social and personal interpretation of health information received via this modality. With the meaning of all events being seen as socially constructed and specific to setting and context, the qualitative research concept was particularly well-suited and armed to grasp individuals’ experiences.

Thus, peoples’ experiences are not easily condensed into small compartments with limited identifiers; the social nature of context and setting are not easily described through narrow detail and description. Because of this, qualitative research holds that rich descriptions of the social world are valuable (Denzin & Lincoln, 2003; Marshall & Rossman, 2006; Patton, 2002). Only through the richness and diversity of this description can the context, setting and participants’ frames of references be closely documented and understood. Through this rich description, researchers can gather the kind of data that assists in building ideas or possible theories that attempt to provide insights into the meaning of a phenomenon for those included in the research (Merriam, 2002). In the case of the meaning of health-related e-mail messaging at the worksite, it was essential to carefully document and reveal the rich descriptions provided by study participants in order to understand their unique experience and interpretation of the message. For many employees, reading e-mail at work was a common occurrence that, in some ways, can be simply explained and described. However, within the depth and description of the potential meaning of a singular or group of events (health e-messages) comes the understanding
of the importance of how the meaning derived from this lived experience may contribute to a cascade of thoughts and actions relevant to health knowledge and behavior.

Research Type – Social Constructivism

In the continuum of philosophies regarding learning and instruction, there are critical differences in how the creation of knowledge is viewed. On one end of this continuum is the belief that knowledge is somehow “imposed” from an outside force to be passively absorbed or copied by individuals; at the other end of the spectrum is the belief that knowledge is socially constructed by individuals or groups (Phillips, 1995). Although there has been much learned from applying the empiricists’ scientific method to human actions, it cannot account for variations in human behavior over time. To this end, “…reality is socially constructed and the sociology of knowledge must analyze the processes in which this occurs” (Berger & Luckmann, 1966). Constructivism can be described and categorized in numerous ways based upon particular stances on key issues. In addition to the “human as the creator of knowledge versus nature as the instructor” issue already mentioned, Phillips (1997) also notes the continuum relating to individual knowledge or public disciplines. Early constructivists such as Vygotsky or Piaget (Phillips, 1997; Palincsar, 1998) were most concerned with the individual’s construction of knowledge; others are more interested in the social construction of global or public bodies of knowledge that serve to inform a particular discipline. Other key issues seen on a constructivist continuum is the extent that the knowledge construction is viewed as an individual activity or as socio-political process; and the extent that the focus of knowledge conception is mainly on epistemological factors versus the use of knowledge construction for social action or oppressed groups (Phillips, 1996; 1997).
Social constructivism posits that knowledge is constructed by individuals and groups as they attempt to make sense and meaning of their experiences; this meaning-making occurs within a backdrop of societal context that is in constant flux based upon members’ interpretation (Gergen, 1999; Phillips, 1995). This study concerns itself with the constructed meaning and interpretation associated with receiving health-related e-mail messages at the workplace. Foundational to this work is the belief that meanings of these events are socially constructed by individuals in interaction with their world (Marshall & Rossman, 2006; Merriam, 2002; Patton, 2002). Via computer mechanisms, information delivery through the web can become a common tool for constructivist learning (Huang, 2002). Although the use of e-mail at the worksite is a common, everyday experience, this study denotes its importance as a socially constructed phenomenon that has the potential to impact individuals’ meaning regarding health and health behavior. This idea also resonates with Craig’s (1999) constitutive model of health communication in that a message is not only about the act of imparting information but also about the sharing and negotiating of the meanings of wellness or illness among members of an organization. It is the “…study of lived experiences and the ways we understand these experiences to develop a worldview” (Marshall & Rossman, 2006, p.104), as well as how people describe things and experience them through their senses (Husserl, as cited in Patton, 2002). What is it about how people construct and perceive e-mail messaging at the worksite that brings certain meanings or concepts to inform their own health or health behavior?

Social constructivism is concerned with “…explicating the processes by which people come to describe, explain, or otherwise account for the world (including themselves) that they live in” (Gergen, 1985, p.266). These processes are essentially the realities constructed by individuals and the implications of those constructions for their lives and relationships with
others (Patton, 2002). It is this socially constructed nature of reality that differentiates the study of human behavior from the investigation of other phenomena in the natural world. As such, several key assumptions are associated with the social constructivist approach. The first premise, that “truth” and “fact” have no objective definition in reality, is in direct opposition to the empiricist perspective (Burr, 1995; Gergen, 1999). Peoples’ ways of understanding the world have no meaning except within a socially constructed context and value system; taken-for-granted observations of the world must be critically assessed. This is a very personal process; people are unique and their associated perception of reality and meaning creations are also unique (Kreps & Thornton, 1992). This premise holds pertinence regarding the historical division in how the medical community has imparted health knowledge. Long dominant in the health behavior arena has been the “objective” language to describe biomedical functioning such as clinical signs and laboratory results. The social construction of health has brought forth the “subjective” language individuals use to describe their personally and socially constructed understandings of health virtually embedded within societal and cultural contexts thought to transcend the strict physical interpretation of disease (Sharf & Vanderford, 2003). As such, the examination of how individual employees make sense, define, and construct meaning from health related e-mail messages was especially important to this study’s purpose.

The second premise of social constructivism is the belief that the ways we understand the world are historically and culturally specific; they are the artifacts of personal meaning and interchanges among people at a particular place and time (Burr, 1995; Gergen, 1973, 1985; & 1999). Ultimately, this premise suggests that all ways of understanding are historically relative — and never absolute across time and space (Patton, 2002). This tenet of social constructivism is commonly seen in the construction of health knowledge over time as well. Whether or not a
particular health experience or health behavior is viewed as a sign or symptom of illness depends upon historical factors, social norms, individual beliefs, and socially created meanings (Sharf & Vanderford, 2003). Thus, in regards to this study, how individuals make meaning of health e-mail messages was inextricably tied to all these factors that were then woven within the fabric of the worksite setting at a particular time and place.

The notion that knowledge is sustained via social processes is a third assumption of social constructivism (Burr, 1995; Gergen, 1985, 1999). “It is through the daily interactions between people in the course of social life that our versions of knowledge become fabricated” (Burr, p. 4). The typical exchanges that forge the material of individuals’ interactions become the origins of the shared and collective versions of constructed knowledge. Nothing exists for us, as individuals or as societies until there are relationships with others to provide contextual frameworks for socially constructed meaning (Gergen, 1999). How people create, interpret, or process information about health follows a similar path. Both content and relationship facets of health information are concurrently articulated in every message sent and every message received (Kreps & Thornton, 1992). As expressed by Babrow & Mattson (2003), “The communicative interweaving of bodily sensation, cognitive-emotional sense-making, and various layers of social structures and practices fabricate the social meaning of physical states and the physical meaning of social states (p. 40). How these varying factors continually interplay exert influence was of significance to this study. The meaning individuals’ assigned to health related e-mail at the worksite was a reflection of relationships experienced in numerous paths of life. Interpretation is inherently social; shared meanings, activities and other cultural tools are integral to understanding how these messages were conceived at the individual and worksite level (Palincsar, 1998).
The fourth assumption regarding social constructivism pertains to the pairing of knowledge creation and social action (Burr, 1995; Gergen, 1999). Just as knowledge represents a social creation reflecting multiple realities, historical and cultural contexts, and relationships with others, it also represents the potential beginnings of broader patterns of practice or action. Different constructions of concepts may invite a particular set of actions. Likewise, what is socially assembled as a specific health belief may lead to new individual or societal practices. For example, the combination of constructed beliefs relating exercise to positive well-being has led to national, state, and community-wide efforts to encourage the overall increase in peoples’ daily activity. Certain constructions of health knowledge serve to sustain some patterns and exclude others based upon the shared meaning-making around a particular conception. These new patterns “…are not secured simply by refusing or rejecting the meanings as given, …rather, the strong invitation is for the emergence of new ways of interpreting the world” (Gergen, p. 49). Challenging existing social constructions and developing new shared meanings can be the result of this process; understanding how, why or if this happened within the context of study was important to its purpose.

Overall, the research type of social constructivism was appropriate for the purpose of this study. To understand that lived experience and meaning that individuals’ give to health-related e-mail messages that the worksite, there must be descriptive information collected that is free of predetermined categories of analysis. The examination of these socially constructed meanings allowed the researcher to explore the multi-faceted contexts at work in the message experience. It is the related interplay between the human subject, context, social relationships, and potential action that provided a view of the phenomena that respects the wholeness of the experience and depth of understanding.
Background of Researcher

Merriam (2002) states that the human instrument that is the main data collector in the qualitative realm “…has shortcomings and biases that might have an impact on the study” (p.5). My role as a researcher ultimately presents such biases. I am a white, female adult health educator, and I work as the manager of an adult health education department within a health education facility delivering a variety of wellness services to businesses across the state. My main responsibilities are the assessment, design, implementation and evaluation of worksite health promotion services, including consultation, telephonic health coaching, program development, targeted e-mail messaging and online learning modules. These services are targeted to address both health care utilization costs of a business, as well as the health interests as indicated by employee survey data; additionally the variety of services are meant to be integrated in such a way as to reinforce educational goals of the workforce.

Although I function partly as a program administrator, I see my main role as worksite health educator, facilitating a number of onsite activities directly with employees. After many years in this field, I am often asked to rationalize the existence of what I do by demonstrating quantifiable behavioral outcomes that are directly linked to corporate return of investment. Studies of corporate health promotion have repeatedly shown a significant return of investment in relation to reduced health insurance claims and accompanying costs. In this realm, the successes of health promotion programming have been reduced to individuals’ achievement of a certain health behavior as measured by quantifiable or stage-based medical criteria.

There is very little research that addresses the meaning making processes that accompany perceptions of health or health behavior from a learning perspective. After years of working with employees who struggle to modify or adjust to a variety of health issues, it is very
frustrating to see their attitudinal and/or cognitive progress be classified as a “failure” because they do not meet the behavioral criteria associated with a successful health outcome. Instead, I find it amazing to see how people make meaning of health messages and subsequently adjust their health attitudes and behavior based upon the smallest bit of information or conversation.

This occurrence has been most revealed to me via the e-mail messaging component of the health education services that I provide. With onsite class time becoming more limited, my use of regular e-mail messaging to deliver targeted health information to employees has become widespread. I receive many comments from employees regarding the meaning that these e-mail messages have in relation to their health beliefs and behavior. With e-mail being such a widely used communication modality, I have become curious as to the role that this educational delivery mechanism might have in the meaning making and lived experience of employees.

In relation to qualitative research of this study and the associated research type of social constructivism, I was not a participant in the research, but a gatherer of data from employee participants who regularly read these e-mail messages. My assumptions were that employees value these messages and desire to make positive steps to maintain their health by understanding and possibly applying what they learn through the educational content of the messages. My interest in this study was especially unique in that I researched and designed the actual format of the messages that I used in practice; it is my goal that these electronic creations are meaningful to those who read them. Because of this, I have a great deal of professional investment in the educational value represented in the e-mail messages that I utilize. Knowing how I created these messages and how I intended these messages to be received and interpreted is important for me to know so that I do not impact the way I perceive others’ reactions to the e-mail message.
Participant Selection

In qualitative research, a small sample is selected purposefully to ascertain the most information about the phenomenon under study (Merriam, 2002; Patton, 2002). In this type of inquiry, it is the researcher’s goal to understand the meaning of a phenomenon from the participants’ perspective; to do this, a sample should be chosen that provides the most that can be learned about the experience under investigation (Merriam). To achieve this, a purposeful sample was utilized in order to “…select information-rich cases whose study will illuminate the questions under study (Patton, 2002, p.46). Studying a purposeful sample yielded in-depth understanding from the study participants. This is especially relevant to the purpose of this study because a purposeful sample of employees at the worksite that receive health-related e-mail messages at work are the ideal target for obtaining the kind of rich, descriptive data needed to understand the essence of their lived experience of the phenomenon itself.

Criterion sampling, a type of purposeful sampling, was used in this study. The usefulness of criterion sampling is that it allows examination and/or in-depth follow up to cases that meet some kind of preplanned criterion that set them apart from other similar cases (Marshall & Rossman, 2006; Patton, 2002). In order to study the lived experience of employees receiving e-mail massaging at the worksite, a determination was sought via criterion sampling to select a sample of employees that not only received these messages at work, but also read these messages regularly. To this end, the sample for the study was obtained by recruiting participants from a worksite setting via e-mail. The recruitment e-mail (Appendix A) asked for volunteer participants who have been receiving and reading health-related e-mail messaging on a weekly basis for at six months from the researcher’s organization as part of an overall wellness program. This criterion was selected through a review of the literature regarding current use of e-mail.
messaging at the worksite. For example, a recent study by Franklin, Rosenbaum, Carey, and Roizen (2006) provided evidence that the use of sequential e-mail messages during a six month period to promote healthy behaviors among employees had feasibility, broad reach, and employee acceptance; of 345 employee participants, a majority opened 50% or more of daily messages opening rate. Within a typical worksite wellness program, information is provided to employees in a number of different ways: onsite classes, informational flyers (for example, via interoffice mail, mailing to employees’ homes, paycheck stuffers, cafeteria tent sheets, etc.) e-mail messaging, company newsletters, health fair table displays, and intranet postings among others. In this study, e-mail was used in conjunction with other modes of information delivery and was coordinated with these other modes to introduce and/or reinforce health education topics that were identified and targeted to address a particular company’s health care cost expenditures, demographics, and employee interests. Research participants were solicited from a worksite that was a current client of the researcher’s former organization that incorporated health education information (including e-mail messaging) in the manner just described. Because of its unique challenges in providing health education information to a variety of employees, a worksite that included both professional and manufacturing employees was chosen.

From those meeting the criterion that volunteered to be included in the study, a sample size of twelve participants were selected, with both men and women and represented. The sample size was not predetermined, however; the size of the sample was determined by the ability of the researcher to maximize the type of information needed, as well as reach the point of informational redundancy (Lincoln & Guba, as cited in Patton, 2002) or replication of data.

In accordance with The Pennsylvania State University Office of Research Protections, the protection of study participants was protected in several ways via procedures in accordance with
the institutional review process. An informed consent form (Appendix B) was provided to each participant with adequate explanation of the study’s intent, structure and purpose. After signing the informed consent, each participant was provided a copy, along with a copy being retained as part of the researcher’s study recorded. To protect their confidentiality, each participant was asked to assign themselves a pseudonym, with the knowledge that they would have the right to withdrawal from the investigation at any time without penalty of retribution.

Data Collection

The purpose of qualitative research was to gather as much in-depth information that would provide rich descriptive data pertinent to the study’s purpose. The major sources of data for qualitative research include interviews, observations, and documents (Merriam, 2002; Patton, 2002). The main method data collection for this study was through in-depth, face-to-face interviews, a method typically associated with the study of lived experience (Marshall & Rossman, 2006). This method closely matches the kind of information needed to determine the experiences of employees who read health-related messages at the worksite. As is noted by van Manen (1997)

In phenomenological human science the interview serves very specific purposes: (1) it may be used as a means for exploring and gathering experiential narrative material and may serve as a resource for developing richer and deeper understanding of a human phenomenon, and (2) the interview may be used as a vehicle to develop a conversational relation with a partner (interviewee) about the meaning of an experience. (p. 66)

Patton (2002) describes three types of interviews: unstructured, semi-structured, and structured. “The semi structured interview contains a mix or more or less structured questions” (Merriam, 2002, p. 13). This study used semi-structured interviews based on inquiries related to
the research questions and included in an interview guide (Appendix C). The interview guide ensured that each participant was asked a similar line of questions; as well as allowed the interviewer the ability to predetermine the content areas under question during the interview time allotment. Although the interview guide can predestine the course of the interview in such a way as to preclude gathering of pertinent information that may be of importance of the study (Patton), it also provides the researcher with the ability to stay within a focused area of discussion, while having the freedom to explore certain areas in more detail as needed for the purpose of the study. To further assist participants focus their comments on specific e-mail messages, each interviewee was provided with a packet of messages, three to five days before their first interview, which was received at their workplace in the six months prior. Appendix D and E include the e-mail packets provided to Worksite 1 and Worksite 2; e-mails delivered to each worksite within the six months prior to interviews were different based upon the preferences and health needs of each business site.

Using the interview guide and referring to their worksite’s specific health-related, e-mail packet, each study participant completed a tape-recorded, primary interview at the employees’ place of work lasting roughly 1½ - 2 hours, and was later be transcribed. Each transcript was delivered back to each study participant for their comment and verification. A secondary interview, of 1 hour in length, was then scheduled with each participant at their convenience to review the initial transcript, clarify information discussed, and allow expansion of content or other additional information deemed pertinent to the study’s purpose. All second interviews were tape-recorded and transcribed for use in the next part of the data collection.

Following both the first and second interviews, the researcher conducted a one-hour, tape-recorded focus group with study participants in order to clarify information shared in the
interview processes, as well as promote further analysis by participants. A focus group interview is an interview with a small group of people (typically 6 – 10 people) to discuss a specific topic (Marshall & Rossman, 2006; Patton, 2002). In this venue, individuals are gathered, not to problem solve, but to discuss a topic within a specific social context with others. During the interview, the study participants can express their own viewpoints, hear what others have to say about the topic, and make additional comments based upon the conversations that they build together as a group (Patton, 2002). This is applicable for this current research because study participants were able to discuss their experience of receiving health-related e-mail messaging at the worksite based upon their shared “…characteristics relevant to the study’s questions (Marshall & Rossman, p. 114).

Patton (2002) outlines several advantages for the focus group process. To begin, the data collection is cost-effective and enhances data quality. While leveraging the ability to interview a larger group of people in a shorter time, the focus group will bring deeper understanding to the original individual interviews as participants frequently benefit from hearing others’ opinions as they continue to develop their own understanding. Additionally, a greater level of personal sharing is promoted as study participants tend to enjoy the social processes involved in the group. At the same time, the interviewer/researcher can use this time to quickly assess the diversity of views across the spectrum of ideas that were presented before (in the initial one-on-one interviews) with those newly emerging from the focus group discussion.

There are, however, certain disadvantages to the focus group method that need to be addressed by the interviewer. In any group of people, power dynamics will be present and need to be observed and monitored by the facilitator. Directly related, those group members that feel that their opinions represent a minority perspective or a highly personal issue, may be less likely
to share their thoughts because of others’ reactions. Additionally, each individuals’ response will be limited due to time constraints and the need to hear viewpoints from all participants as opposed to just a few (Marshall & Rossman, 2006; Patton, 2002).

In recognition of all these factors, it is the interviewer’s job to create a supportive, comfortable environment for the group to minimize possible disadvantages and leverage strengths. In this study, the researcher kept the group focused with a preplanned set of agenda items as reflected by the interview guide and major themes emerging from the first two sets of participant interviews regarding e-mail messaging at the worksite. After having met and interacted with all potential members of the focus group, it was easier to predict power dynamics and response patterns emerged during the focus group discussion.

The focus group in this research was conducted over the lunch hour at the participants’ place of employment. The groups were both held in conference rooms that included a laptop and projector used by the researcher to share a presentation of preliminary findings, pose further questions for discussion, and display various e-mail design concepts for participant feedback. At the beginning of the discussion, group members were reminded of their informed consent agreement and advised that the groups’ conversation should be kept totally confidential. Members of the group were seated in a semi-circle, with the interviewer seating among, but at the end of the group in order to scribe major points of discussion on a large easel with paper. The interviewer facilitated the group’s dialogue via reference to questions asked during the first and second sets of participant interviews.

Data Analysis

The opportunity provided by qualitative research to generate large amounts of thick descriptive information presents researchers with the challenge of using sound analytic
methodologies to make sense of the gathered data. Using Marshall and Rossman’s (2006) seven major data analysis procedures as an outline, and referring to cognitive processes inherent in data analysis (Morse, 1994), this section will address how the data gathered in this study was analyzed and constructed into a framework for communicating eventual results.

Patton (2002) notes that the researcher’s ideas for making sense of the data while in the field, as well as tracking critical insights during data collection represent initial steps in data analysis. Armed with the answers to the questions generated in the design phase of the study and the analytic insights emerging during the data collection (Patton), Marshall and Rossman’s (2006) procedure suggests that the beginning steps in the process after data collection are organizing data and immersion in the data. This researcher carefully logged data collected according to dates, names, times, and places; simultaneously, this researcher immersed herself in the data by reading and rereading the collected information so that concepts could be constantly sifted through the researcher’s mind. As a beginning organizational strategy, Patton suggests using interview questions and associated responses as a way to group similar types of information together; the interview guide employed by this study served in this capacity. The researcher also employed Morse’s (1994) concept of “comprehending,” or approaching the data with an in-depth, multi-faceting understanding and nonjudgmental perspective in preparation for thematic organization.

The next phases in the analytic process are generating themes and categories and coding the data (Marshall & Rossman, 2006). Demanding a heightened awareness to the data and a focused attention to detail, these steps will “…identify salient themes, recurring ideas or language, and patterns of belief that link people and settings together…” (Marshall & Rossman, p. 158.). This researcher used the constant comparative method involving the continual
comparison of one unit of data with another to identify basis elements (Merriam, 2002).

Searching interview transcriptions for recurring words or themes, or content analysis, serves to identify core consistencies and meanings (Patton, 2002). As categories of meaning emerged in this study, the researcher sought to identify those that had internal convergence and external divergence (Guba, as cited in Patton): categories reflected consistency, but were still distinct from one another. The notion of “synthesizing” is an important cognitive process in this phase (Morse, 1994); this is the ability of the researcher to “…merge several stories or cases to describe the typical patterns or behaviors or responses of a group” (p. 30). This researcher merged cases in this way as recurring patterns were identified in detailed review of interview transcripts. The next step, coding the data, is the researcher’s application of a coding scheme to the generated categories and themes that begin the interpretive process (Marshall & Rossman). This researcher used a color coding system to categorize responses patterns that occurred naturally from the interview guide order, as well as by themes emerging from the data.

The ending phases in the data analysis process are offering interpretations and searching for alternative understandings (Marshall & Rossman, 2006). Interpretation begins as the analyst examines the thematic categories and applies their perspective and understanding of the data to make sense and attach significance to the findings (Patton, 2002). The skill of “theorizing” lead this researcher to manipulate observed schemes and formulate an emerging story and insights based upon a study’s theoretical framework (Morse, 1994). A deliberate part of this process should entailed searching for alternative understandings of the findings. “As the researcher discovers categories and patterns in the data, she should engage in critically challenging the very patterns that seem so apparent” (Marshall and Rossman, p. 162). The identification of alternative interpretations helped build the plausibility of this researcher’s eventual conclusions.
Prior to writing the final report, this researcher strived to “recontextualize” the conclusions; the process of applying the findings to other research settings in an effort to “…place the results in a context of established knowledge, to identify clearly findings that support established knowledge/theory, and to claim clearly new contributions” (Morse, p. 34).

Trustworthiness

Credibility, transferability, dependability, and confirmability are four essential elements used in assessing the trustworthiness and integrity of this qualitative research (Lincoln & Guba, 1985). This section will describe how these considerations were addressed in relation to this study.

Credibility, or internal validity, relates to how congruent a study’s findings are to what really is happening in reality (Merriam, 2002). This study employed prolonged engagement, triangulation, peer debriefing, and member checks to ensure credibility (Lincoln & Guba, 1985). Prolonged engagement refers to the extended involvement of the researcher within the study’s setting for an extended period of time (Lincoln & Guba, 1985). A lengthy engagement process helped reduce research biases and helped compensate for contextual effects that could be related to unusual or unexpected events. In addition, trust and rapport was more easily built between researcher and study participants as prolonged exposure to the environment was maintained. In this study, two, one-hour in-depth interviews were held with each participant, as well as a focus group with all respondents to positively impact engagement.

Triangulation refers to the use of multiple methods of data collection and analysis to test for consistency of findings (Patton, 2002). This study employed multiple in-depth interviews, a focus group and observations. Cross referencing and analyzing these varying sources increased the trustworthiness of the data.
Peer debriefing or peer review, are other strategies to increase credibility (Lincoln & Guba, 1985). Peer review refers to employing the consultation of other colleagues who are outside the context of the study, but have a general understanding of the research under investigation. Debriefing sessions with peers provided an additional resource by which the researcher reviewed perceptions, insights, and other suggestions for analysis. In this study, the researcher’s dissertation advisor and two other committee members served in this capacity.

Lastly, Merriam (2002) and Lincoln & Guba (1985) cite member checks as a critical strategy for ensuring credibility and validity in qualitative research. Within this process, tentative findings generated from initial interviews or observations are shared with study participants so they can comment on and/or clarify the researcher’s interpretation of the gathered data. In this study, member checks were completed after each of two, one hour interviews, as well as through the focus group discussions.

Transferability is the extent to which the study’s findings can be applied in other contexts or with other study participants (Lincoln & Guba, 1985). Thick descriptions providing detail within the context of the study provided sufficient information to contribute to transferability. This research provided the highly detailed and rich description needed to address this aspect of credibility.

The dependability or reliability of a study “…refers to the extent to which research findings can be replicated” (Merriam, 2002, pg. 27). Overlapping methods, such as interviews, focus groups, and/or observations that will be used in this study represent a triangulation effect that will assist in establishing dependability. In addition, an audit trail (Lincoln & Guba, 1985) was employed in this study to impact reliability. By documenting and explaining how the results were gathered analyzed and maintained, via research notes or journaling, an audit trail was
created that can be followed by an outside source to authenticate and replicate research procedures.

Confirmability is the degree to which a study’s findings are the product of the inquiry itself as opposed to the biases of the researcher (Lincoln & Guba, 1985). Triangulation, an audit trail, and field notes are all strategies to address this aspect of trustworthiness. As described in the former section, triangulation for this study was obtained via participant interviews, observations and a focus group. The audit trail was maintained through researcher notes so that conclusions, interpretations and recommendations could be traced to their sources and connected to and supported by the inquiry under study (Lincoln & Guba).

Study Participants

The goal of this study was to explore how employees at the worksite make meaning of e-mail messaging targeted at providing information regarding risk factors and positive health behaviors. Twelve volunteer study participants were included in this research and were solicited based on the following selection criteria: (a) each was at least 25 years old; (b) each had received regular WellSents e-mail messages at their worksite in the past six months; (c) each had regularly read the messages; and (d) each had found value in some of the messages, and/or had shared message content with a friend or family member. Some background information on the health and other contextual aspects of these participants’ lives is helpful to understanding the findings that are described in Chapter 4. The next section of this chapter addresses general demographic data and is followed by a short description of each participant.

The 12 participants in this research were diverse on a number of factors including age, occupation, and years worked at current employer. The participants were from two different worksites in two separate counties in central Pennsylvania, with five participants being employed
by an accounting firm (Worksite 1) and seven participants being local county government employees (Worksite 2). Half of the participant group had been involved in their worksite’s corporate wellness program at some time during their employment tenure. A summary of participant demographics is presented at Table 2. All participants were White and of European descent, including nine females and three males, with ages ranging from 28 to 63 with a mean age of 48.2 years. Among the participants, the average amount of years worked at the current employer was 14.6, with a range of two to 45 years of service. The occupations of the study members were varied, including accountants, human services specialists, department managers, administrative assistants, and receptionists. Although it was intended to include a manufacturing worksite in this research, the logistics surrounding participant recruitment prevented such industry inclusion.

Table 2

*Participant Demographics*

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Worksite</th>
<th>Occupation</th>
<th>Years Employed</th>
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The findings of this research were based on two, one-hour interviews with each of the 12 study participants, along with one, one-hour focus groups conducted at each of the two worksites. Each study participant willingly took part in all phases of the research and was familiar with the time commitments, timeline, and protocols of the study. Participant descriptions are presented in the order in which the first interviews were conducted and are separated by worksite to lend understanding to the findings and analysis.

**Worksite 1:**

*Mara*

Mara, a single, 28 year old woman, had been employed as an accountant at Worksite 1 for three years. She was a regular user of e-mail and had active work and home accounts that she accessed daily. She read the *WellSents* messages in e-mail form, but regularly saw the message content via posting on the worksite’s bulletin board. Describing herself as being in good health, Mara had recently fallen out of her exercise routine, but tried to remain fairly active by playing softball on a local team. She felt she was overweight, and held weight loss and better nutrition as immediate goals; for her this meant eating more fruits and vegetables and less “unhealthy” foods. Currently a smoker, she was uncertain about when or how she may move forward with the
quitting process, but knew she needed to address the issue because of her lifelong battle with asthma that required regular medication.

*Jackie*

Jackie, a staff accountant for 13 years, was married with a grown daughter; she identified herself as being “around 50.” A member of her worksite’s wellness committee, Jackie was comfortable with e-mail and was the primary contact in receiving messages from the local wellness provider that supplied the message content. She was often involved in making decisions about how *WellSents* would be distributed in ways other than the electronic form based on numerous factors. Jackie was driven to increase her knowledge about healthy behavior to assist her husband cope with numerous chronic illnesses. A self-proclaimed, type A personality, Jackie was fairly disciplined with her exercise routine and cited a long history of activity across the lifespan. A smoker, Jackie expressed quitting as a goal, along with better nutrition to help assist with menopausal symptoms.

*Mandy*

Mandy had been the company receptionist for nine years and enjoyed talking about health and wellness with outside visitors that she greeted in the lobby. At 52, Mandy was single and was active on the employee wellness committee. She described herself as having average health, but continually a “work in progress.” Mandy was very interested in the *WellSents* content and looked forward to their arrival and how she might use the information to her betterment. Mandy had a positive, “laid back” attitude about growing older and frequently expressed wanting to have a good quality of life in retirement. She shared being a strong advocate for friends or other family members who were trying to get healthier. Her own goals included losing weight and increasing activity; she acknowledged being on cholesterol and thyroid medicine.
Sam

Sam was a veteran member of his worksite, having been a senior accountant in the company for 45 years; he was 57 years old and was an active board member in various local health organizations. Married with three grown children, Sam was vocal in expressing his preference for using phone or “in person” communication instead of e-mail. He was a regular reader of the WellSents messages, but preferred to interact with wellness professionals in person when they came onsite to implement health and wellness programs. Although Sam described himself as very healthy, he also admitted that he wasn’t the “picture of health.” He was active, but struggled with his weight because of recent joint replacement, borderline diabetes and high cholesterol. He listed exercise and nutrition improvements as among his goals because he felt he wanted to enjoy his upcoming retirement to the fullest extent.

Clint

A veteran of his company for 25 years, Clint was 51 years old and held one of the highest executive positions at Worksite 1. As a company stockholder, Clint was an original advocate of integrating wellness programming into the worksite’s onsite activities. Clint shared that e-mail was his main communication method for both internal and external clients. A very succinct and straight-forward communicator, he felt that the WellSents messages were beneficial to the overall wellness program, but admitted feeling overwhelmed by the high number of e-mails received daily at work. These large volumes led Clint to advocate for the company to start an internal electronic newsletter to distribute important information. Having recently achieved a significant weight loss with his wife, Clint included continued healthy nutrition and activity as critical to his weight maintenance and high cholesterol status.
Worksite 2:

**Liz**

Liz was a 48 year old mother of two grown children who had been with her current employer for five years serving as a drug and alcohol counselor. Liz was a great advocate for healthy behavior and served on the company wellness committee. She felt that the e-mail modality was efficient, but also felt that her busy work schedule sometimes forced her to read messages that she deemed essential to her job duties. Describing herself as in good health, she noted dealing with depression and overweight as primary concerns. Her positive attitude and sense of humor assisted her to keep moving forward with both exercise and nutritional goals; she saw these activities occurring within her large social network that provided needed support.

**Cara**

Having been employed by worksite 2 for nearly 22 years, Cara was a veteran employee who served as an administrative assistant to three executives. At 63, she was looking forward to retirement and expressed health goals related to maintaining an active lifestyle for this next phase of life. Especially important were goals related to reducing stress and blood pressure, coping with hormone replacement therapy, and increasing time devoted to regular exercise. Cara was a natural leader in her role as wellness committee member; she was a huge proponent of WellSents message modality and viewed it as an essential part of the overall program. She had strong opinions about corporate wellness and served as a support person for other co-workers struggling with health issues.

**Meg**

Meg was a “40-something,” part-time employee who was also married with a teenage daughter. Meg had been employed by Worksite 2 for over two years; she worked in the human
resources department, had excellent computer skills, and was essentially tuned in to e-mail on a constant basis dealing with incoming resumes and benefit questions. Describing herself as in “pretty good health,” Meg expressed disappointment in having seen a slow decline in her exercise activity in the past two years. She felt she was slightly overweight and wanted to get back into shape by changing her diet. She struggled with asthma, but wanted to increase exercise levels by walking with her daughter.

*Jane*

Jane was passionate about her health and was seen as very disciplined in her efforts by co-workers. She had been employed at Worksite 2 for five years and recently changed jobs within the company and perceived her new sales and marketing position within a nursing home environment as much more stressful. At 45, Jane was married with one teenage daughter and saw herself as being in excellent health and seldom sick with any of the typical minor illnesses. Both grateful and humble regarding her health status, Jane saw reducing stress and improving sleep patterns as very important to her. Already very physically active, she wanted to maintain her fitness level; she saw *WellSents* messages as a way to keep her health knowledge current and felt the e-mail modality was valuable to her.

*Sail*

Sail had been employed for 26 years at Worksite 2 and loved her job as a nutrition and family living educator. She used e-mail frequently and most often accessed her work account both in the office and at home. In her fifties, Sail was insightful, relaxed and a seeker of health information in and outside work. Constantly looking for new facts and research to utilize for her job duties and family, she viewed *WellSents* as a way to add timely health information to her repertoire. Wanting to set an example in her role at work, Sail took her family history of colon
cancer very seriously and felt strongly about eating healthy and getting regular exercise in order to “practice what she preached.” She had numerous hobbies that she enjoyed with family and friends that kept her active outside of work and was well-known in the community for her service and educational expertise.

Phil

Phil was 40 year old emergency medical services professional that had been with Worksite 2 for 18 years and was a faithful wellness committee member. Phil used e-mail as a primary form of communication at work and had e-mail and web capabilities on his cellular phone. Being a strong advocate for corporate wellness, Phil was a regular follower of the WellSents messages and other types of health information. Having lost 110 pounds at one time in his life, Phil’s health accomplishments were well-known among his co-workers. However, with a change in job schedule, Phil experienced a return to weight struggles as he expressed having less time to exercise and more time to eat out meals with friends. He was active outdoors with his children, but admitted not putting the effort forward to exercise very intensely; Phil remained motivated to lose weight and decrease his blood pressure and considered his setbacks as typical of the American population.

Lauren

Lauren was a human resources manager and had just completed three years at Worksite 2. She described her work life as “rushed” and extremely busy; she communicated mainly via e-mail and was a regular WellSents reader. At 48, she described herself as in good health, but recently felt a greater sense of urgency to improve certain health goals based upon her mother’s recent diabetes diagnosis. Frequently referring to this “wake-up call,” she wanted to approach
menopause with more activity and less body weight. She was quite active in her family’s life and was working to create a plan for having more time and energy to devote to herself and her health goals.
CHAPTER 4

FINDINGS

Introduction

The purpose of this study was to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings relate to current and future health behavior. This study was conducted within the context of three guiding research questions focused on (a) the meaning and effect of the overall health e-mail message as it relates to an employee’s current and future health behavior; (b) the meaning that employees at the worksite make of the actual e-mail message content regarding suggested practices to effect health behavior; and (c) the aspects of the message appearance and construction as related to an employee’s process of meaning making as it relates to their health behavior. These three main questions and other closely related issues were included as discussion points during each participant’s interviews; the interview guide used is included as Appendix C. As preliminary background, each participant began the interview providing a brief basic description of themselves, their families, occupation, worksite, and computer use experience, focusing somewhat on their familiarity with e-mail as it related to them both personally and professionally. Next, to provide a context to meaningfully illustrate health-related, e-mail experience, each participant was asked to describe their general health, emphasizing important health behaviors that they currently had, as well as behaviors that they were contemplating changing in the future.

During this process, participants responded to issues pertaining to the three main research questions citing experiences and meanings from both their personal and professional lives. While each of the 12 participants’ experiences was unique and represented a variety of complex
health behaviors and meanings, this chapter reports the themes that emerged during the interviewing process. To this point and in keeping with the qualitative methodology of this research, pertinent direct quotes from the worksite interviewees will be used to present the themes that surfaced.

The findings of this research are presented in six sections as follows: (a) Appraisal of Meaningful Content; (b) Influence of Worksite Setting; (c) Structure and Appearance; (d) Recipient Characteristics; (e) Health E-Mail Message Assessment and Application; and (f) Maximizing Message Impact. Each of these sections represents a major category or theme that emerged from data analysis and reflects common patterns across the data, as well as the frequency and repeated emphasis of certain issues. As outlined in Table 3, each section includes subcategories that highlight relevant themes respective to each part and complete this chapter’s findings.

Table 3  Outline of Findings

I. Appraisal of Meaningful Content
   A. Personal Health Goals
   B. Family Significance
   C. Lifespan Issues
   D. Social Connection and Community

II. Influence of Worksite Setting
   A. The Convenience of Health-related Worksite E-mail
   B. E-mail Prioritizing, Balance and Timing
C. The Connection to the Employer Wellness Program

1. E-mail as a source of worksite conversation
2. E-mail as a wellness program component
3. Varying dissemination of message content

III. Structure and Appearance

A. A Combination of Elements
B. The Use of Graphics and Color
C. A Directional and Balanced Layout
D. The Visual Recognition of Message Source

IV. Recipient Characteristics

A. Varied Learning Preferences
B. Type A Personality Factors

V. Health E-mail Message Assessment and Application

A. Readiness and Confidence to Change
B. New Ideas and Challenging Long Held Beliefs
C. Cues to Action and Small Behavioral Change
D. Reinforcement of Change Already Made

VI. Maximizing Message Impact

A. More Alerting Content Coverage
B. Integrating More Graphical Elements
C. Using a Variety of Medium

Appraisal of Meaningful Content

“I read every message that comes out, but there are some of these that hit home a little more than others.” Maura’s e-mail message appraisal speaks to how this section explores the
way that significant message content and associated personal relevance served as a basic foundation for how participants found meaning in the health-related e-mails that they regularly received at the worksite. Generally, e-mail content in these messages were chosen by the wellness program provider after a comprehensive corporate health assessment that included measures such as health care utilization data, aggregate employee health risk appraisal data, employee health interest survey results, and feedback from the corporate wellness committee. These collective results were leveraged to create an overall corporate wellness program, including e-mail messaging content, addressing specific employee health concerns and needs in an effort to positively both impact quality of employee life and overall corporate health and cost savings.

Topical areas targeted by participants’ wellness programs included chronic disease management and preventive health maintenance commonly pursued in corporate wellness efforts: cancer prevention, heart disease prevention, dietary recommendations, exercise program ideas, diabetes control, health screening recommendations, medical consumerism, and a wide range of other general health topics as indicated by employee interest survey results. Rooted in this process, participants in the worksites chosen received weekly or bi-weekly e-mails featuring a wide variety of message topics in the six month time period prior to study interviews. Based upon the assortment of messages arriving, this chapter describes the appraisal, mental criteria or filtering mechanisms employed by participants to attend to specific messages that had meaning for them in regards to health and health behavior. The topics of the e-mail messages were not as important, per se, as the meaning that the particular topic held for participants when filtered through varying lenses. As messages were seen and read, interviewees described an appraisal process that assessed potential linkages between the topic and various areas of personal
relevance. This process forged an initial meaning for the e-mail message; the concept of a topic’s meaning as being “center stage” for participants was expressed clearly by Mandy: “It’s really the content. I’m interested in what the facts are here. So at the crux of this, it’s the content that helps you make the connection to you personally and with others.” Included in this section are the following four sub-categories representing the main areas of personal relevance that impacted meaning appraisal: (a) Personal Health Goals; (b) Family Significance; (c) Lifespan Issues; and (d) Social Connection and Community.

**Personal Health Goals**

Most study participants talked about the meaning found in the e-mail messaging component of their wellness program by referencing content in relation to their own health interests or concerns. Although not always overtly stated, their interest in a particular message was usually associated with a personal health goal they were currently pursuing or wanted to impact in the near future. For Example, Lauren explained her general interest in these messages by sharing “I look at it more personally. From my perspective, how is this going to help me?” Similarly, Phil responded “I would go to personal relevance. What’s this about? Does it pertain to me?” After talking generally about how the e-mail content attracted their personal attention, each participant eventually revealed that their personal health goals were a prominent factor in determining whether content was meaningful to them.

After looking through and discussing the e-mail packet of past messages at her worksite for over 15 minutes, Lauren stopped briefly and then concluded, “My attention to these really relate to my health concerns and my health goals…exercise, eating habits, and trying to lose weight.” While most participants eventually realized or expressed this connection to a particular health goal, some went further in describing how this factor impacted their attention to more or
less of the detail within message content. This was the case for Clint who pointed to a message
addressing breakfast nutrition:

Now if I look at this one about the important of breakfast, I am reminded that I have
discussed this topic with my doctor about it being the most valuable meal of the day. So,
I am already working on my goal of eating breakfast….so I just skimmed through some
of this message. Some of these things I already know – it was a review.

On the other hand, some participants referenced the presence of very specific health goals
and the recognition that these goals were already “mastered” or “engrained” in past months. This
realization also served as important criteria in determining message meaning and the time
dedoted to reading a particular message. Participants recognized the content as potentially
meaningful, but not necessarily in line with their most current set of health goals. When referring
to a particular message explaining the important of stretching, Jackie explained “It’s more of a
personal goal thing for me. Like this message right here. This is good. I already do this. I don’t
need to know anything more about all this stretching. I didn’t entirely read this message.”
Likewise, Phil described his experience in receiving a message regarding the importance of
drinking water: “Somehow in my mind, I knew that I already drink the eight glasses a day
discussed in this e-mail. I’ve met this goal; it’s good information, but I don’t need the
information again.”

In addition to personal health goals already achieved or health goals currently being
actively addressed, all participants referenced finding more meaning in message content that
represented a personal health goal that they wanted to achieve in the future, but was not currently
pursuing. There was definite attention given to message content that reminded participants of
personal goals they needed to work on in the future or triggered the desire to add a new goal
based upon the meaning of a particular message’s content. In response to seeing a message discussing alternatives to traditional exercise plans, Cara commented that

This is something that made me think about what I needed to do. ‘Hey, I need to look at this and do it – something different.’ I’m really going to take the time to read this. It means a lot to me if it’s something I’m interested in.

Mandy’s response reflected this same line of thought, “I know I need to start exercising in the future. I know about goals, but this might help me set up short term goals.” Related to this was, was the timing of the message and its arrival coinciding with the importance and immediacy associated with a particular goal or health topic on that day. As Clint noted, “It’s a matter of timing in relation to how interested I am that day about certain issues. If I happen to be experiencing something and then I see this, I look at it.” Cara expressed an idea that was commonly mentioned by participants that found message content to be meaningful based upon its relation to personal health goals, whether past, present or future: “I read this e-mail and even sent it to my home e-mail account. Something like this, I print out and keep in a hard-copy folder at my desk for future reference.”

*Family Relevance*

For many study participants, message content was discussed in relation to their family. If content was seen as applicable to a particular family member’s health, that message had more relevant meaning. “If these e-mails are related to things geared towards my kids or myself, I find more meaning in those.” Maura’s quick criteria for judging e-mail content expressed a common theme shared by others as well. While interview discussions centering around e-mail content frequently led to sharing stories and personal details about health behavior struggles and successes, participants often mentioned the role of family health concerns in making some e-mail
messages more meaningful to them. Most of the participants had made a habit of saving or forwarding messages to loved ones on a regular basis if they felt the e-mail was valuable. Jane had saved or printed off so many messages over the past months that she could not reference one topic in particular during the interview: “I don’t remember the topics specifically, but I would print these off for my Mom because I knew it was a health issue that my Dad was interested or that would help them.”

Sometimes the e-mail topic sparked a concern about family health that wasn’t particularly worrisome before. As Jackie glanced through several e-mails from her packet, she stopped and chose a message regarding home safety stating:

I wanted to tell someone and remember this. It had to do with the facts listed and the rest of the content as well. The title was catchy, ‘Our House is a Very Fine House.’ I was thinking. ‘What’s this about?’ I think I need to check our smoke alarms at home!”

Similarly, other participants remarked that many of the e-mails that caught their attention were safety or “health alert” topics and had applicability to a current family situation. Phil expressed interest in an e-mail that he saw from the past summer: “This e-mail came and it was called ‘Is Your Vacation Safe?’ I thought, ‘That’s a good question.’ I read it for overall family safety and for the vacation part.”

More commonly, participants found meaning in messages that reminded them of past or current issues directly related to a particular family member. They viewed the information as being able to assist a family member cope with or be more aware of a certain health concern that the participant assessed was important or urgent in nature. As Clint recalled: “There was a message about stretching with Therabands that I took home to my wife who was having back pain issues. I thought she would find that to be helpful.” In this same vein, Mandy was on the
watch for messages related to diabetes: “If I saw something about diabetes, I would scan it. I may look at it a bit harder and remember to give the information to someone in my family that is diabetic.” Sometimes participants found content meaningful because the message helped explain or provide new information about a health issue currently impacting a family member. They wouldn’t necessarily print or forward the message to anyone, but they were drawn to the topic because of its family connection. As Maura explained,

There was an e-mail message about lupus. That’s a disease that I don’t know a lot about, but I do know someone in my family who has it. To me, this is something I’m curious about and if I found something about it, I would read further about it even though I don’t have it myself.

Liz had similar thoughts about an e-mail message in her packet that she associated with her husband: “OK, there’s this prostate message in here. I don’t have a prostate, but my husband does – so it’s interesting to me for his sake, but not personally interesting to me as a woman.”

Lifespan Issues

As participants talked more in their interviews about the meaning they placed on specific e-mail topics or how an issue was related to their health or family, they started to reflect and think more deeply about their attention to messages over time. They began to relay that e-mail content that was more meaningful was often times related to their age or what stage they saw themselves across the lifespan. Seeing that some of the participants had been e-mail message recipients as part of their company’s wellness programs for several years, a thread of common expression began to emerge from their responses. For example, whether it was out of true interest in a topic or more of a sense of obligation, participants with younger families mentioned a trend in their experience with e-mail. Mara, age 28 shared: “As a young person with children –
raising a family – you are looking for different things in these messages. Your focus is less on
you and more on where I am with my family.” Participants that were a bit older or associated
their life with more “middle-aged” status had some different thoughts as verbalized by Liz, age 48:

I have more time to think about myself now that my kids are in college. I don’t have
their day to day demands on me that fill my attention. I have more time to plan my own
agenda with them not being so dependent on me right now.

Some participants were looking ahead to lifespan issues that they saw in the future as a
way to make meaning of message content. At age 28, Maura’s comments in the interview
process characterized a theme seen in other interviews associated with early prevention: “Some
of these messages deal with issues that could happen later in life, and If I take measures now to
prevent them, then that’s helpful to me to prevent all the bad stuff from happening later.” Others
were reminded that they were coming into an age category that put them at increased risk for a
particular health problem. Phil, age 40 recounted seeing a message targeting cancer prevention:
“It says, ‘If you are 40…’ Right away I’m on alert what this message is telling me. It’s
important when I see one in five men will get cancer. I’m thinking prostate cancer - the cold
hard facts.”

More commonly, participants expressed a recognition that they were getting older; this
realization of entering into a different stage of life influenced the way they experienced some of
the e-mail messages. Both Jane and Lauren, age 51 and 48 respectively, used humor as they
talked about “turning the corner” in their opinions about age, health implications and the
meaning they assigned to the e-mail messages. As Jane admitted, “I think that the older I get, the
more attention I pay to these [messages]. At 20 you don’t think you are going to die. Then,
things start to fall apart. You know you are going to die.” Whether their e-mail attention and meaning was less driven by general health interests or more attached to a sense of inevitability or urgency, Lauren was clear about why some of the message content was meaningful to her:

Some of the reasons that I tend to look at these [messages] or pay closer attention has to do with my age. As I get older…..yes, I’ve got to face all these health ‘things.’ When you are younger, you think you will live forever, and then as you get older and your body isn’t quite what it used to be, you start paying a lot more attention to these [messages] and thinking about your health.

Social Connection and Community

Apart from how participants appraised meaningful e-mail content associated with personal goals, family concerns, or lifespan issues, there were other message topic areas that struck a chord and prompted strong opinions. Most often these sharp reactions were in response to health messages addressing issues of social awareness or important local community matters. Participants’ found relevance in message meaning that discussed community or pertinent social issues that were important to them. “I look for social issues impacting us. I stay in tune with what’s going on here. Hit me where I live.” Liz verbalized the essence of what other participants also expressed regarding e-mail message content and the way the meaning was assigned based upon social issues and sense of community.

There were several specific e-mail messages regarding current social issues that most commonly evoked important meanings for participants. Two of these topic areas were frequently mentioned: health risks associated with children’s busy lifestyles and the relationship between body image, media and weight loss. Jackie and Mandy’s responses epitomized the groups’ overall meaning attached to one of the topics. Mandy was quick to remark, “This one [e-
mail] about kids being too busy with outside activities…Well, I don’t have any kids, but this is an important issue I’m interested in. It wasn’t like this when I was younger.” Jackie had similar ideas that led to larger issues:

This struck a chord. I see something happening here that isn’t good for today’s family.

Here we have these stressed-out kids and parents thinking that they need to take their kids to two or more events each night. People don’t even have time for dinner together any more. Everyone is rushing. This is relevant for our society and a social issue I see all the time.

The healthy body image e-mail message was also referenced frequently as having meaning to participants in the social sense. Mandy remarked, “When you see the TV and see some skinny, waif-like actress….whatever. The images you see on TV are terrible. This is something I would share with other women. It stuck in my mind.” Maura had related opinions, but also connected the social context of this issue to herself:

The body image message was good. I know that’s an issue these days and I guess it always has been an issue. It’s been an issue with me in the past. I wouldn’t say that I agreed with the poll referenced in the message that reported that skinny images of women on TV make women watching at home feel insecure. Because I’m not in shape right now, I would be more likely to feel insecure by seeing people in shape and healthy. This is a good message to help move body image into a more positive place.

Although participants frequently found meaning in e-mail messages that referenced health-related social issues within national or worldwide context, many interviewees’ experience with receiving e-mail messages regarding local or regional health concerns were noteworthy. Some mentioned that seeing statistics comparing the prevalence of a certain health behavior in
the United States versus their local region would have more meaning to them. As Phil stated, “Hearing that 20% of American smoke is not all that engaging, but hearing about a recent poll indicating that 50% of my coworkers smoke is interesting – that is like ‘wow!’” Another participant, Jane, remarked in a similar fashion: “It’s fascinating to hear that our county has ‘X’ percent more pollution than other regions in Pennsylvania. Our area has a lot of concern about air quality and asthma right now – it’s getting attention.” Other participants expressed more meaning in messages that went on to offer potential explanations for the differences between local and national health issues. For example, Clint was inquisitive regarding a message about obesity rates and shared, “Just thinking about this…if the message addressed the obesity rate here as higher than the national average, I need to ask, ‘why are we so obese here and are the reasons different here than elsewhere?’

With this study being conducted in a particular Pennsylvania region, participants often found meaning in content that made county versus state comparisons and prompted their memory of incidences in the recent past regarding an infamous local accident with health and social implications. For instance, Mandy’s interest in respiratory health was impacted by content comparing local and national asthma rates:

Our area is much higher for asthma and we don’t even have a ton of manufacturing anymore. I’m an asthma sufferer; when the weather is bad, I feel it. Somehow I wonder if these issues and also thyroid cancer has anything to do with TMI. Radiation doesn’t act immediately in the environment.

The findings noted in this first section described four major areas of criteria used by participants as they interpreted and found meaning in health e-mail messages at the worksite. Personal health goals, family relevance, lifespan issues, and a social connection to community
were main criteria utilized in determining whether a message was relevant to participants. Specific content areas addressed by messages were not necessarily seen as meaningful in and of themselves until the topic was sifted through these varying levels of criteria and deemed relevant.

Influence of the Worksite Setting

With this research addressing electronic mail as a communication method, during interviews participants had numerous comments about their general use of e-mail, how it had changed over time, and how they managed e-mail accounts and volume between home and work environments. At some point during each participant interview, there was a time when it became apparent that there was something about the worksite setting that made receiving e-mail at work different than other contexts. For some it was a matter of their perception that work-related email was more important, serious, or less casual – something that needed their attention in an immediate sense for the sake of job performance and security. For others the use of e-mail and the workplace context had more to do with time restraints. It was related to how they perceived their available time both at home and at work; the use of time in both environments had an impact in how participants perceived e-mail at work.

Situated within and around these issues, were participants’ specific perceptions of health-related e-mail messages as being different from the typical flow of work-related e-mail. There was a kind of “worksite effect” surrounding these WellSents messages. They were an important part of the overall wellness program, but for some participants, the e-mails stood alone or apart in their associated meaning. Co-workers would sometimes find message topics at the center of worksite conversations – these conversations were about participants’ health or a health issue, but it was also embedded within a worksite environment along with other wellness-related events
happening within the company. Participants mentioned issues about the practical implementation of using an e-mail component to a wellness program when e-mail inboxes were full, the company server was “clogged,” or when corporate wellness committees decided to use the *WellSents* in different ways to maximize health information exposure. This section addresses the factors noted by participants as they looked to describe specific influences of the worksite setting and the meaning of health-related e-mail messages, including, (a) The Convenience of Health-related Worksite E-mail; (b) E-mail Prioritizing, Balance, and Timing; and (c) The Connection to Employer Wellness Program.

*The Convenience of Health-Related Worksite E-Mail*

In many ways, participants’ perceptions of e-mail were reflected throughout this entire chapter, but it is mostly in this section that some of their thoughts about the “nuts and bolts” or instrumental use of electronic mail are presented. As with many computer applications, participants had a wide variety of comments in regards to using e-mail at work. Regardless of their personal preferences, most participants shared Phil’s sentiment: “E-mail is primary at work.” Using e-mail technology was a matter of necessity for all participants interviewed; it was the main communication strategy for these worksites. Participants frequently mentioned e-mail’s integration with electronic calendars, cellular phones, Outlook tasking functions, and work supported personal digital assistants (PDAs), and other handheld computer devices. “I have very positive feelings about e-mail. It’s part of doing business every day,” shared Jane when she reflected about how much of her job was spend sending and responding to e-mail messages with both internal and external clients.
In addition to perceiving worksite email as inherent to their job responsibilities, most referred to e-mail as something convenient and favorable. These assessments were provided about both regular work e-mail and *WellSents*. As Clint expressed,

> When compared to paper, these [messages] are less likely to get lost in the shuffle and much easier to keep track of as we move to a paperless workplace. It’s the preferred mode for me; I can just launch these [messages] right up on my screen and read it – that’s an advantage.

Sail shared these thoughts: “It’s valuable to me to get instantaneous kinds of messages on my screen. It’s definitely the right way to hit all kinds of different people at the worksite. Liz continued, “These messages are ‘there;’ they are feasible and accessible to me during the day and if I access work e-mail when I’m out of the office. In addition to convenience, Jackie expressed a slightly different view: “I don’t want to mess with long attachments. A little information in this message is better than a five-page article in a magazine; this gives the highlights of the topic. It’s right there when I click on it.”

As convenient as e-mail was described by participants, there were additional comments that brought out other important issues regarding its practical use. As Phil shared, “Yes, e-mail is more convenient to get the message sent without effort; likewise, it is also easier to delete the message without much effort – there are pros and cons with these.” Others referenced co-workers or themselves who found themselves with limited access because they were either away from computer stations for long parts of the day doing other priority work or purposefully chose not to check e-mail. As Maura described, “Most of us here [worksite] have access, but people don’t check it all the time; some ‘turn off’ that function that let’s you know when an e-mail has arrived.” Along different lines, some participants noted drawbacks about e-mail as they
differentiated between the types of messages sent at the workplace. As Sam thoughtfully expressed:

When you are talking about health communication or internal policy messages, e-mail probably works O.K., but personal communication does not deliver well by e-mail. You can not smile or frown in an e-mail; you can not see a person’s body language. If you really want to communicate something on the personal side, it [e-mail] lacks a lot.

Phil continued, “It’s very difficult sometimes to make sure that an e-mail is perceived correctly. True feelings are hard to convey. For basic information, it is fine – I like my Blackberry PDA access.”

Whether for basic information exchange or more personal communication, most participants expressed a preference for sending and receiving e-mail messages at the worksite versus another setting. Some participants noted issues of time restraints or differences in computer functionality or quality between home and worksite environments. Liz responded regarding her lack of time and preferences, “I’m on the computer all day; I don’t use my e-mail account at home,” or as Sail commented, “I generally don’t access our family e-mail at home; if I have time at home, I occasionally use my work e-mail.” Further, when Clint responded about the possibility of receiving health-related e-mails at home: “To get a message like this at home – it may not ever get read based on time.” Other common reasons cited for preferring to access e-mail at work were related to participants’ perceptions that their work computers were “faster,” and higher quality or that they had more advanced anti-virus software to deal with unwanted e-mail. Mandy’s comments about her home computer were somewhat typical: I don’t use my computer at home because it takes forever to get online. It works like the ‘Slowskis’ when I get
online at home. I get very frustrated. If I want one of these [messages] at home, I print it as a hard copy at work and can write on it later.

In addition, while discussing the convenience of receiving these messages at the worksite, Maura expressed suspicions about receiving e-mail on her home account, “On my home computer, I have to question the validity of these [messages] and getting through my spam filter. ‘Where are these coming from?’”

**E-mail Prioritizing, Balance, and Timing**

With an array of interview questions addressing concepts of e-mail, the workplace and health issues, participants invariably expressed issues regarding the interplay between time restraints, task overload, prioritizing, and the search for balance within the context of receiving WellSents messages. When talking about time issues, participants reported that they perceived the message format to be feasibly read in a short period of time, but also cited a host of time restraints faced within the fabric of a day’s events that impacted message priority at any given time. As Jackie stated, “This [message] is something that takes very little time to read in the day,” and Mandy continued, “I guess this [message] is better for people. They are short and to the point. People don’t have time to sit and read in-depth information.”

To this point, participants’ assessment of having the time to read was directly related to the perceived overall time “crunch” as dictated by the day’s pace and sheer amount of other responsibilities that needed to be accomplished. When addressing this point, Jackie noted, “My work schedule impacts the value that I place on these messages in general.” More specifically, Liz commented further by adding, “With these messages, it all depends on that particular day – if I had a really busy day versus a slower day at work.” Many participants talked about the correlation between workload and attention paid to the health-related messages received; also
mentioned was the workload generated and time devoted to read the total volume of all work-related e-mail messages in a day’s or week’s time. The majority of study participants received what they characterized as “a lot” of e-mail during the workday. As Clint put it bluntly, “I get over 75 e-mail messages every day. Things get prioritized very quickly.” Liz readily expressed the reality of her situation:

Yes, I sometimes have ‘snippets’ of time that impact how I pay attention to these messages. Just today, I walk in here [office] and I have 61 e-mails, and I have another meeting at 3pm. I will not sit here and go through all these e-mails – some have to wait or be deleted.”

Like many people in the working world, study participants were commonly put into a position of deciding when, where, how, or even if the WellSents and/or other work e-mail would ever get read. Lauren’s comments about e-mail characterized how some participants felt some days regarding hectic times at work: “I get tons of e-mail…tons of it…to the point where….the communication can stress you out. Your cell phone is ringing, your office phone is ringing, and then you see your e-mail coming on your screen.” Between e-mail and other related work stimuli, participants sometimes felt bombarded with messages to the point of information overload. For example, Phil and Liz epitomized this feeling, “It gets to the point that I can’t ‘mess’ with these [messages],” or “I have so much coming in. Sometimes I tend to tune them [messages] out.”

This overload and the unexpected “peaks and valleys” of the every day e-mail flow was a reality for study participants. It was not something they preferred, but it was something that they grew accustomed to as part of dealing with their workplace and occupations. Against the backdrop of this particular situation, participants were still able to find the time to read and find
meaning in the steady flow of *WellSents* messages that were part of their wellness program. Strategies to address this issue were not vastly different than those associated with other kinds of work e-mail. Jackie stated in regards to this issue: “We all have to prioritize. We have to prioritize our lives, whether at work or at home.” Some mentioned specific approaches used to ensure that the *WellSents* were filtered out in their minds and inboxes and eventually read. Liz offered, “If you think of the different ‘boxes’ that you put messages, I mentally put these [messages] into a temporary ‘no time’ group and then later go back and put them into an ‘interesting’ category.” Others mentioned filtering out the messages that they wanted to read during a time set at the end of each week that was spent “cleaning out the inbox” then deleting or archiving as needed. During this clean up process, some participants could easily recognize the *WellSents* message by its subject line – “Oh, there’s that message,” – and determine interest in the topic or content at that time.

Other participants referenced specific timing factors as being an important organizational strategy. As Sail remarked, “I expect these [messages] to come at a certain day each week. It’s the expectation of its arrival that is more important – the time of day doesn’t matter.” Others often shared that they most commonly read these messages in the morning hours regardless of the time of day that the actual message arrived in the participants’ inbox. For example, Phil stated: “For these [messages], in the AM is better for me – first thing. I go through e-mail and then set my day up there.” Others agreed, expressing a common sentiment, “I read e-mail in the AM; by the afternoon, I have all this other stuff to get done before I leave.” Cara expressed a more specific combination of timing and attention:
Mornings are better for me. Think about it. Everyone that comes in each morning, the first thing they do is look at their e-mail. Later in the afternoon, people are tired, they have a lot to do, and they may not even look at it.

At the end of the day, there were a multitude of factors influencing the day to day logistics of e-mail use; time, workload, e-mail volume and potential information overload were all elements that participants noted. Throughout this process, most interviewees noted a deliberate prioritization of e-mail that sought to capture the WellSents messages at a time that was most convenient for them. As best they could, they found a way to find balance between the daily overload and the potential importance and meaning that particular health-related messages held for them at the worksite.

*Connection to Employer Wellness Program*

In addition to the issues of time and computer function, another set of issues began to emerge for participants that were applicable specifically to WellSents, as verbalized by Sam, “I think that receiving these [messages] at work…In my case it gets much more attention.” The type of “attention” meant here become a commonly expressed idea by participants. For a variety of reasons, participants perceived that these health-related messages were more important and warranted their attention because of who in the company was sending them and their beliefs about “why” they were being sent. In some cases, the messages were given more credence or significance because participants felt that they were being sent by those “higher up” in the company. In these cases, a number of interviewees expressed that, in addition to finding value in the health message content, they opened the WellSents because they did not want to miss anything communicated by upper management or the wellness committee that might be mandatory or “strongly encouraged.” As Jane remarked regarding her regular reading of the
messages, “Absolutely is has a bigger impact in my inbox. It shows that my employer is sanctioning this message...this information.” In addition to this sentiment, more commonly participants verbalized recognition that the employer “cared enough to send these out to us.” Maura voiced, “I put more importance on these because I know our employer wants us to be healthier in the long run. No one wants to see a co-worker sick. You are seeing it [wellness] everywhere.” Liz continued along these same lines:

It means a lot to me to have an employer that cares about my health. Yes, I know we need to get our [health] insurance costs down, but I feel as though they are taking some kind of action. ‘You are our employee; we want to help you.’ We are all in this together. I’m glad they are investing in this.”

As a member of the management team, Clint continued, “The message we are sending is that we are concerned about our people. We want them to be healthy. Certainly, there are advantages to us [company] to having healthier employees, but there are probably more advantages to the individual.” Individuals in this research seemed to have awareness of this issue, and in combination with their views of e-mail at the workplace, perceived meaning associated with the health-related messages.

Clearly, the WellSents messages were a part of their company’s ongoing wellness program and included health information that was specific to them as employees and often referenced other components and/or events associated with their wellness plan. The e-mail messages under question in this research did not arrive in recipients’ inboxes in a vacuum. They were different from other health-related messages or automatic daily health news or tips that participants may have gotten at work or at home from other sources like WebMD®, for example. General content may have also included announcements for upcoming onsite health education
classes, related worksite events or contests, health insurance updates, or suggested Internet sites for further information.

The messages were already connected to “something” at their worksite – an initiative – that was sanctioned and encouraged by senior management; the wellness program and its elements had a certain degree of visibility with the company’s culture and ongoing strategy to impact employee health. This specific context influenced how participants made meaning of these messages and impacted how the content was perceived or referenced within the workplace setting. It was sometimes difficult for participants to “tease” apart the meanings derived from different aspects of the wellness program that typically included onsite classes, activities, distribution of written materials in addition to *WellSents*. None the less, these messages were cited as a source of work conversation, referenced as an important part in the overall wellness program elements, and were used in ways that reflected the practical reality of implementing a regular electronic message in a sometimes imperfect computerized work environment.

*E-mail as a source of worksite conversation.* For some participants, the arrival or certain message content impacted work discussions in their own departments or with other coworkers. When referring to a message about holiday stress, Cara remarked: “Something like this is a conversation starter at work. If it’s something that I really like, I share it with the girls in here.” Sometimes participants saw health tips or tried ideas suggested in messages that they then discussed with others at work. Jane commented about message discussion in general, “We talk about these [messages]. ‘I read it in *WellSents*. Did you try that? I’m going to try that.’” Further, Liz shared: “I saw a helpful hint – something that I found that was easy to implement that I thought they [coworker] would value. ‘Hey, this helped me and maybe this will help you. Just think about it. This might help you.’” Some messages sparked very specific conversations
among coworkers that participants found otherwise difficult to discuss. Phil recalled a message regarding colonoscopy:

    We talked about it. Everyone wanted to share their personal story – kind of like a family support group in a way. One guy was a little worried about it [colonoscopy], but he has spread the word since having it. ‘You should go. You should have it done regularly – even before age 50.’ We’ve discussed these things [messages] over time – not every message, but some of them.”

Some participants recalled having overheard comments regarding the messages from other coworkers that were less positive. These remarks seemed to reflect how other employees felt about the messages themselves or their perception of whom or what were sending the messages to all internal staff. “I’m not sure how other people in the office perceive these [messages],” shared Jane. Jane remembered hearing a sampling of comments over time related to others’ perceptions that the messages were “bossy” or intrusive somehow; she continued by stating: “One of the things I heard was, ‘Oh, here’s this wellness e-mail telling me to lose weight again!’” Other participants talked about coworkers deleting the messages by virtue of the subject line that they perceived as being “wellness program” related. Phil recalled, “I knew of some people here that would delete these messages if they thought that is was coming from the wellness program or wellness committee. They were not to be bothered by something they didn’t think was important.” Although these sentiments were not shared by the study participants, they do speak further to the idea that meanings attached to message content – whether positive, negative or neutral – coexisted within a worksite context and associated influences.
E-mail as a wellness program component. “People do talk about these [messages]. I’ve heard discussions around the ‘water cooler,’ like ‘There’s going to be a class about this [topic]. Did you know?’” Sail’s recollections about office conversation began to highlight participants’ perceptions that these messages were part of a multi-faceted delivery system, as well as an important piece in the overall wellness program strategy linking content with other onsite activities. Regardless of what other events were happening as part of the wellness program at the worksite, the WellSents messages served as a consistent, subtle reminder that there was an “undercurrent” of health information and/or activities happening at the company. Sail continued, recalling her first experiences with getting the messages when they began to be integrated with the program: “Every week you are expecting them. It’s like, ‘Oh, I remember this. I got this last week.’” The arrival of the messages established a small habit and pattern of regularity that represented a piece of the program – another avenue of getting information in addition to onsite classes or other written material. The messages were a way to receive information that did not require much effort in order to get the content’s benefit. As Sail expressed, “People need to get this information in different ways and in different angles.” Jackie continued, “This [messaging] is a way to get ideas to people that don’t ordinarily read any health information nor do anything else in the program.” For others, just getting something unique that was not previously used in the wellness program was valuable to them. Further, Mandy stated: “I need someone to present this differently to me. Maybe I’ll find something different here and then I can always go online for more detail if I want.”

Additionally, participants relayed a perception of the messages’ connectedness to the whole as shared by Liz, “I think these [messages] are beneficial. I understand that it’s all interwoven.” Jane continued with, “This is fitting into everything else. I think it’s important. I
think it ties a lot together.” Some participants were very specific in describing how the pieces of the puzzle were all coming together for them and perhaps others at the worksite. Mandy addressed this concept by relaying her thoughts about a recent onsite class addressing cardiovascular disease prevention:

I think these messages are a continuation of the wellness sessions. I do. We are ‘walking the talk.’ We are not just saying, ‘Okay, come to this session at noon. We will feed you a free lunch and these people are coming to teach you about blood pressure and then you leave.’ We are also seeing an e-mail about blood pressure, and then I go downstairs to and talk to someone in the office about the same thing: ‘We talked about this last week in the lunch session.’ You have a connection here.

Some shared that they felt that the messages had meaning outside the company wellness program that related to community wellness activities or national events. Meg’s comments referenced the concept of monthly national health observances when she shared, “February is national heart month. This [message] is called, ‘Taking Care of Your Heart.’ It just makes good sense to hook this to whatever time of the year it is with everything else going on out there.” Cara continued addressing a similar concept when she remembered forwarding some of the messages to friend’s a local Weight Watchers® group. “Every little bit helps especially for people trying to get healthy. I’ve sent these out to some [people] in other areas. Those in the [Weight Watchers®] group were happy about it.”

Varied dissemination of message content. Whether referencing the wellness program or other external educational activities, most participants viewed the messages as an important piece of the whole – reminders or reinforcers of other things heard or seen at the worksite. As Jane remarked about this issue, “It reinforces what people hear. …another poke that says, ‘Hey,
here’s something else for you.’ It’s just another way.” This idea of “another way” took on a new meaning when participants started to talk about the practical implications and logistics of the WellSents e-mail component. With the high volume of electronic communications being exchanged within these worksites, inboxes were quickly full, company computer servers were burdened, and overall “slowness” of computer technology became critical issues over time in relation to these messages. Participants in both worksites noted a variety of message adaptations utilized by their wellness committees to cope with these occurrences or just to expand the visibility or use of the message content. As Maura shared, “There are times when some people in the company do not get these [messages] electronically because of our e-mail system storage issues.”

In a practical sense, these worksites had to adapt to internal limitations by looking for other ways to distribute the WellSents content to the workforce; there were numerous strategies used. Along the way, wellness committee saw that making the messages available in other forms was another way of “getting the word out.” Most often, hard copies of the messages were printed and posted in key places, (such as bulletin boards, lunchrooms or restrooms), disseminated via interoffice mailboxes or integrated into the company’s regular newsletter. Although not the intended modality of message delivery, most participants still viewed these alternative message formats as playing a similar role as the electronic version in regards to the overall wellness program. In reference to messages being used as wall posters in some locations, Maura stated:

I guess it gives everyone a chance to ‘see’ them and read them. You might read it when it first arrives, then you go to the bathroom and say, ‘Oh, I remember that [message].’ You start thinking about again. It serves as a reminder because you see it constantly in the office.
In regards to the alternate forms of message posting, several participants noted that e-mail was still their preferred delivery method. Lauren expressed this clearly:

Getting them here [computer screen] is the optimum place that I would read it. It’s OK to print them out, but I’m not going to stop in the hall and read it as a poster unless someone stopped me right in front of the posting and pointed to it. Then, I would notice the Wellsents ‘look,’ but I probably wouldn’t read it. It’s convenient on the screen.

To this point, both worksites had additionally pursued different screen adaptations of the message content to save e-mail system storage space and/or to provide alternate electronic venues for message subject matter to be posted. One employer stored message content on the company’s intranet site and started to send only the hyperlinked Internet address for each message within the body of e-mail. Recipients could “click” on the hyperlink to get to the content on the intranet site, but they could also access past message topics through this method. The other employer integrated the entire Wellsents message or large parts of the content into an internal general employer newsletter that was delivered each week electronically. There were mixed opinions about this modality among participants. Certainly, many felt positively that the online newsletter saved on paper, but as Mandy put it: “I don’t have time to read the entire online newsletter. You have to go through the entire newsletter to find this part [message content] and launch it.” Further, when talking about the overall newsletter contents, Clint remarked:

Typically it’s [message] buried somewhere in the middle. It it’s important to the reader, it should be closer to the front, but it depends on whether you think that the interest of the reader should drive content placement or the interest of the company?”
As seen, participants reported some pros and cons with these alternate electronic venues. In both worksites, these newer options were in their infancy as companies were striving to find different ways to communicate wellness information to their employees. Most participants appreciated this multi-faceted approach within the worksite context as it related to message meaning. Different people valued receiving messages in varying ways.

Structure and Appearance

One of the main research questions in this study specifically addressed the aspects of the message appearance and construction as related to an employee’s process of meaning making as it related to their health habits. This section will explore the variety of ways that participants assessed the meaning of the message via a visual inventory of structural elements encompassed in the message body as seen on the computer screen when the e-mail arrived at the worksite.

Before reviewing the findings in this segment, it is useful to briefly examine the basic structure (Appendix D and E) of the health-related e-mails, referred to as WellSents within the corporate wellness program, to provide a better context for understanding participants’ interview responses. The messages arrived on a weekly or bi-weekly basis in the recipient’s e-mail inbox; the arrival day and time were usually consistent for each recipient and based upon a pre-arranged delivery schedule from the wellness provider outside the company. The message was first sent to a designated contact person within the company and then forwarded to an internal listserv of employees. The actual message was sent as an attachment or hyperlink by the contact person to each recipient for viewing with an e-mail subject line identifying the message as WellSents.

Further, it is important to recognize that these e-mail messages appeared quite different than typical e-mails normally exchanged in the business community. The message was delivered within a consistent style template that included a header box with colorful graphics identifying
the message as *WellSents*. A text box with graphics was also included in the footer area that identified the message developer (outside wellness provider), contact phone number and e-mail address for recipient comments or questions. Between the header and footer areas was a large area for text that was utilized to house the actual content of the message that allowed inclusion of typical word processing features: different colors, varying font styles and sizes, assorted bullets, and a vast array of graphical images (See Appendix D 1, 5, and 10; Appendix E 5, 8, and 12).

Based upon the message construction and appearance itself, the participants had many comments during the interview process about the visual “look” of the message and how these elements impacted the meaning assigned to the e-mail and the content. Along the way, many participants remarked that it was somewhat difficult for them to separate their assessment of the e-mail appearance from the actual content or topic of the message itself. However, it was apparent that the visual elements of the message played a primary role for some participants as they navigated through the body of the message and were drawn to certain word groupings, pictures, indentations, text boxes, and textual patterns. The interplay between visual appraisal and content recognition was a persistent backdrop to participants’ meaning identification for these messages. Consistent categorical themes described in this section are (a) A Combination of Elements; (b) The Use of Graphics and Color; (c) A Directional and Balanced Layout; and (d) The Visual Recognition of Message Source.

*A Combination of Elements*

Throughout the interview process, there was “something” that the participants described as they tried to explain the cascade of mental and visual cues that were experienced when they first looked at the e-mail message. This appraisal process was intangible to some; participants hinted that it was an instantaneous experience. Their explanations of the occurrence were elusive
at first, but became more apparent as they reflected on what they were trying to identify or
describe within the message appearance that momentarily formulated meaning for them. This
combination of elements led to a “quick look” or glance that integrated message structure and
content and captured their attention for further exploration.

For some participants, the “glance” included numerous elements all coming together at
once to create an impression of sorts. For other recipients, they came to realize that it was one or
two aspects that they habitually looked to in a first appraisal step to determine their initial
message meaning. As Phil flipped through a number of different e-mails in his packet (See
Appendix E3), he chose a message about sun safety; his comments were characteristic of those
that saw numerous components of the message as forming an initial impression or meaning:

My eyes are drawn to these bullets down here. This title gives the drift of what it’s about
right away. Right now I can say ‘yes’ or ‘no’ to reading more of the message. These
bullet points go right into telling me ‘why’ this is helpful to me.

Jane explained further when referring to a message providing tips for worksite dining (See
Appendix E4): “I see these six separate statements on the left. They are short and easy to see. I
see the title and think, ‘What are they talking about here and I go on reading.’” Similarly, Maura
expressed her thoughts about balance and content (See Appendix D3), “It’s all in the balance
between everything on the page; it can be asymmetrical but still balanced. The title doesn’t
always need to be in the middle.” These participants had a myriad of visual elements that were
all being assessed at the same time, and what they included in their initial glance was varied for
each e-mail they read. As Mandy added regarding a message about goal setting (See Appendix
D1): “On this message, I skipped right away down to this acronym [D.R.E.A.M.S.] at first. I
thought it was easy to remember. I saw the title then, ‘Experience is a Great Teacher.’ It looked interesting.”

Some participants were eventually able to express their “system” for quickly appraising the visual snapshot of the message elements. These participants identified some component of the message that they habitually assessed that quickly determined their interest or meaning about the message. For Jackie, the e-mail title was the first thing (See Appendix D11): “I look at the appearance of the title as I decide if it’s going to be interesting to me.” Others hinted that a combination of message title and first words of the message were most influential: “The title has to catch my eye, then I look to the first message line and other parts at the beginning.” Other participants revealed that they typically looked for something in the message first that gave them a sense of overall “tightness” or conciseness in the visual field before they would continue reading. As Liz tried to verbalize (See Appendix E7), “I will use the cliché – less is more. It needs to be little bits of information. If I want more, I’ll go to the internet.” Jane continued describing this first glance experience (See Appendix E11), “It’s what I’m looking for. It’s quick. It’s digestible.” Others also seemed to reflect this “keep it simple” need as they took a first look at the e-mail by sharing, “I need to see short, concise statements – that’s important to me.” Whether these responses reflected a purely visual appeal or some combination of visual review and content appraisal was difficult for participants to differentiate. Either way, this initial consideration provided e-mail recipients with enough information to determine at a glance if the essence of the overall message held meaning.

The Use of Graphics and Color

Participants often referenced the graphics and color of the WellSents messages as making them different from reading a regular work e-mail or a health article in the newspaper. The
graphical inclusions and colorful style of the email template lent itself to be more whimsical in nature. Frequently, the colors and images in the messages were cited as creating a particular meaning for participants regarding their health. Their responses included insights originating from both ends of a continuum.

For example, Lauren remarked with a laugh as she looked at an e-mail that had been sent addressing stress over the holidays (See Appendix E13): “I love the picture of the Grinch on this one. That attracted my attention and made me think of ornaments and different people I know.” Many participants felt favorably towards the graphics: “Graphics and pictures make a difference,” or “A large graphic definitely catches my eye first,” were frequent comments shared during the interviews. Like Lauren, most participants were able to cite specific images in their e-mail message packets that were memorable and attention-getting. As Jackie stated in regards to a message about blood donation (See Appendix D2), “This pink heart is cute; it caught my eye immediately and made me think of Valentine’s Day.”

Sail went on to state (See Appendix E): “I love the graphics – anything that catches your attention visually as well as intellectually is really important.” Sail’s thoughts on the intellectual connection to graphics represented a turning point expressed by some participants in linking pictures to something beyond cute or “eye-catching.” Similarly, Maura’s interpretation of the graphical images in a message addressing sleep and problem solving was representative of some other participants’ deeper connection and meaning making about the message (See Appendix D9):

The title was ‘Just Sleep on It.’ I saw the picture in the message with the little guy popping out of bed with a light bulb going off in his head. That’s amusing, but it helps
me get a little clue into the topic a little bit more. Maybe I’ll read more of the [message]
if I see something like that.

In this case and in other e-mails, the image included was also a graphical representation for the
message topic. Some referenced a message about making resolutions that featured a mountain
image (See Appendix D1): “I see that mountain and it makes me think of how hard it will be to
reach my goals.” While some participants noticed these linkages; others felt mainly that the
graphics were interesting or catchy – visually pleasing.

Despite this strong interest in graphics, some participants were less likely to mention
graphics as a factor in their reading or meaning of the message. Content to these participants was
“center stage” for them. Clint put it bluntly (See Appendix D), “To me personally, the graphics
don’t add a lot. I look at what it’s saying in the content.” Some agreed with this sentiment or had
mixed feelings about images and message content interplay. As Meg expressed (See Appendix
E2), “To me the graphics might be wasted space, but it depends on the topic. If you are reading
about fruits and vegetables, I’d rather see the food names listed. The most important thing is
content.” Cara expressed a slightly different view (See Appendix E12): “I noticed that this
message is a bit fuller with pictures than some of the others. You could do away with some of
the graphics and make the pictures smaller in relation to what it’s saying in the words.”

Although color and graphical images were closely linked in the participants’ minds, color
was often mentioned separately in the interviews. For example, Cara’s comment, “Color pulls
me in,” was representative of how many participants felt regarding this issue. The attention-
getting appeal of color was mentioned frequently, as Lauren states (See Appendix E13): “It’s all
colorful and that attracts my attention and probably makes me stop and read it more than it
otherwise would.” Others reported moving a step beyond the sheer appeal of the color and sometimes expressed more in-depth meaning associated with the message as Maura shared:

It attracts you to it; different colors put you in a different frame of mind. Like red…is an eye-catcher and sometimes in health situations it could mean ‘caution’ or ‘hey, you better read this.’ It makes is more important. There was one [message] recently on meditation called ‘Just Breathe.’ It had a blue color which brings a calming state of mind.

In other circumstances, color was also referenced as a means of providing visual contrast for the participants. Phil described this concept when discussing a message about summer picnic ideas (See Appendix E12): “The color in the title – ‘Savor the Flavor’ – is good. The different bolded color down further helps me pick up where the different paragraphs start and end. The different colored numbers down at the bottom are brighter.” Whether providing contrast, appeal, or something of more depth, color and graphics were part of a larger, overall layout that contributed to participants’ message meaning.

A Directional and Balanced Layout

When discussing the e-mail message appearance and structure and the way that the content and graphics were laid out on the page, participants typically made comments about the overall, “big picture” layout as well as some very specific things that were intrinsically intertwined with message meaning. In a general sense, participants discussed things such as the directional flow of words and images on the page, groupings of words, symmetry, and use of white space. More specifically, elements like font (size and bolding), bullets, numbering, and the purposes associated with such items were addressed.

Maura expressed a common response shared with other interview participants that was more of a general observation regarding the overall layout of the message (See Appendix D10):
I like to see the page laid out in a neat way from left to right – the way the eye goes naturally. I usually see what’s on the left hand side of the page first. If it’s a picture, I see that first; if it’s words or a title, I see that first.

Related to this concept of “flow” were thoughts associated with use of white space, balance, and concise word groupings. Liz spoke directly to this (See Appendix E8): “Messages that are off balance or too crowded lose my attention and I might not even read it. You can’t have too little or too much white space intermixed with the words. Sometimes less is more with these messages. Mandy agreed with this sentiment, “I need to see right away that this layout is concise and easy to read; I don’t want to be reading a textbook.” Further, Lauren offered (See Appendix E11), “I like the way these look. They are short and to the point – not a lot of filler or fluff. It’s all in one page that I can handle.” E-mail message layouts that were “outside” these parameters were readily noticed by participants like Cara (See Appendix E8): “There’s too much on this page – it’s overwhelming!” Asymmetrical structure was distracting to a number of participants noted with such comments as, “This is not a balanced layout,” or as Phil put it bluntly (See Appendix E6): “I’m having trouble identifying the key points here – it’s just too busy. This paragraph is spread out too much on multiple lines and it’s bothersome that the words and lines are zigzagging down the page.”

Uniquely, some participants were either helped or hindered by specific groupings of words. For example, when referring to a sun safety message, Phil remarked (See Appendix E3): About the layout here…at a glance, this sentence is too long and, I would have more value with this message if it just said ‘wear sunscreen,’ instead of ‘make sure to wear sunscreen when outdoors, etc.’ I want the ‘down and dirty rules’ of what you are trying to
say….that you are getting at here. If I want to read more there’s a paragraph below I can go to.

Furthering Phil’s statements, Maura and Liz mentioned the role of small details regarding font and size. Liz shared (See Appendix E7), “The big font gets my attention right away. Also the key words are bolded and underlined. There’s smaller font used here for the supporting information. You can easily see the difference.” As Maura compared two different e-mails, she replied (See Appendix E3 and E4), “This one is definitely better and more interesting to me. It uses different letters [fonts], some bolding and more underlining. It places more importance on where I should go next.”

This concept of “where to go next” in the message was often cited by participants as they described how specific bullet points and numbering helped them find more cohesion and meaning in the body of the e-mail. As Liz elaborated (See Appendix E9), “These bullets here…it draws you right into the content. It’s like those are the important points…I say to myself, ‘I probably need to read those.’ Some participants preferred a mostly bulleted message as expressed by Cara (See Appendix E4): “It stands out and brings attention to what this message is trying to say. My eyes go to the bullets; I’m not paying much attention to the sentences.”

Both bullets and numbering were mentioned by participants as bringing balance, symmetry and overall organization to the message. As Meg reflected on a recent message regarding Thanksgiving and nutrition (See Appendix E12):

Many times these [messages] will give information as steps in a process. I’m someone who likes to see things as ‘1, 2, and 3.’ It lets you know these are steps to make this happen. It’s lets you know that there’s a beginning, a middle, and an end to this process.
In addition to comments like this about using numbers to organize the message layout, most participants referenced their preference for actual phrases used with numbering or bullets. Comments characterizing these thoughts were frequently associated with how bulleted phrases were either categorical in nature or were phrases that suggested action items. As Sam shared when referring to an e-mail that gave recommendations about fruits and vegetable intake (See Appendix D6): “I prefer action-oriented phrases that are bulleted.” Meg agreed (See Appendix E2), “These ‘take action’ bullets are better…grab my attention.” In explaining a contrast between two messages in her packet, Jane remarked (See Appendix E4 and E5):

I respond more to action oriented bullet points. A listing of different categories of things might catch my attention, but the action items would stick with me longer. It’s a concrete thing you can relate to versus seeing more information about a category of things.

By contrast, Maura hinted at a concept brought up by a few other participants (See Appendix D4): “I don’t always like glancing at a message and seeing these bullets that are ‘telling me to do something again.’ Sometimes I get annoyed and overwhelmed with that – it builds up over time.”

The Visual Recognition of Message Source

As referenced earlier, the e-mail messages that the participants received as part of this study had both a graphical header and footer. Parts of both of these areas were branded with the name of the message creator that clearly associated the WellSents message with a known corporate wellness provider in the region. When discussing the message layout, almost all participants made reference to this visual recognition of branding and had comment about what it meant to them in regards to the e-mail’s legitimacy. As Mandy put it, “I don’t believe everything I read; I need to feel confident in the source to even pay attention to it.” As a study
participant that provided health education services as part of her job, Sail went further by sharing (See Appendix E): “The first thing I must look at is the resource of the information and its credibility. This logo on the message gives me immediate recognition of this.” Infrequently, participants made note that the header and organization affiliation was too large within the layout. As Liz expressed, “The originator’s affiliation is over done and too large in the header; I care more about this message than I do that they authored this.”

Many participants made comparisons between the *WellSents* messages and other similar information arriving to their e-mail box at their home or via other Internet sites. As Maura described:

Well, on my home computer, I’d have to question where the heck the message came from. I’m thinking, ‘Who sent this?’ ‘Are they giving me a virus?’ At work, I know it’s a qualified institution that sent this to us.

Jackie continued this thought and also raised a common theme regarding the concept of branding (See Appendix D): “This [message] holds more validity for me than something I might see casually on the Internet – I know where it’s from the moment it arrives at work.” Other participants went on to reference a dual purpose associated with branding that they felt was valuable to the layout’s design. Participants not only recognized where the message was coming from as legitimate, but they also associated the name, “*WellSents*,” with a reminder or recognition that, “Oh, here’s that health tip coming again this week.” It represented an instant recognition and association of the message with something that occurred regularly and was part of the company’s ongoing wellness program. Receiving and reading the messages become a regular habit for them and something they associated with their health and their worksite.
This section discussed findings related to the structure and appearance of the WellSents messages and how these elements influenced how participants made meaning of the message content. Participants noted that a combination of visual elements was used to conduct a quick assessment of the message’s visual appeal and potential meaning. The use of graphics and color were cited as visual elements that facilitated interest in the message and led to some beginning formations of message meaning. Further, structural and design factors, such as font, bullets, bolding, balance, use of program branding, and symmetry were described by participants as being influential to their comprehension of message content and meaning. Clearly, this combination of visual features were relevant in piquing participants’ interest in exploring messages further as well as assisting in the formation of message meaning.

Recipient Characteristics

Amidst discussions of e-mail’s integration into the overall wellness program at the worksite, participants addressed a wide variety of issues that factored into how they made meaning of the WellSents messages. They considered content and its relation to personal health goals and family. Intermixed with content was the structure or appearance of the message itself and how varying elements drew participants’ attention. The workplace context held its own set of influences regarding time, e-mail delivery, balance and the relationship between message content and other programmatic components of a company’s wellness activities. Thus, there were a fair amount of factors coming together that contributed to the participants’ meaning making process regarding these messages.

In some cases, it initially appeared that participants defined the majority of these elements as external to themselves and mostly related to the message itself or what was happening at work or life circumstances. As interviews continued, and as participants began to
describe their experiences in more detail, they started to make connections between message meaning and some of their own personality characteristics or personal preferences. When participants became more comfortable talking about the research questions, there were subtle changes in how they described their perceptions in relation to themselves. It was the idea that they recognized or at least felt comfortable sharing some things about who they were – their personal characteristics – that, apart from certain external factors, played a role in message meaning. This section describes the major themes that emerged from participants’ references to their own personal characteristics and the role of those elements in relation to how they made meaning of message content and the overall purpose of this study. E-mail recipient characteristics are described here within two different categories: (a) Varied Learning Preferences, and (b) Type A Personality Factors.

*Varied Learning Preferences*

References to learning preferences began to emerge when participants described what they liked about specific message content, how they perceived the e-mail’s appearance, and the ways that they conceptualized the messages as being one piece in an overall strategy to deliver health information to employees at the worksite. Liz conveyed a common participant viewpoint: “I think that this multi-faceted approach is helping overall. We know that people have different learning styles. I am mostly an auditory learner and others may be more visual or ‘hands on.’” From one view, participants felt that the e-mail messages provided those who were visual learners with a preferred “piece” of the overall wellness offerings. Related to this, they also talked about how their own preferred learning preferences – visual or otherwise – were related to the meaning they found in the *WellSents*. Mandy and many others talked about the message appeal to visual learners: “I am a very visual person. I look at the color, the content and the
pictures. The little graphics attract people visually. I see that they look different each time and I know it’s a ‘new’ message arriving.” Jane continued, “I am a visual learner. It constantly plays a role. I mean I’m the kind of person that if I see something like this in front of me, I read it.”

A fair amount of participants referred to themselves as mainly auditory or tactile and went on to describe how they perceived this e-mail modality in relation with other wellness activities and associated meaning. Cara shared: “Honestly, I would rather hear it [message] or see a wellness session in person. If I can’t hear it [message], then seeing this message is the next best thing for me as far as understanding.” Sam provided further detail about his auditory preferences and his thoughts regarding the appropriate use of e-mail to communicate messages:

There’s a lot to be said for hearing a person convey a concept [in an onsite session] that is lost when the same topic is in the written form. E-mail can be an unattractive form of communication to convey larger messages. It’s OK when you can’t see a session or talk to someone on the phone. It has its place for shorter thoughts or concepts.

Liz further described her auditory preferences and the meaning that these messages held in relation to other wellness components: “To see something like this [message] on the computer screen doesn’t always speak to me. But in conjunction with having conversations with others in a session, I get a different perspective that energizes me. Not having a preference for one learning style over another, Clint’s remarks introduced another related factor: “If we can tailor the elements of our wellness program to the way a person learns, it’s certainly going to make it more effective. For those employees that are more “tech” savvy, these messages are more of our visual component.” Familiarity with computer technology combined with a level of comfort with e-mail use was referenced by participants as a specific kind of “style” preference. As Maura discussed her comfort with using technology, she related, “You’ve got to be used to a
computer to feel comfortable getting and opening these messages. People that are not ‘up’ with the computer age don’t want to be bothered by e-mail.” Others referenced past or current experiences with coursework or training that was offered online via the Internet as positive and/or related to their comfort with using e-mail and related technology at the workplace.

Type A Personality Factors

At some point early in the interview process, participants were asked to describe the criteria that they utilized to quickly determine whether the message was meaningful to them. Questions such as “What was the first thing you noticed?” and “How did you know the message was interesting to you?” or “What was it about this information that got your attention?” were common questions posed during the discussion. As mentioned before, issues such as message content, appearance and a combination of worksite elements were all referenced as being involved in this meaning making process. Along the way, participants seemed to associate the importance found in message meaning with certain personal characteristics or personality traits. Liz provided insights into this notion:

I prefer to see a message that clearly states what I need to do about a particular health issue. It needs to cut to the chase and tell me what I need to know. I don’t want all the other ‘blah, blah, blah’ sometimes. I don’t know…others may prefer to see a lot of detail. Perhaps this is related to personality.

When talking about the meaning attached to specific messages or to these messages in an overall way, participants cited their own personality factors as playing a role in both meaning and attention. Typically when trying to explain what they meant by personality, most participants made reference to the common categorization of type A or type B. Although this typology vastly oversimplified the complexities of personality issues, it seemed to be a convenient reference
point for participants’ descriptions of their own temperament and its relation to the concepts discussed. Most frequently, participants referred to type A characteristics as “impatient” or “hurried,” and type B characteristics as “laid back” or “relaxed.”

Sometimes participants placed themselves firmly in one category; others described their personality as being a combination of both categories of characteristics. Along with identifying these different types, participants usually offered concurrent explanations of how or why they saw that particular set of characteristics as playing a role in how they made meaning of the messages they received and read. Sam was clear in his assessment: “I am a type A personality. I definitely want to spot something right away that is of interest to me or I will pass it by.” Clint offered further explanation of his type A traits,

I’m a type A for sure. I want to get to the details and to the answers associated for the health issue in the message. I don’t need to know everything there is to know about the issue. I want to cut to the chase.

Liz described her type A tendencies as impacting the way she appraised message value: “I’m very quick to judge [in the message content] – ‘That’s not going to work for me,’ or ‘That could work.’ Those participants that described themselves as having a combination of both type A and type B traits associated one or the other with how that trait set might impact how they interpret or make meaning of a message. Maura’s remarks were characteristic of others’:

Sometimes I read these and I’m impatient thinking, ‘I need to get to the details here and take action on x, y, z issues’ [in the message] or ‘I need to get this done now.’ Sometimes on another day, I say to myself, ‘Maybe I’ll get to this someday; maybe I should read this.’
Sometimes participants referenced different factors associated with personality more related to work pace and time limitations or issues related to message content and design. For some of the participants, time restraints or work volume seemed to “trump” personality elements that would otherwise be a contributing factor in the message experience. Liz’s assessment epitomized this issue:

It all depends on what is going on at work - how overwhelmed I feel. Like today….there’s no way. I probably wouldn’t even open this [message]. Lack of time is going to override personality and wanting to get to the facts.

Others looked at the interplay between personality traits and message appearance or content. Generally, participants felt that the message “look” needed to strike a balance to be appealing to e-mail recipients looking for different inclusions based upon possible personality influences. “Messages need to be captivating. People are looking for different content. You need to have the basics displayed for ‘A’s, but then it needs to be flashy enough so that type ‘B’s say, ‘Hey, I’m going to read this!’” remarked Sail while looking through the provided message packet.

Overall, participants’ comments regarding e-mail message meaning expanded to include factors that were more personal in nature in addition to those related to external contexts. Recipient characteristics were cited by participants as being one of the elements across a broad spectrum of factors contributing to the message meaning making process. Learning styles, referenced as visual or auditory preferences, for example, were discussed as being related to the e-mail’s visual modality as well as an important factor when considering the implementation of a multi-faceted wellness program incorporating components appealing to a broad audience of learners. Aspects of personality, referenced most commonly as type A or type B traits, were discussed by participants as playing a role in how participants assessed message value and
meaning. These elements seemed to impact the degree of urgency associated with message reading, the desired conciseness of the content itself, and the ability of the e-mail appearance to generate participant attention.

This section addressed findings related to more internal or personal characteristics of the recipients. Participants referenced learning preferences as being related to the appeal of the e-mail message format and associated meaning. Whether referring to a computer-based modality or the variance in their preference of visual, auditory, and/or tactile experiences, these factors were cited as important to participants. Additionally, participants made reference to their own personality style or type when describing the way they interpreted message content and meaning. These factors seemed to influence the urgency associated with message meaning and how content could be leveraged for immediate use.

Health E-mail Messaging Interpretation and Application

This section chronicled the various processes experienced by participants as they derived message meaning, made interpretations through multiple lenses, and moved into an updated set of understandings or a newer behavioral repertoire of health behaviors. Included in this portion of the chapter are four major thematic segments: (a) Readiness and Confidence to Change; (b) New Ideas and Challenging Long Held Beliefs; (c) Cues to Action and Small Behavioral Change; and (d) Reinforcement of Change Already Made.

As referenced in prior sections, the meaning making process described by the participants was multi-faceted. There were many factors that played a role in participants’ instantaneous assessment of the message’s value. If the message was deemed meaningful by their criteria, interviewees then began to verbalize how the e-mail’s meaning was extracted and “packaged” to be integrated into their current knowledge or beliefs about a health issue. For some participants,
the message meaning was further harnessed and utilized to enact health behavior change or reinforce the continuation of a set of health habits already in practice. These were complex processes to describe; for many, some of the issues discussed represented lifelong struggles to modify and/or stabilize chronic disease risk factors. In other cases, the meaning’s derived from e-mail messages were aligned with what participants described as “simple,” or “easy,” ideas to understand and facilitate in relation to their health habits.

*Readiness and Confidence to Change*

During the interview process it was apparent that participants were in different stages of receptivity or “openness” to doing something new or different in their health or lifestyle choices. Sometimes participants referred to this aspect as an overall reflection of where they were in relation to all health issues in general. Others suggested that they were more “ready” or confident to make health-related changes in one area of health than in others. In regards to the WellSents, some participants felt that their state of mind or receptivity to health messages impacted the meaning that they assigned to a particular message’s content. Conversely, in other cases, the message content and associated meaning influenced participants to be more or less receptive to accepting information and contemplating its use to attempt or make actual change in a health habit. To begin, Jackie shared, “Sometimes I see something in these [messages] that I’m contemplating about trying. I know I should do it, but for some reason, ‘Do I want to do this? Maybe not.’” Maura continued as she talked about a health habit that she wasn’t ready to consider at the current time:

I know it’s bad – whatever I’m doing or not doing. If you are not willing to change, then it’s pretty much…it is just useless knowledge. If I don’t have that willingness to change, the message is falling on deaf ears.
Others’ comments reinforced the idea that their state of readiness was critical to message meaning. As Phil remarked, “I need to be at least getting ready or considering change in this area to be interested in this [message].” Further, Clint talked about his level of interest and readiness and its relation reading the message: “Yes, the more desperate I am, the more likely I am to be looking for information that will help me achieve my goals.” Some referenced readiness or receptivity in relating e-mail to the other wellness program components. As Phil remarked,

There are times when you aren’t ready or willing to attend an onsite sessions here [workplace]. These [messages] are easily read and explored. It’s the initial ‘tickler’ of the message that brings more information and pushes people to be more involved.

For others, it was the message content itself that impacted their state of mind and their readiness to consider the information. As Liz shared, “I’m more receptive to these messages if I’m conscious of the health issue being related there [message].” Sail provided further insight by stating, “Once you get a person’s attention, you hit the ‘hot spot,’ and get some routine going with a little encouragement from these [messages].” Some participants expressed that the repeated inclusion of a specific health topic that was particularly relevant over time in multiple e-mails “coaxed” them into being more open to an idea or helped them keep “plodding forward” in maintaining small changes in health practices. As Maura expressed in a general sense: “These things [messages] become repetitive, and repetition helps you remember what you need to do – helps get the message across. Hopefully it will sink in eventually.” As Mandy put it more specifically: “I know about exercise. I know about goals, but if I see these [messages] repeat it over time, it says something that just kind of gets me too…set some goals to begin.” Cara further commented about exercise, “If you keep seeing some good things continuously in these messages, it helps you to keep going with your routine.”
Phil’s related comments introduced another element critical to participants’ meaning appraisal process and developing readiness: “These e-mails are something safe. It’s at the employees’ private discretion to look, view, or to use these. There’s no pressure with e-mail.” Participants’ fluency with overall e-mail use, as well as their familiarity with receiving and reading *WellSents* over time played a role in their confidence and/or self-efficacy when deriving personal meaning. Here again, a participant’s sense of confidence on any particular day or the confidence they felt regarding their likelihood of being successful in making a change in health habits were both working in a simultaneous fashion with the notion of readiness to change. For some, this relationship was quite clear as described by Maura, “I might not even try this [message recommendation] if I have the mindset of ‘Oh, I can’t do that, It’s impossible.’” Clint specifically referenced self-efficacy when reading a message: “If it’s not stuff I can accomplish, it automatically gets deleted into the trash. I don’t really think about it [message] then.”

Being confident or seeing a successful outcome were key factors in participants’ readiness; sometimes the perception that the message contained simple concepts played into this appraisal. Meg recalled asking certain questions of herself in relation to this issue: “I would say, ‘Is this overwhelming?’ or ‘Is this something that I can do?’” Continuing, Phil shared, “I need to see the goal. I need to see that I have a chance to succeed in this change before I feel ‘ready.’ Some are easier than others.” Liz remarked further about this concept:

I saw this one message and I thought, ‘Oh, what do I have to give up now?’ But, the content was pretty simple. It wasn’t a miserable change or a hardship to try this. I thought, ‘There’s nothing here that is so tortuous.’”

In addition to observing that their current state of confidence might affect perceptions of the incoming message content, some participants felt that certain *WellSents* contained information
that changed their sense of self-efficacy or confidence to attempt health habit change. Maura remembered, “Yes – definitely. Small things in these messages have increased my confidence to make change or keep going with things.” Offering her thoughts about confidence, Mandy contributed: “If I was feeling insecure and less confident about this topic, the more I see it, the more I read about it, the more it becomes possible to do it.” Cara made specific reference to lack of efficacy and increased receptivity to message content:

If it’s a ‘down’ day for me…less confident…If it [message] said: “Just forget about not wanting to do it and get yourself moving!’ I say to myself, ‘Listen to this! You can to it!’ I think certain things would grab me more.”

In conjunction with self-efficacy and confidence in relationship to readiness, participants noted another factor that played a role in determining a message’s meaning. The evaluation of whether the message content would bring immediate or long term benefits was cited as being an important part of the message appraisal process. For example, Phil referenced this contributing aspect: “I think that quicker, immediate health benefits are preferable in these [messages]. It’s like going to the gym. No one wants to go because it takes too much time. We want more for less.” Cara agreed, “People want everything done quickly. For myself, I want quick benefits and immediate application – the faster effect.” Liz elaborated when referencing a message about drinking more water: “These other things [message content] are overwhelming and take a long time to see or are taking me down a path I just can’t think about. But, ‘Hey, this water [message], that’s something I can do now.’” Some other participants felt that their perceived sense of both short and long term benefits were equally important in a message. Jane offered, “I do think that the short term outcome is preferred, but I do see how short term outcomes have led to long term benefits. Both outcomes are important.” These interviewees noted that they felt as if immediate
and long term goals and results were naturally connected. As Maura reiterated, “There’s no way around it. Some things you can see right away; others take time and more effort.”

Findings in this section related to the interwoven concepts of readiness to change, confidence, self-efficacy, and assessment of the timing of health-related outcomes. Participants were able to appraise their readiness to consider a health behavior change; however, elements of confidence, perceived health outcomes and self-efficacy were all interrelated concepts surrounding the issue of readiness to change. These elements were described as multi-directional in relation to e-mail message content. Participants’ current assessment of their own readiness influenced how they interpreted the message. Likewise, the meaning of message content seemed to have the ability at times to influence shifts in current states of readiness or confidence to attend to a particular health habit.

New Ideas and Challenging Long Held Beliefs

As participants described reading the messages and formulating related meaning, they were more likely to talk more specifically about content related to new ideas, a broadened awareness of a familiar topic, or concepts challenging current understanding about a health issue. They tended to categorize content into three different areas: things they already knew, concepts that represented new information not previously known, and new ideas that were not only new, but challenged what they currently believed about a particular health topic. For example, Sam shared: “The number one thing about these [messages] is that they have educated me. A number of them have told me things I wasn’t aware of.” Phil remarked about his breadth of knowledge: “Yes, for sure…These [messages] have impacted my general awareness. My health knowledge is probably ten times better than before.” Likewise, Sail continued comment, “This top part of the message wasn’t new to me, but this at the bottom gave me new ‘how to’ insights that I didn’t
have before.” Others referenced more specific content; Jackie pointed to a message about the food pyramid: “This pointed out a few things that I wasn’t aware of. This is telling me the latest and greatest. ‘Hey, that pyramid changed again.’”

In some cases there seemed to be a subset of certain message content areas that took participants far beyond what they knew or believed about a certain topic. Whether it was a totally new concept or something new about a familiar topic, participants had moments where they were not sure where the content “fit in” with their health beliefs; some arrived a new understandings or meanings. For example, some participants cited a message about health myths, entitled, “Old Wives’ Tales,” as being disorienting to them. Jackie quickly pulled out the message from her packet:

I read every one of these. I always thought they [myths] were true. Maybe it’s not true. These are things that I thought were true, and now I’m finding that they are not. These facts challenged the awareness that I thought I had and made me start asking questions in my mind.

Maura referenced the same message: “I have to rethink what my parents told me and what I would be telling my kids. This myth…going out in the cold with a wet head. My dad always told me that and here it’s not true.” Liz remarked about another e-mail addressing the benefits of water: “I read this one [message] many times. My idea of dehydration was always associated with strenuous exercise; I never knew you could be dehydrated at work or that it worked to make you more attentive and less tired.” Participants perception about these messages and their thinking were not always associated with a monumental “jolt” to their core health beliefs. More commonly, these occurrences were described as raising questions about current beliefs as stated
by Liz, Maura and Jackie: “How does this make sense?” “How might I deal with this?” or “What am I to do differently about this when I’ve always done it this way?”

Furthermore, the challenge to health beliefs was mostly generated by parts of or entire e-mail messages that sparked participants thinking in a new way never considered in the past. However, interviewees also talked about graphical images contained within the message itself that had a similar effect. In these cases the illustration or picture was a representation of a message learning point. For example, Phil remembered an e-mail about healthy fats that contained a graphic of a test tube that showed the amount of fat grams in a hot dog: “I have that image in my mind. I don’t ever look at a hot dog in the same way.” Others mentioned messages that represented health portion sizes of foods as compared to graphical images of common household items (deck of cards = three ounces of meat) as changing their conception of eating. An atypical response regarding graphics and metaphorical meaning was provided by Sam as he referenced a message regarding the importance of foot care that highlighted a cartoon-like illustration of a person’s foot. He stated:

I never thought much of foot care. I saw that picture. I began to think of how the foot is small part of our body in the same way that we as individuals are part of the Christian community. If one part hurts, everyone suffers. This made me realize how important the foot is to the body – ‘This is part of my health, too.’”

Although not typical, this response highlighted the interplay between content, graphics, and meaning. Participants were intrigued by new ideas contained within the WellSents. Whether this involved words or pictures, there was a sense expressed by some that this influx of new ideas played an important role in message meaning and the ways that participants used the information.
Cues to Action Small Behavioral Changes

Participants in this study were regular readers of the WellSents messages and openly shared their interest in reading or seeking health information when needed. Because of this, it was somewhat of a challenge for participants to discuss how they potentially used message content to begin or modify a health behavior. How was a particular message different than a fact heard during an onsite wellness sessions? Was it possible to separate information from these messages from something a participant heard two months before on a television show? When questioned about how they might have used message content as applied to their own health behavior, participants commonly referred to messages as “cues to action” to try something new or as blatant reasons to begin a new health practice.

Many participants shared Mandy’s sentiment about the challenges of changing health habits: “I need something different. You can lead a horse to water, but you can’t make him drink? I keep getting led to the water, but something has got to get me to drink. That’s what I’m looking for.” This was one of the functions of the messages for a majority of participants, as verbalized again by Mandy, “Something in these messages sparks me to do something different to put me on more of a path to stay healthy. It could be just one line in a message that did it for me.” Similarly, Meg continued, “Sometimes you push a health concern to the back burner of your mind. It [message] got my attention. It made me think. It was that nudge to do something now.” Sail referred to the e-mail modality with her comments regarding “cues:” “These things [messages] are informal. They are instantaneous. That has a lot to do with their impact. It’s a constant ‘burr under the saddle,’ of ‘Yeah, I should have had a V8.’”

Some participants referenced specific examples of how information served as cues to do something different. Lauren talked about a message addressing holiday eating: “It makes you
stop and look. You think about what you are going to do and what you should not do.” Similarly, Maura continued on this concept by referring to a message about the benefits of drinking water: “I remember this one. It has a lot of interesting facts, and I read the highlights. Mostly, the message was saying to me, ‘Hey, here I am. Drink more water.’ I know I need to do this now.” For Liz, the cue to action was related to the specific message content of the same water email that shed light onto a familiar topic that wasn’t necessarily interesting in the past:

This little piece of information was helpful. It not only said ‘Drink more water,’ but it also explained the real reasons why you need it. It was a simple thing. This is not high chemistry or physiology, and it made sense to me and it clicked.

A fair number of participants also referenced cues to action brought about by their association between to health topics that had meaning only to them. As Cara remarked, “If I read something…sometimes I might look at a message about high blood pressure and then I start thinking about doing something about other issues related to this.” Sam continued on this train of thought:

It [message] pops up and it gets me thinking. You need that little ‘touch’ every once in a while. This one is talking about water, but then I realize that I have not been watching my blood sugar and need to check on that.

Sometimes, participants saw message information that they did not recognize at the time as being significant, but later served as a cue. Jane stated: “I read one of these [messages], and I might not think it’s real important. But later, I remember what I read and do it. It goes in, but it doesn’t come to the surface until later.”

Other than serving as behavioral cue to address a particular health practice, numerous participants talked about changes that they had made in their health behavior as a result of the e-
mail message content. Some related change to the repetitiveness of certain topic areas addressed
in message content over time. As Jackie related, “I kept seeing things [messages] about water. I
read them over and over. That has translated into: ‘I drink more water.’” In a similar example,
Clint continued, “It was kind of a chain reaction. This content over time about exercise triggered
me to start walking and use a pedometer.” Others also expressed seeing a message recommend
something and making a change in behavior. It was a direct connection for them. As Maura
pointed out: “When I saw this, it really helped remind me of what I need to do. Since reading
this, I always stretch a bit before working out.”

Most participants referenced making small changes in regards to specific message
content. They started to do little things over time as they felt comfortable. Mandy shared, “I
changed to wheat spaghetti. I’ve also started putting vegetables like broccoli or cauliflower in
my pasta sauce. Sam continued, “One message talked about darker colored vegetables being
healthier. I choose spinach now.” Phil referenced other small changes, “I trim fat off the meat. I
buy reduced-fat items. I read food labels more thoroughly.” Jane talked about a small change that
resulted in a major effect,

There was this message about stretching at your desk. I started doing them and it really
helped. When you are on the phone all day, it really helps your shoulders and other
muscles. That change was a big deal to me.

When referring to changes made, participants were varied in their assessment of whether the
changes held major or minor meanings to them. It was very personal and interwoven within
multiple contexts regarding health over time. As Sam perceived, “At times, I thought of it
[health changes] as minor simply because they were easy for me to do. But from a health
perspective, these changes might be major.” Lauren also stated: “I think they have major
meaning for me in the long run. It has a long term impact on my health.” Phil was more specific about this: “These little changes that I’m making are little things. When I look at the whole thing together, it’s major, but it’s major now because it’s cumulative over time.” Other participants’ responses regarding changes made were more neutral, as discussed by Cara, “The changes I’ve made…the nudges I get to exercise…I would place that importance to me somewhere in the middle.”

Reinforcement of Change Already Made

As interviews progressed, it was apparent that many of the study participants were lifelong learners in regards to health practices. Some had struggled for years with specific health issues; others’ attention to content was less serious, and more reflective of an ongoing series of “interesting hobbies” that happened to pay off in plentiful health benefits. Regardless of how participants interpreted their ongoing meaning and interest in the subject matter, they referred to e-mail content as providing them with reinforcement to maintain an existing behavior or nurture a newly acquired set of practices. Sail reflected on receiving e-mails over time at the workplace by commenting, “We are animals of condition. There’s a lot of value in ‘growing to expect these.’ It’s a good reinforcement. It kind of ‘sures up’ the decision to make the correct selection.” Mandy continued, “The more you see, the more you think about doing it. The more I see these [messages], the more I know I need to keep doing this [exercise] even if I don’t like it.” Similarly, Phil went further to explain:

I go back to the constant ‘beat of the drum.’ I use tidbits of motivation…constant reminders from these [messages]. You are trying to beat years of bad behaviors with little healthy ‘shots’ in the arm. I guess Rome wasn’t built in a day.
Hearing repeated message content was commonly cited by participants as playing an important role in how they continued to make meaning of message content over time to assist in behavioral maintenance. Jane commented, “Hearing the messages repeatedly and in different ways reinforces this to me. It brings it to the front of my attention.” Jackie talked about this concept by sharing, “These [messages] reinforce what I’m doing. It’s digestible and easy to read, like ‘Here’s a little more, and a little more’ for you.”

Participants also noted the reinforcing nature of pairing message content with national health observances as helpful. For example, Phil responded: “This message, ‘Hey guy, this one’s for you,’ was a good reminder about the prostate screening. It said ‘National Prostate Month.’ Anything ‘National’ catches my eye.” Lauren talked about the timing of a holiday eating message, “The timing of this one is on target. I needed to see this at Thanksgiving to keep me going.” Other participants mentioned the value of viewing the e-mail during an existing national health observance and then seeing other similar message outside of work that reinforced the same concept. As Sail recalled about a message about Dental Health Month:

You see in on TV. You see it in the magazines. It creates a reinforcement that you want to pick up those tidbits for yourself. Maybe the messages aren’t so different from one another. They might be presented in just a little different way, ‘I missed that fact,” or ‘I had no idea that this would impact me.’

How participants assessed the impact of the reinforcing nature of the message content was variable and very personal. While messages reinforced health habits already made, participants seemed to view the reinforcing message with an associated assignment of importance for them. Was this something major or minor to them? Liz responded, “Overall, I’d say that these messages are reinforcing to what I’m already doing. It’s not like I’ve been totally
enlightened by these [messages] as if I never heard of it before.” Jane stated bluntly, “As far as a whole new issue opening up for me? I’m not sure these [messages] are the vehicles for that.” Others had differing opinions about this issue. Cara responded, “It could be very simple, but if it means a lot to me, it’s important. If you can make that little shift in perception – that is empowering.” Maura referenced a reassuring feeling: “I think it makes a major impact because it [messages] lets me know that I’m on the right track and I’m going where I should be going health-wise. This just shows me, ‘Hey you’re getting there.’”

In this chapter segment, the idea of reinforcement was featured prominently; participants referenced the value of message content in “nudging” them in various ways to find meaning related to their health habits. WellSents content played a variety of roles in how interviewees extracted meaningful concepts to integrate into their overall knowledge base or apply towards change. Some of the e-mail messages were cited as being positively related to receptivity or readiness to consider health information or potential change. Participants’ sense of self-efficacy or confidence was important elements associated with how message content was perceived and considered. Conversely, message subject matter was also cited as increasing interviewee efficacy and confidence in regards to health topics previously associated with barriers or frustration. This same interplay was noted around the issue ease or immediacy of perceived or projected health outcomes associated with a message recommendation. Participants’ perception of whether or not a health practice referenced in the message would bring immediate rewards was influenced both by their current state of mind as well as the way that the content presented the information. These brief assessment processes were factors in how interviewees located themselves along a continuum of readiness to change in relation to particular health concept.
The introduction of certain health concepts commonly represented something new or unusual to the participants. New ideas broadened understandings about certain health practices, raised questions about current knowledge, and challenged former health beliefs. These disorienting messages were at times outside typical belief systems and urged participants to assess subject matter apart from their usual assessment strategies. The development of new understandings or reevaluations of foundational beliefs were sometimes cited. New ideas and/or the repetition of certain health concepts within the messages often prompted participants to strongly consider or to move towards health practice adoption by making small changes. These cues to action and associated outcomes were perceived by participants as being major and/or minor in regards to their overall health. These appraisals were highly personal and subjective; varying outside health influences within the participants’ environment made it challenging to isolate the meanings of these different elements. This same trend was referenced by participants in their descriptions of how message content served as important support mechanisms for current or newly defined health practices. Messages served as reminders – positive reinforcement – that participants were headed in the right direction in the context of what they felt was important to them.

Maximizing Message Impact

During the interview process, all participants offered specific suggestions and feedback pertaining to the WellSents e-mail worksite experience. After the second set of interviews was completed for both workplace groups, participants had the opportunity to discuss their thoughts and reflections within a focus group environment. A one-hour focus group was conducted by the researcher at both worksites; all but two participants were able to attend these gatherings (a total of ten people among the two groups). The groups were both held in conference rooms that
included a laptop and projector used by the researcher to share a presentation of preliminary findings, pose further questions for discussion, and display various e-mail design concepts for participant feedback.

This was a time for participants to hear about the preliminary findings associated with data gathered during both sets of interviews and provided the opportunity for member checks and/or clarification of responses. Additionally it served as a venue for participants to interact as both coworkers and interviewees regarding overall findings and reflect about others’ opinions as similar or different from their own. After findings and associated discussions were held, the researcher provided a summary of suggestions, generated from specific comments during the interview process, regarding message content, appearance, and future e-mail functionality.

During this time specific WellSents messages formerly seen by participants were displayed for the group to provide a context to discuss provided suggestions. E-mails never before seen by the audience were also shown; these messages incorporated some of the suggestions previously provided by participants during their interviews. The display also incorporated some content and design elements as developed by the researcher as reflected by participant data and literature review conceptions.

During the course of the focus groups, participants generally replied that the presented findings were indicative of their original interview responses. Hearing responses from others that were different from their own was enlightening for some. As Cara shared, “What I said then [prior interviews] is still true for me now, but now I see other things that I didn’t think of before.” Findings related to meaningful content, message appearance, and message interpretation/application were met with lively discussions as participants learned that certain messages were equally interesting to them or led others down similar paths to their own. Other
research findings, those associated with participant personality, for example, were met with less personal disclosure.

A lengthier discussion ensued as findings related to health behavior change were addressed by the groups. The challenge of isolating individual influences generated from these messages as compared to other wellness program factors or outside sources was discussed. The complexities of multiple contexts referenced prior in this chapter were cited by many as they worked to “tease” apart the interplay of varying messages. In one group, participants discussed the change process referencing the importance of seeing a topic repeated over time versus the impact of a singular health statement. There were varying perspectives on both sides of the issue – the assessment of “major” or “minor” impact was difficult to discern. The remainder of this section summarizes additional focus group conversation and individual participant feedback regarding: (a) More Alerting Content Coverage; (b) Integrating more Graphical elements; and (c) Using a Variety of Medium.

**More Alerting Content Coverage**

Participants were consistently forthcoming about what topic areas should be added to the WellSents repertoire and how message topics should be chosen for their worksite. Information regarding children’s health, cancer education and screening, and health care insurance coverage navigation were mentioned as potential future topics they felt were important and useful to them. In general, interviewees felt that message content should be “more alerting” in some way to catch people’s attention. For example, Phil suggested that this might be achieved via provocative message titles (“Hey, Stop for a Second”) or having the message originate from upper management for extra clout. He stated: “These need to get peoples’ attention; when it comes from the ‘higher ups,’ people sit up and take notice.”
To increase more interest, some mentioned interest in having certain health topics addressed more in-depth over time. As Maura suggested: “It would be nice if they could take a more complicated issue and create a message series over the course of time.” This was related to the suggestion of having a “theme” of the month or quarter to provide deeper coverage for complex subject matter. Similarly, Sam commented about expanding certain interest area over time with a series of messages:

Well, I don’t think you can cover certain subjects on a one-pager [message]. Even though I think that this kind of message should be a one-pager….if you are going to devote two or three messages to a topic, building on the previous one, that would be a good way to expand an area.

Both individuals and focus group discussions brought forth suggestions for how future message topics might be chosen. Cara commented: “Having an e-mail survey or contest involving employees would be great to generate interesting future areas.” Although current messaging patterns were partly generated from health insurance claims analyses and health interest assessments, some participants, like Sam, felt that they wanted content more closely connected with an individuals’ health risk appraisal results or recommendations from a “users” group. He stated: We already do a health risk appraisal here at work. These results might be used to gather folks with similar interests for these messages.” Based upon these proposals, participants further suggested that employees might “sign up” for a particular tract relating to a specific chronic disease or health behavior change process. Sail felt strongly about this option, “Having the ability to personally choose the types of message I get over time would be helpful to me.”
Integrating More Graphical Elements

Interview questions and focus group discussions regarding message structure, design and appearance generated quite a bit of ideas and suggestions from participants. Most of these comments pertained to the graphical elements of the current message template and observations related to some new message images presented by the researcher. As noted in an earlier section of this chapter, graphics and color were meaningful and attention-getting for participants. Some thought that the illustrations made the messages more appealing and others saw a connection between a picture in the message and the content’s intended meaning. Participants were most persistent about seeing more graphics integrated into future messages that made a powerful, but concrete impact relating content meaning to the featured illustration. For example, Liz shared, “Seeing something like a realistic food portion size on the screen accompanied with interesting content would be good.” Also mentioned was the afore referenced image of a test tube of fat representing a certain food; participants suggested this be paired with actual food illustrations, suggestions for reducing fat, or interesting hyperlinks to other Internet sites addressing similar content. Phil proposed having a test tube of fat (displaying the amount of fat grams in a hot dog) and a picture of a hot beside it with the caption: “You wouldn’t drink what’s in the test tube, so why would you eat this hot dog?”

Additionally, the research presented the focus groups with several messages incorporating never seen before animated graphical images. Based on literature review information linking animation with increased attention and memory storage, several animated images were incorporated into the message template (Appendix F) and presented to both focus groups. The images chosen were animated representations of concepts addressed within the message content. These images met with mixed reviews. Most found the individual graphics to
be “cool,” and helpful in making a meaningful connection to the content. As Sail shared (See Appendix F): “The ‘clover leaf’ road is good for linking blood vessels and fat.” Others were distracted by multiple animations included within one message template and found it challenging to compartmentalize image meaning and subject matter. Clint responded (See Appendix F), “There’s too much animation going on in this one; it’s overwhelming to see what it’s about.” Related to their comments, discussions followed about limiting the amount of animation used on any one message.

*Using a Variety of Medium*

The focus groups presented a fertile ground for participants to discuss and envision how health-related e-mail messages might be used in the future at their worksites. Most participants felt that the e-mail modality was a worthwhile information delivery tool to continue utilizing. Some talked about e-mail preference over paper and the “chance” of being able to read other message formats in their busy worksite environments. Clint explained:

> If I were to rate the chances of reading something that came to me, I’d say there would be a 10 – 15% chance of me reading something arriving via traditional mail; a 75% chance of me reading general e-mail, and 90% chance of reading something posted in the men’s bathroom.

Although humorous, Clint’s perceptions spoke to the varying ways that message content was being utilized within the worksite environment to maximize exposure or cope with computer issues. Other discussions were focused on findings related to recipient learner preferences; those with auditory or “hands on” preferences put forth some interesting suggestion indicative of current learning management systems already in use. For example, Cara’s comments illustrated these views: “These messages should contain a hyperlink that launches someone actually
presenting a session about the subject matter similar to a short webinar.” Maura added, “For those that are more auditory, you could insert sounds or audio clips to help the message. Other innovative suggestions included the integration of a “blog” hyperlink into message content for group discussion and the use of “sub-messaging” to follow up with employees after regular message content was delivered. Participants suggested that these quick follow up e-mails might be in the form of a question or simple reminder as related to the original message content. For example, Liz suggested: “A smaller message might ask, ‘How did you do today?’ or ‘Did you have your five veggies today?’” Phil added, “These could be like a traffic alert on the radio: ‘Get up and stretch now!’ or ‘Drink more water!’” Cara responded humorously, “This might be like having your mother telling you do something right in front of you on the computer screen.”

This chapter segment highlighted participants’ comments about maximizing message impact that were received during focus groups that occurred after individual interviews were conducted. Focus group conversations centered on ways that messages might be more appealing or alerting to recipients; this was seen as the first step to piquing curiosity for further exploration of message content. Participants shared that the intentional inclusion of graphical elements to represent or demonstrate a specific learning point in future e-mails would be important in overall understanding of the health concept and associated meaning. Lastly, focus group participants saw future uses for e-mail delivery as expanding to other web-based venues that might enhance or expand the utility of this modality.

Chapter Summary

This chapter included six main categories of information related to the meaning of health-related e-mail messaging at the worksite. In most cases, participants revealed both simple and complex health issues that they were currently struggling to alter; most mentioned health
behaviors that they had addressed or changed in a way they defined as “successful” to them within their own contexts and health beliefs. Because they regularly read health-related, e-mail messages at work that were included as part of their overall company wellness program, all the study participants could be described as being “interested” in health and as having found value in receiving health information at work. To varying degrees, each participant brought a set of experiences, beliefs, and characteristics to the way in which they interpreted these e-mails and applied their content and appearance to the meaning of their current and future health behavior.

The various themes presented in the first three sections addressed factors cited by participants that were important or appealing to them as they evaluated message value and relevant personal meaning. Through a cursory appraisal of content and message appearance, participants formulated an impression in their mind of how and why a particular message held meaning for them. The numerous elements included in the worksite context further enveloped the meaning making process and brought uniqueness to how participants perceived message content as unfolding for them in this environment. At this point in the chapter there was a subtle, yet definitive movement towards the view of message meaning as being part of an interplay between message content and factors less external to participants. As the discussion in the concluding three sections indicates, interviewees’ comments evolved to express how specific message content and accompanying personal meaning interacted with their readiness to change, health beliefs, and actual health behavior change efforts.

Participants’ perception of message meaning on a continuum between “easy,” or “difficult,” was wrapped within a layering of smaller appraisals that eventually culminated in a kind of decision about how to categorize, store, or somehow use the information provided by the message. The appraisals employed were related to readiness or receptivity, perceived confidence
or self-efficacy to modify, and perceptions of potential health outcomes being immediate or long term. Along the way, some participants saw things in the messages that catapulted them outside of their typical appraisal system; they had to rethink what they thought was “true,” and come to some new understanding of what this content meant to them in terms of health beliefs and behavior. It was difficult for participants to identify or pinpoint where in this process the message meaning went from encouraging a new health practice, to promoting actual adoption of a new health behavior, or perhaps serving as reinforcement to previous or newer health habits. It was a challenge for participants to “tease” apart these different processes or to describe the specific role of the e-mail message versus additional aspects of the wellness program or other external health messages in this progression of events.

The concept of meaning was intrinsically linked to numerous mental and emotional pathways for each participant. Their description of these experiences was riveting and energizing for some, and yet somewhat “common place” or “run of the mill” for others in this study. However, the level of energy or excitement displayed during the discussions wasn’t always indicative of the eventual importance or seriousness by which participants assigned meaning to the message and what it ultimately meant to health beliefs or practices.

Interviewees shared their thoughts about the level of importance assigned to these experiences and their challenges in differentiating multiple message influences. Further, via a focus group venue, participants from both worksites had an opportunity to comment on preliminary research findings, share insights about those outcomes, and offer suggestions and perceptions about future e-mail content, structure, and uses. The next and final chapter will discuss the implications for the findings and concepts presented in this chapter.
CHAPTER 5
DISSCUSION AND IMPLICATIONS OF FINDINGS

Introduction

The purpose of this study was to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings relate to current and future health behavior. This qualitative, social constructivist investigation was conducted within the context of three guiding research questions that established a foundation for analysis and findings presented in the previous chapter: (a) the meaning and effect of the overall health e-mail message as it relates to an employee’s current and future health behavior; (b) the meaning that employees at the worksite make of the actual e-mail message content regarding suggested practices to effect health behavior; and (c) the aspects of the message appearance and construction as related to an employee’s process of meaning making as it relates to their health behavior.

This chapter achieves several objectives in light of the study’s purpose and findings. First, it will assess major points resulting from the study in relation to pertinent background literature related to health-related e-mail messages. Next, relevant study findings will be examined within the context of the theoretical frameworks utilized in this research. This is followed by an examination of the implications for practice within the field of adult education. This chapter concludes with recommendations for further research in adult education and other varying disciplines.

Discussion of Findings

This study revealed that there are many layers to the participants’ experiences of receiving health-related e-mail messages at the worksite. Some of the layers were easily
described as tangible elements — factors related to basic comprehension of words in the message, elements surrounding the use of e-mail in conjunction with other work responsibilities, or items linked to the visual appeal of a structural element. Other layers of the experience were less tangible; these factors were more related to the ways that participants found relevance in the message content and continued in some fashion to integrate that thought or meaning within their own experiences. Depending on the relevance of the message, content may have burrowed into other layers that gave rise to attitudes and associated behavior. The layers described were similar, but the relative importance of the multiple layers was different for each participant. Additionally, the sequences in which interviewees assessed or attended to those assorted layers were varied both between and within participants. It was a multifaceted experience that resulted in a specific meaning for these e-mail recipients; frequently this meaning was leveraged in ways that related to participants’ health in some way. Although difficult to examine this integrated experience as component parts, this discussion seeks to explore the most salient layers of participants’ experience as related to the study’s purpose. Thus, the first major section of this chapter discusses the specific use of electronic mail as a modality of delivering health message content to employees at the worksite. It will explore the main elements considered by participants as they determined and assigned relevance to the messages within their worksite context. The following section will examine the implications of participants’ application of message content in relation to this study’s theoretical frameworks.

*E-Mail as a Delivery Tool*

This study’s results confirmed the notion that e-mail is not only the most commonly used Internet application, but also most frequently accessed at the worksite (Department of Commerce, 2002). The majority of participants viewed e-mail with positive regard and
acknowledged utilizing worksite e-mail on a more frequent basis than they did personal e-mail accounts within the home environment. In the context of this research, this means that e-mail supported the notion that e-mail is an accessible delivery mechanism of information to worksite employees in this study. This section will examine a series of interrelated findings concerning the interplay between the e-mail modality and participant assessment and meaning of e-mail content and structure. The implication of these issues will then be placed within the worksite context for further discussion. The following categories will address this content area: (a) The Importance of E-Mail Message Assessment and Meaning; (b) The Influence of E-Mail Structure; and (c) The Role of Worksite Context in Message Meaning.

The importance of e-mail message assessment and meaning. This study’s results revealed something new and perhaps contradictory to the expected findings associated with typical strategies associated with the planning and targeting of wellness initiatives in the corporate world. To discuss the implications of how participants assessed and made meaning of e-mail messages at the worksite in this study, it is important to juxtapose the findings alongside the reasons explaining why employees were receiving these particular messages at work. Although additional factors related specifically to the worksite context will be addressed in a following section, several pertinent worksite-related issues need to be noted here in regards to participants’ meaning making of these messages.

Health education messages at the worksite are intended to assist employees to improve particular health risks so that associated health care expenditures can decrease, thus saving the company resources. Companies need employees to receive and be engaged by the messages provided; basically, it is a strategy to keep employees healthy and productive while realizing favorable cost benefit outcomes for the future workforce. Literature examining the planning and
outcomes associated with worksite wellness programming (Pelletier, 1999a, 1999b, 2005) typically reference an assessment process that is leveraged to accurately target employee health issues that are most prominent in a worksite population. Often, the selected wellness initiatives are based mostly on clinical data, for example, health care claims information, pharmacy trends, or employee health risk appraisal reports. Usually, employees are also asked to provide responses to an employee interest survey or checklist where they can share what health topics are of most interest or importance to them. Overall, these data sources create a picture for the company that portrays both what employees need, as well as what they want. This portrait can be challenging to address because often, these two factors can be very different. For example, a company may learn that they have a high smoking rate among employees that point to the need for the implementation of an onsite smoking cessation program. However, it is quite possible that smoking employees do not want to quit; thus, their participation in the cessation initiative would be minimal.

Although planning an effective corporate wellness program involves many factors, the findings of this research indicate that what employees need and what they want are enveloped in another layer or dimension that is inextricably tied to the way that an employee makes meaning of a specific message. Employees in this study gravitated toward message content that generated a meaning for them that was personally relevant in some way. These research findings indicated that participants most often found relevance in health message content that held meaning to them in regards to personal health goals, family importance, lifespan issues and societal implications. This assessment of “relevant” was determined by the meaning that the message held to the participant as opposed to the specific message topic. For example, to reiterate a statement made by Jane in regards to this concept: “I don’t remember the topics specifically, but I would print
these off for my Mom because I knew it was a health issue that my Dad was interested in or that would help them. If a message had a meaning related to a participant’s family member, this “family relevance” criteria was the primary point of attention as opposed to a participant looking for a particular topic area. E-mail message content was consistently filtered through these layers to determine if a message was relevant; this assessment of meaning was critical in how participants perceived or applied the information that they had received. This finding means that there is another dimension to defining what employees want or need from a wellness program that is separate and varied from employees completing a simple checklist of health topics that look interesting or identifying clinical risks. The meaning making process is central to how employees perceive and possibly utilize information received at the worksite.

The influence of e-mail message structure. One of the research questions of this study aimed to examine how the health e-mail’s appearance and structure related to the meaning making process. While literature examining health e-mail messaging at the worksite addressed a message’s ability to promote a positive physical change, for example, weight loss, it did not examine the influence of message appearance or structure on employees’ interpretation. Media effect research suggests that message source and the way that information is delivered, or modality, along with its construction and appearance plays a role in message perception (Diao & Sundar, 2004; Heo, Sundar, & Chaturvedi, 2001; Heo & Sundar, 2000a, 2000b; Li, Daughery, & Biocca, 2003; Reeves & Nass, 2000; Sundar, 2000; Sundar & Kalyanaraman, 2004; Sundar, Kalyanaraman, & Brown, 2003; Sundar & Nass, 2001). The findings of this research support the notion that message appearance and formation play a role that is separate but related to the message content and meaning. Much of this study examined how e-mail recipients made meaning of health messages at the worksite. Interestingly, these findings suggest that message
appearance represents another “layer” in the meaning making process. To the extent that this set of elements was either prominent or tangential to employees’ appraisal varied between participants and messages; regardless, this means that design and structure can make a difference in ways that are very personal and specific to the recipient.

The linkages between message appearance and meaning were apparent both in participant individual interviews as well as in the worksite focus groups. In addition to noting the title of a particular message, participants described a simultaneous assessment of multiple visual elements that formed a first impression of the message itself. This appraising “glance” was cited as something that piqued their interest in exploring the message further. Once drawn into a message, participants’ were more specific in describing how certain design elements were intertwined with the meaning that was being made regarding the message. The use of bullets, bolding, and symmetry were mentioned as elements within the message layout that assisted participants in quickly assessing whether the message was relevant and meaningful or too unattractive visually to continue reading. This means that placement and appearance of text within an e-mail message is critical for message recipients: the overall appearance leads to an impression that supports or discourages further reading or favorable receptivity to the health information itself.

In addition to general layout as related to structure and design, these findings showed that participants were most vocal about message visual elements that represented a deeper meaning or emotional aspect in regards to their health. If message recipients are considered as consumers of health information, this research confirms that idea that color, graphics and vividness are important features that lead to an instantaneous impression among participants that is generally positive and helpful (Li, Daughery, & Biocca, 2003). Additionally, graphical animation was
another message element assessed in the focus groups that shed light on prior literature (Heo & Sundar, 2000a, 2000b; Sundar & Kalyanarman, 2004. Apart from appraising a particular graphic, color or font as notable or “attractive” in some way, most participants in this study went further to describe a specific feature as especially integral to their overall meaning making of the message. For example, a humorous graphic conjured further meaning associated with the content or a picture reminded participants of something health related that connected with their recent experiences or learning.

In this same vein, participants in both focus groups talked about how graphical images in e-mail messages helped them to comprehend what was being conveyed or assist them in making linkages that reinforced health education concepts seen before. For instance, seeing an image of a food portion size was more meaningful to participants than reading a description about appropriate amounts of food. Further, when participants viewed an animated graphic that represented a health concept (in this case, an animated test tube of fat), they confirmed the notion that animation can be attention getting and meaningful when included as a part of the visual field (Heo & Sundar, 2000a, 2000b; Sundar & Kalyanarman, 2004). However, as also noted by this literature and confirmed by these findings, animation can represent sensory overload to some participants as they try to assess the overall message. These findings mean that appearance and accompanying images are powerful elements that are integrally tied to how participants make meaning of message content. Certainly, not all types of visual elements are equally appealing and engaging to message recipients. The point here is that they need to be considered in the totality of what is trying to be conveyed in the message and perhaps leveraged to increase participant interest and make connections to deeper meaning.
The role of the worksite context in message meaning. Findings that emerged from this study suggest that the worksite environment plays a role in how participants perceive health e-mail messages in a variety of ways. Most basically, the literature’s portrayal of the pros and cons of the e-mail modality as a communication medium at the worksite was represented among participants’ responses. For example, literature references (Lantz, 2003) regarding the large amount of time to handle and sort e-mail correspondence, the sheer amount of e-mail messages arriving daily in employees’ “inboxes,” and the task of integrating e-mail communication with other job responsibilities were all noted by participants as affecting their perception of the WellSents messages were arriving along with many other e-mails that were a part of the typical job routine. Against this backdrop of “challenge,” however, was the confirmation of other literature sources (Singarella, Baxter, Sandefur, & Emery, 1993) that spoke to employees’ perception that e-mail was preferable over paper, increased their job efficiency, and allowed for convenient transfer of ideas and documents. Findings of this research reflected the tension seen in the literature and practical life regarding e-mail use at the worksite as a “double-edged sword.” In this study, this means that health e-mail at the worksite was subjected to the same “bundle” of logistical issues as other job-related e-mail. Depending on a participant’s particular view of e-mail or the amount of job duties featured in a specific day made a difference in how a health e-mail message was defined or perceived — it was another layer of influence that affected how participants’ made meaning of the message content. Thus, messages were sometimes seen as a welcome arrival containing positive information or a minor annoyance interrupting a busy day. The implications of this might bring understanding to the projected effectiveness of a worksite e-mail intervention or how the message arrival may be timed or highlighted in some way to address these factors.
Another way that these findings highlighted the uniqueness of the worksite context was in regards to health e-mail’s relationship to the overall corporate wellness program as a whole. This was apparent in two ways. First, this study’s results confirmed media effects literature that suggests that the source or origin of information makes a difference to recipients (Diao & Sundar, 2004; Heo, Sundar, & Chaturvedi, 2001; Heo & Sundar, 2000a, 2000b; Reeves & Nass, 2000; Sundar, 2000; Sundar & Kalyanaraman, 2004; Sundar, Kalyanaraman, & Brown, 2003; Sundar & Nass, 2001). Participants perceived the information as important and worthy to be read because it was coming from their employer and related to a wellness program that the company was sponsoring. In addition, participants assessed the messages as accurate and legitimate because it was coming jointly from a respected wellness provider as well as their employer. This finding means that health e-mail at these worksites carried some clout and was more likely to be read and perceived positively by virtue of its origin. Participants’ initial perception of recognizing WellSents as a legitimate part of something bigger was a critical part of their meaning making.

The second set of issues related to health e-mail’s integration into an overall wellness strategy had to do with sense of worksite community, the relative role of e-mail as a health education information source, and the way that the e-mail element informed literature addressing worksite wellness programming weaknesses. To begin, these findings confirmed the notion from literature regarding the instructional use of e-mail that its use with a particular setting can foster a sense of community among users (Lowry et al., 1994; Yungbluth & Bertino, 1996). Many study participants talked about the conversations and references made in regards to a particular health e-mail that led to the initiation of information sharing among employees consistent with the social constructionist perspective guiding this research. This created a positive context regarding
both the e-mail and the wellness programming happening onsite. Whether the e-mail sparked a conversation about a particular health issue or whether employees were remembering a similar topic addressed at a recent onsite group education program, these discussions were viewed as a positive picture of “worksite wellness culture” by most participants. This means that an e-mail component as incorporated into a wellness strategy may contribute to building a worksite community that is favorable and perhaps beneficial for the overall program.

Another part of the instructional literature (Frey, Faul & Yankelov, 2003; Garside, 1996; Lowry et al., 1994) suggests that when e-mail is used as part of an educational experience, participants view it as a valuable adjunct to the curriculum. This study’s findings suggest that participants viewed the health e-mail component of the overall program as a valuable “puzzle piece” of the wellness puzzle at their worksite. The *WellSents* alone, although impactful at times, were more often seen as an avenue to bring further understanding to the full spectrum of wellness activities that was already ongoing at the worksite or within participants’ personal pursuit of a body of health knowledge associated with a personal health interest or goal. This view of health e-mail as a valuable adjunct also has implications for literature that has sought to identify typical weaknesses within worksite wellness programming (Glascow & McCaul, 1993; Heaney & Goetzel, 1996; Lewis, 1995; & Pelletier, 1999a). This body of research suggests that usual worksite programming does not reach high risk employees or is not readily accessible by employees because of time constraints or inflexible policies by upper management disallowing program participation. This study’s findings bring a mixed bag of outcomes to this literature. While participants in this research confirmed the easy accessibility and convenient reading the health e-mail information, it does not necessarily comment on e-mail’s ability to reach high risk employees or to be an absolute substitution of onsite group education participation in a work
environment of limited time. This means that although e-mail was valuable to interviewees in this study and perhaps can address some of the barriers of worksite wellness programming, in the worksites studied for this research, it was one among a variety of wellness activities where its specific impact was difficult to discern.

Thus far the initial part of the chapter has addressed research findings that inform understanding of health e-mail message delivery and impact in relation to participants’ perceptions; these elements were likened to varying layers that were directly or more subtly associated with how employees made meaning of this experience. E-mail delivery of health information was discussed as a unique modality in relation to worksite context. Implications regarding its value as a communication medium, as well as an integrated component of an overall corporate wellness program were discussed. In addition to basic content, the relationship of e-mail message structural elements were noted by participants as a combination of factors relating to their perception and associated message meaning. A discussion of how participants found relevance in specific health e-mail messages lead to implications suggesting that traditional needs assessment methods utilized in targeting particular employee health needs or interests in a company wellness program might consider meaning making processes in gauging targeted initiatives. The next section of the chapter will link participants’ meaning and perceptions of worksite e-mail messages to their associated application to their own health habits.

*The Involvement of Health E-Mail Messages on the Path to Health Behavior Change*

A large portion of participant interviews was devoted to one of the main research questions of this study: how do employees at the worksite make meaning of the actual e-mail message content regarding suggested practices to affect health behavior? The literature that
addressed the use of health-related e-mail messaging at the worksite was mainly focused on its ability to reach a broad audience, and its usefulness in leading to desired physical outcomes, for example, weight loss or lowered blood sugar levels, that were targeted risk factors within the employee population (Block, Block, Wakimoto, & Block, 2004; Franklin, Rosenbaum, Carey, and Roizen, 2006; Franklin, Ploutz-Snyder, Rosenbaum, Carey, Smith, and Roizen, 2006; Napolitano, Fotheringham, Tate, Sciamanna, Leslie, Owen, & Bauman, 2004; Tate, Jacknony, & Wing, 2003; Tate, Wing, & Winnett, 2001). Although insightful, the literature did not inform the understanding of how or why change occurred in regards to the outcomes seen. The multi-layered experience of how employees perceived and made meaning of e-mail message content at the worksite provides insights into understanding the complicated process of change. The next section in this chapter will discuss the findings of this study in relation to the three theoretical frameworks undergirding this research. First, implications of these findings will be examined in relation to two health behavior change theories, the Health Belief Model and the Stages of Change Model; next, research outcomes will be addressed referencing constructs of Transformation Learning Theory. The final piece of this section will discuss finding implications as related to the theoretical intersection of all three frameworks.

_The role of health e-mail messages at the worksite in health behavior change theories._

One of the motivating factors behind this study was the anecdotal stories shared by employees regarding their use of content that was provided via the e-mail messaging component of their corporate wellness program. What exactly was compelling some of these employees to share what these messages meant to them in regards to their health habits? What was going on in the minds of e-mail recipients as they read two to three paragraphs of formatted health education material on a weekly basis? Some of the basic theoretical constructs of the Health Belief Model
(HBM) (Janz & Becker, 1984) and the Stages of Change Model (SOCM) (Prochaska, Norcross, & DiClemente, 1994) provided some understanding into how health information is used to influence personal health beliefs or readiness to change varying health behavior; neither model elaborates how change occurs over time or what processes lead to outcomes. Although this study’s findings confirm the relevance of some of these models’ variables, the way that participants made meaning of the e-mail messages in this research has implications for understanding the interplay between health information, message receiver and the possibilities for change.

Both of the health behavior change models offer an explanation to how people may progress through or contemplate an array of health beliefs or feelings of readiness on the road to adopting or maintaining some kind of health behavior. The Health Belief Model references four attitudinal constructs (perceived susceptibility, severity, barriers, and benefits); the Stages of Change Model offers six stages of readiness to change, beginning with contemplation and ending with maintenance. First, this study confirmed some basic foundational assumptions offered by both models. To begin, these findings strongly confirmed the notion that health behavior change is not an event, but a fluid, multi-directional series of incremental changes, thought processes, setbacks, and maybe, minor or major outcomes over time. This was not only true as they chronicled their overall health-related histories, but also as they related their specific use of the e-mail message content to the totality of their current and future efforts on the path of change. This means that participants were leveraging e-mail message content in their efforts; they added it to their arsenal of tools that were reinforcing or informing the undercurrent of processes influencing their behavioral efforts.
To explain further, participants referenced specific health behavior change paths; they talked about attitudes and readiness as being an influence in their thinking about or enacting change. For example, some participants discussed HBM health beliefs — their barriers to change, attitudes related to fear of a specific illness (susceptibility or severity), or the expected benefits they felt would accompany an eventual change in health behavior. Likewise, as participants discussed particular health behaviors that they were striving to address, they typically referenced their perceived progress in ways similar to the SOCM. What was different about this study’s findings was that participants’ path to identifying a concept as a “perceived barrier or benefit,” or seeing themselves as “ready to take action,” was not so much related to the actual message content/topic as it was the meaning they made about the content. In most cases content was sifted through a series of criteria or layers before it was deemed relevant enough to be labeled — “this is worth remembering.” The criteria or filter used were related to personal health goals, family health issues, lifespan happenings, or social significance to self or community. This meaning-making step was a starting point for the placement of their beliefs or their readiness within the HBM or SOCM and informs these theoretical frameworks.

Another confirmation of this study’s findings for the two models concerns the roles of both self-efficacy and cues to action as an influencing factor in health behavior change processes. Although self-efficacy is referenced more prominently in the HBM, both models recognize the importance of this variable whether it is in the juggling of varying health beliefs or in the perception of being able to progress to a next stage of readiness. The findings confirm the importance of self-efficacy as part of the meaning making process when content is received via e-mail. A participants’ appraisal of their ability to make progress in a certain behavioral area was integrated into the meaning they made of the message and its eventual relevance to them. For
example, if a participant felt efficacious regarding a particular health goal (i.e. weight loss), then a message regarding that health behavior was viewed as more relevant to them at that time. What is interesting in this research is the notion that, in addition to being a starting characteristic of the e-mail recipient, self-efficacy levels was also influenced by the meaning of the e-mail content itself. This means that there was a dynamic exchange between a participant’s level of self-efficacy and the way they harnessed a particular message’s meaning to reevaluate their belief in their ability to start the change process. For example, a participant may have read something in a message about weight loss that modified their existing sense of self-efficacy and their associated readiness to attempt change in some way. In an interesting twist, sometimes message meaning had a neutral or negative impact on self-efficacy; sometimes the meaning made of content reminded a participant of past setbacks in trying to change a behavior. One might say that these messages sometimes functioned in a motivational capacity, but the identification of that definition was embedded in the self-efficacy and message meaning interchange.

The concept of cues to action as it related to HBM and SOCM was interestingly portrayed in these research findings. In both models, cues to action are referenced as important elements that can trigger changes in health beliefs or movement from one stage of readiness to another that may result in some kind of behavioral action step. Meillier, Lund and Kok (1997) talked about cues to action as an important link to self-efficacy and related to a person’s underlying shifts in the possibility of change. These underlying shifts in the possibility of change and the associated cues discussed by participants were difficult to separate. Certainly cues to action were identified as particular facts and meanings from the e-mail that led to a change in behavior. Although not all messages functioned in this “cue to action” capacity, the ability of a cue to act as a spark to a behavioral outcome was inextricably tied to self-efficacy
and sometimes to the participants’ perception that the cue to act would result in more immediate outcomes versus results seen as happening sometime in the future. Either way, the variables of the HBM and SOCM were seen within this interplay between cues to action, self-efficacy, and the participants’ underlying shifts in the possibility of change. The possibility, relevance, and value of short or long term change to the participant were closely interwoven with the message meaning. In the context of this research and these models, this means that the concepts of health beliefs and readiness to change as factors or predictors for health behavior change are highly related to how participants make meaning of messages and the constant flux between meaning, self-efficacy and what is seen within the realm of “possible.”

A final discussion point of this study’s findings in relation to the HBM and SOCM is associated with the literature’s identification of weaknesses with the models. The HBM has been criticized because it is too individually focused and not sensitive to multiple contexts outside the person (Janz, Champion, & Strecher, 2002). Similar issues have been made with the SOCM, in addition to the idea that the model is more of a description of how people should change than how they actually do change (Strecher, 1999). This study’s findings highlight the importance of contextual factors involved in the meaning of receiving e-mail messages at work that might not be fully explained by the models or should be more prominently considered as impacting circumstances. The influence of the worksite context was seen as an important element by participants as something outside themselves that had influence on health beliefs or readiness. For example, the fact that these messages were integrated within the context of an existing worksite wellness program was an element external to the individual that played a role in their beliefs about the message’s meaning. On a different level than the contexts already mentioned in these findings was the idea discussed by participants that part of their filtering or criteria used in
determining message relevance or meaning was determined by a message’s relatedness to societal or community importance. These were issues that were external to the person, but were also meaningful to them because they felt the issue was important to society or their community. The role of these types of factors in overall health beliefs or readiness is not fully explained in the models, but was seen as an influencing element in this research.

Health e-mail message relevance to transformational learning. While sharing some similarities with the two models addressed in the prior section, the theory of Transformational Learning (TL) (Mezirow, 2000) offers more insights into the cognitive processes involved in learning, the organization of meaning perspectives, and the role of critical thinking and discourse during the change process. This section will discuss implications for TL as related to health e-mail messaging at the worksite, but will also provide comment about this study’s findings in relation to alternative perspectives of TL and literature regarding TL and online experiences.

Three themes to Mezirow’s (2000) concept of TL include experience, critical reflection and discourse. This study’s findings hold implications for these three concepts and perhaps those related to perspective transformation (PT). In regards to initial meaning and experience associated with receiving e-mail messaging, this study confirms the notion that people give meaning to their experiences and interpret new situations through their frames of reference. Although the findings of this research has been characterized thus far via the image of multiple layers of experience or filters, this concept is very similar to the idea of frames of reference or sets of assumptions as noted by Mezirow. In this study’s particular context, these frames of references were most frequently identified by participants as those sets of assumptions that led them to find meaning and relevancy with the message content. Perhaps something new coming from this study is that, in regards to health behavior, the sets of assumptions most significantly
associated with this learning process were personal health goals, family relevance, lifespan issues or connection to societal or community elements.

Within Mezirow’s view, the idea of critical reflection comes into play when someone has difficulty understanding a new experience in regards to their existing set of assumptions; somehow there is a realization that the new concept is leading to a recognition that frames of reference need modified to integrate the new information into an updated perspective. The findings of this study offer some confirmation that e-mail message content can serve to challenge current health beliefs and influence the onset of critical reflection to integrate the new idea into a more updated, accurate perspective. Not all participants described this as happening; some messages arrived and were comprehended as something familiar and/or reinforcing to a behavior already in place. However, this overall finding does mean that these messages were capable of challenging participants’ health beliefs in some circumstances.

The concept of discourse, were alternative beliefs are critically evaluated in an objective venue (Meziow and Associates, 2000) was seen to some extent in these findings. When faced with an alternative belief posed via a message, some participants did report discussing how they might have talked about the issue with a family member or coworker in an effort “sort out” an assumption; however, the discourse concept, at least in ways able to be verbalized by participants was not a prominent finding. More frequently, participants talked about the e-mail message meanings as preparing a foundation for critical reflection to occur. For example, if a participant found a message meaningful in regards to a specific health goal, they described using message content as a springboard to think about past habits, current behaviors, and future strategies that were different from what they employed in the past. These descriptions were more closely likened to gradual progressions in meaning perspectives that eventually challenged a worldview;
thus, there was some semblance in participants’ thought processes about message meaning that were linked to Mezirow’s phases of perspective transformation (1995). Messages did pose disorienting dilemmas that for some led to the exploration of options and the planning of a new course of action relating to a particular health behavior. Most participants talked about a messages serving as a “spark,” a prod, or “burr in the saddle” to continue exploring options, to think about things differently, or to reinforce a positive effort. Although these findings may not mirror the typical transformation at the meaning scheme level as outlined, this means that this study provides evidence that e-mail messaging has the potential to enact or nurture processes as seen in TL and could be leveraged further at the worksite for health behavior change.

The multiple contexts impacting e-mail message meaning in this research speaks to some of the literature’s criticism and alternate perspectives relating to TL. The notion that TL fails to maintain a link between the meaning of experience and the context in which it arises or how it is interpreted (Clark & Wilson, 1991; Collard & Law, 1989) was also observed in this study’s findings. Health perspectives are formed, questioned, altered, and possibly leveraged for behavior change within the context of multiple venues. The worksite, personal, family and societal contexts where clearly interwoven into participants’ discussions. These contexts were critical to the meanings that were attached to the experience of receiving the e-mail messages.

This study’s findings had an interesting connection to some of the existing alternative views regarding TL. First, Cranton’s (2000) work provides a description of a facet of TL being related to varying learning styles and personality; this research examines how these elements might impact the way that experiences are filtered through existing meaning perspectives and guide learning environment methods. For example, some participants in this study described how their self-identified personality type (Type A or B) played a role in how they made meaning
of the messages; this factor seemed to relate to the urgency by which information was found to
be relevant or applicable to specific health issues. Additionally, participants’ view of themselves
as a visual, tactile, or auditory learner was mentioned as a factor in the meaning of the e-mail
messages. Visual learners found e-mail to be more meaningful to them where as tactile or
auditory learners expressed the e-mail element playing more of an adjunct role in their overall
understanding of a health issue. Thus, those expressing a visual preference were more likely to
attend to and be more interested in the e-mail modality of delivery. To the extent that this visual
preference led to a deeper meaning of message content speaks to the use of e-mail messaging as
potentially transformative.

A second alternative view of TL perhaps seen within the findings of this study reflected
the works of those addressing TL and computer technology or online learning (Cranton & Lin,
2002b; 2003; 2004; Parker, 2003; Ziegahn, 2001). Although this literature was referencing a
spectrum of online modalities including e-mail, these tools were used in some kind of
educational setting to foster critical reflection among users. To the extent that e-mail is
considered an online learning tool, it can be viewed as a factor in creating conditions favorable
for critical reflection. The findings of this study were based on the use of e-mail as a delivery
mechanism for health education content that was purposefully integrated into a variety of other
corporate wellness initiatives to reinforce particular health messages. Depending on how
participants found meaning in these messages, there were times that some aspect of the message
posed information to recipients that lead them to reflect on beliefs or frames of reference.
Something new portrayed in this research was evidence of a connection between a participant’s
perception of the “immediacy” of an outcome and time spent on reflection. Regardless of
whether the critical reflection led to a definitive change in behavior, the fact that the message sparked an initiation of the reflection represents an important implication for how messaging of this type can be used as part of an online learning environment.

The intersection of three theoretical frameworks. Thus far, the relationships between the findings and each of the three frameworks have been examined. This section will discuss the findings of this research in relation to the intersection between the main constructs posited from all three frameworks. The findings of this research showcase the idea that no single framework is likely to explain all the complexities and variables involved in how people make meaning of health messages – particularly those received via e-mail at the worksite. A significant element of the study results concerns itself with the meaning of information to individuals; it is centered on the multitude of factors that surround the experience of receiving a message through a specific modality within the context of a specific setting. TL better informs this experience by providing a framework to understand how information is gathered and integrated within a larger, complex scheme of meaning. Participants in this study related specific frames of reference that were used to determine the relevance of the message to larger sets of assumptions or larger “health belief worldviews.” Further, TL better describes and informs the occurrence of critical reflection that participants described as they chronicled a navigation of integrating new meaning that influenced other incremental or gradual shifts in assumptions. Maybe this gradual process can be likened to phases linked to perspective transformation, but much of the journey or outcome of this cascade of thinking and meaning has yet to be told by participants. The cognitive constructs offered by TL was valuable in understanding the participants’ experiences, but the insights offered by this theory was limited in some ways by the boundaries of this study’s “snapshot” in time of a path that continues to go on at the worksite.
Where TL was so critical in lending insights into cognitive processes and meaning making in regards to this study’s purpose, the concepts of self-efficacy and cues to action, not specifically discussed in TL, were important to these findings and made sense within the frameworks of HBM and SOCM. Self-efficacy, readiness, health beliefs and cues to action appeared to be in a continual flux that proved to be fluid over time. These elements traveled back and forth between message and recipient and impacted the balance between varying perceived health beliefs and/or stages of readiness. Message meanings influenced and tipped the scales of the balance; there were nudges and reinforcements that pulled and tugged participants up and down the continuum of change. Wrapped up in this interplay were the forces related to the context of the worksite, not readily explained by any framework, which also encompassed the instrumental use of e-mail so widely utilized a modality of communication.

It truly is the intersection of these frameworks coming together that help make sense of the findings of this research; likewise the outcomes of this study bring forth a multitude of issues that demand the involvement of multiple frameworks. Much could be written about the usefulness of matching variables between these frameworks to formulate a strategy to influence meaning of messages and promote critical thinking, confidence and increasing levels of readiness. For example, posing a disorienting dilemma could be targeted at influencing the meaning of perceived barriers by tapping into a frame of reference associated with personal health goals or family issues; might this targeted initiative move someone further in the readiness continuum? In the end, these findings indicate a need for a joining of forces. The highly cognitive understanding of how experiences and meanings unite and adapt (TL) is greatly informed in a practical sense by providing theorists with a way to situate these thoughts within a framework (HBM and SOCM) that allows participants to describe or categorize what is
happening to them in this realm. Meaning is critical to understanding how change occurs. These insights are critical when striving to create an environment that offers a steady stream of messages that encourage new thinking, self-efficacy, reinforcement, and critical reflection important to fostering health behavior change.

Implications for Practice

The findings of this research inform a number of different processes and venues related to adult learning and more specifically education targeted for adults within a worksite context. Based upon this research, there are implications for practice based upon the importance of the worksite context and e-mail’s practical use in this environment as a modality to reach employees within the corporate wellness venue. Additionally, there are other implications here that relate to the theoretical framework of this research and how these findings come to bear on how adult educators at the worksite and elsewhere might leverage theoretical insights in e-mail message design and ways that message recipients make meaning of content. This section will address implications for practice from both of these perspectives and include: (a) Implications for Practice at the Worksite; and (b) Theoretical Implications for Practice.

Implications for Practice at the Worksite

In regards to the worksite context, strategies used by adult health educators in this location are varied in their complexity and intent based upon the overall goals formulated by a particular company regarding employee health and its placement on a worksite’s view of priorities. Clearly, the financial imperative to consider employee wellness in relation to health care costs, absenteeism, productivity, and retention is a critical concern in many corporate venues. Although literature in this arena has shown wellness programming to be cost-effective in many scenarios, the challenge to design an effective program to address employee health
continues to exist in a changing workplace and fluctuating economy (Pelletier, 1999a, 1999b, 2005). This research closely examined a specific wellness strategy that integrated health-related e-mail messaging with other health promotion activities already in use within two companies. The important interplay between the meaning of e-mail messages and the worksite context was a significant finding of this research. Most wellness program planning involves multiple employee and corporate assessments to target specific employee health risks; these assessments provide insights into what health information employees need to address health risks in addition to what they may want to learn. This study’s findings imply that the interplay between message content and meaning influenced message relevancy for participants. Because sets of assumptions that participants held regarding personal health goals, family relevance, lifespan issues, and societal concerns were used as criteria to judge message content, practitioners need to consider these elements as they consider traditional assessment results. These criteria should be leveraged as companies strategize how they will address particular employee risk factors within a wellness program; topical information on a targeted health issue provided to employees needs to consider these criteria as a means to influence relevancy. For example, assessment techniques could be designed to query employees regarding these areas of relevancy as they inquire about particular health needs or interests.

Also, participants in this study perceived these messages as important or unique because they were being sent from their worksite management; these messages also had a unique meaning because of their use in tandem with other related worksite wellness elements. The leveraging of these two findings would be useful for health promotion practice. First, because participants felt that the source of the message was important, worksite educators should thoughtfully consider the originator of the message content, as well as the entity within the
workplace that actually “sends” the e-mail message internally to employees. The combination of the perceived legitimacy of the content and the perception that the message is being sent by a worksite entity with authority could be more compelling or appealing to message readers.

Secondly, the use of the WellSents messages in tandem with other worksite activities holds further implications for practice. Participants in this study recognized message content as being related to other wellness elements currently taking place within the worksite; it was perceived as an important piece of the overall wellness context. This identification was essential in two ways: participants were more attentive to messages perceived as being part of the overall wellness program and, related to this participants recognized message content or meaning as being similar or reinforcing to other concepts seen or heard within the wellness program. Based on this, practitioners could strive to use e-mail to reinforce or reiterate what is already going on with the wellness strategy of the company. More purposefully, the use of e-mail to reinforce thematic learning objectives that are being targeted is another key way to provide cyclical messaging that is fortifying to an overall strategy.

Further implications for practice are related to the practical ways that companies might use e-mail message content to support other modalities of health education information delivery. Some participants’ comments reflected some of the points made in the e-mail literature about its limitations in a worksite environment where not all employees have regular access to a computer or where periodic information technology breakdowns occur. These findings imply that practitioners need to leverage the value of the e-mail modality and content to bypass some of these issues as needed. For example, in places where employees have limited computer access, messages could be sent to an employee’s home e-mail account; retirees could be included in this type of listserv distribution. In cases where messaging presents a condition of system overload
or during times of technology failure, the e-mail content could be distributed or posted as a hard copy educational piece. Additionally, e-mail content could be used in varying electronic venues as an alternative to individual employee e-mail delivery. Content could be used as part of an internal electronic newsletter or stored in an intranet wellness library. In this context, as opposed to having the entire email content be included within the actual message body, the e-mail would instead reference new or existing content and provide a hyperlink to access respective electronic venues.

Theoretical Implications for Practice

Study findings highlight the interplay between message meaning, content and design and present implications for practice that are more theoretically based. To begin, literature referenced in regards to media effects discuss the relationship between message design, source and modality and associated influence on message recipients. In this regard, participant findings provide insights into how e-mail design and structure might be leveraged to enhance e-mail’s use as part of a general instructional strategy, as well as how it’s used within this study’s context. When e-mail has been studied as an instructional tool in various leaning venues, it is most often referenced as an adjunct to the overall course of study. This literature does not typically elaborate on the structure of the e-mail message element; thus, e-mail content is likened to typical plain text within the message body itself. This study’s findings indicate that participants found design elements, such as color, graphics, font and animation, to be a crucial factor in maintaining attentiveness and formulating related message meaning. The implications of this are varied and important within the worksite and other contexts. Practitioners need to consider e-mail structural factors as an intentional part of the recipient’s learning experience. In the grand scheme of visual and intellectual elements that contribute to how participants used this kind of content, the
smallest nuance in color or graphical representation is an important piece of how they made meaning of the message itself.

Other message design considerations related to practice implications are connected to the creation of content that has linkages to health behavior change theories (SOCM and HBM) and TL. Literature within these areas have studied the ways in which health behavior change interventions have been designed to reflect theoretical constructs to foster change within a specific framework (Brug, Campbell, & van Assema, 1999; Brug, Steenhuis, van Assema, & de Vries, 1996; Burack, 1989; de Vries & Brug, 1999; Fischera & Frank, 1994; Marcus, Owen, Forsyth, Cavill, & Fredinger, 1998; Melnyk, 1988; Mezirow and Associates, 1990; Prochaska, Rakowski, 1998; Redding, & Evers, 2002; Strecher, 1999; Womeodu & Bailey, 1996). The findings of this study indicate that participants’ meaning-making process was interconnected to some of the variables included in the HBM, SOCM and TL. As such, there is reason to hypothesize that e-mail message content could be constructed to maximize this connection. Content would be formulated in such a way as to influences health beliefs such as perceived barriers, or benefits (HBM). Stage specific information could be provided in varying sequences to encourage a participants’ readiness to consider change (SOCM). Further, the ability of a message to deliver content that may influence or reinforce self-efficacy to consider change is supported by this research and could be a purposeful message inclusion. Similarly, cues to action that are carefully constructed and informed by thoughtful employee assessment procedures should be considered for content inclusions.

In reference to TL, e-mail content delivered to reflect theoretical constructs should be contemplated by practitioners to improve practice. These findings support the notion that message content and associated meanings were referenced by participants in ways that were
indicative of some TL processes. Specifically, the ability of message content to encourage the questioning of health-related assumptions should be leveraged in the message construction process. Certainly, the consistent presence of misinformation regarding health issues coupled with the every-changing face of most current health knowledge creates an environment for the delivery of message content that can function to question recipients’ existing assumptions regarding health beliefs and behavior. Further, e-mail content should be considered that fosters critical reflection of current health beliefs and a sense of immediacy in expected health outcomes, perhaps gradual shifts in meaning schemes, and potentially, eventual change in health perspectives.

From these theoretical perspectives, more impact might be leveraged by practitioners if they strategized how the use of varying model constructs (SOCM, HBM, and TL) could be integrated not only within the e-mail modality of a wellness program, but also within all elements included within the overall worksite health promotion program. Potentially, there are a variety of elements included in a worksite approach to address employee health — onsite group education sessions, distribution of written material, intranet sites, online learning modules, and e-mail messaging, among others. The integration of theoretical constructs within the orchestration of these multiple modalities have the capability to leverage each variable’s strengths and weaknesses to deliver content that brings an effective synergy to foster health behavior change.

Implications for Future Research

With the advent of emerging educational technologies, the implications of these findings for future research are varied and promising. First, much is left to be explored regarding the use of e-mail messaging at the worksite and leveraging content to influence health behavior change. While the importance of messaging and employees’ meaning making in regards to health habits
was explored in this study, the demand by corporations to see obvious physical changes in employee health risk factors will likely continue. This context creates a potential need to combine both qualitative and quantitative methodologies when investigating this issue. These types of results will provide continued evidence of the cost effectiveness of health promotion in addition to providing valuable insights into the design of effective behavioral interventions. Further, the nature of health behavior change lends credence to the need for longitudinal studies that examine change processes over time at the worksite and perhaps other venues such as health care delivery systems. This body of research would benefit from the inclusion of experimental and control groups to further discern the multiple influences of differing modalities of health information delivery.

In relation to the literature regarding media effects, this research might act as a springboard to further areas of e-mail investigation. The consideration and manipulation of message structure elements such as graphics, animation and layout as connected to recipient message meaning require further study as related to adult learning about health practices. Related to this, since message source provided to be a contributing factor in this study, further research is needed to examine recipient interpretation of message subject line within an inbox, message logo and/or branding, and factors considered when deciding to launch a hyperlink leading to further stored content or intranet site. Further, while these study’s findings did not specifically examine the concept of interactivity and health-related e-mail messages, the idea of leveraging the e-mail modality to engage audiences with potential sources of interactivity is an important area of study. This might include the examination of e-mail messaging as a springboard to take users to other instructional interfaces, such as electronic newsletters, message boards, webinars, electronic discussion groups, websites, blogs, or related podcasts to address a
particular health topic or area of health behavior change. Perhaps included in the body of research would be the use of text messaging and its integration with phones and other electronic devices. The widespread use of such technology provides a means to reach a broad audience within a short period of time.

Interrelated among all the implications for further research is the important study of the SOCM, HBM, and TL within not only the context of e-mail messaging and adult learning, but also within other disciplines such as instructional technology, organizational learning, and social sciences. With technological systems and their power to deliver a wide range of messages and messages appearances, further research is needed to discern the role of message meaning in relation to these three frameworks. Over an extended period of time at the workplace or elsewhere, the influence of these theoretical elements in relation to messaging warrants further examination. Most likely, the concept of “messaging” will extend far beyond the typical use of e-mail messaging as seen within a recipient’s inbox at work. Messaging for the intent of health behavioral intent or other ends will likely be integrated into a multitude of online learning environments in numerous settings. Continued exploration of health beliefs, stages of readiness and transformation elements will provide valuable insights into how messaging can be leveraged to influence behavior change and individual quality of life.
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Research volunteers are being sought….If you’re a fan of the Byrnes Health Education Center and Penn State – please consider being part of an upcoming PSU research study regarding the WellSents e-mail messaging component of your wellness program!!

What is this PSU research study about?
♥ This study is affiliated with Penn State University as part of an adult education doctoral program dissertation. The purpose of this study is to learn about the role of health-related e-mail messaging at the worksite and its relation to health from the people who receive the messages – YOU!

Who is conducting this research?
♥ Betsy Aumiller, M.Ed. a PSU doctoral student and former health educator with the Byrnes HEC is conducting that research for her doctoral dissertation and needs your insights!

What is involved with volunteering to be a part of this study?
♥ It’s very easy and interesting! Volunteers will participate in two short interviews and one focus group at their worksite over the course of three months. All information collected is totally confidential.

Who can volunteer to participate in the study?
Anyone can participate that:
♥ At least 25 years old
♥ Has received WellSents messages over the past six months at Stambaugh Ness
♥ Has regularly read the messages, has found value in some of the messages, and/or has shared message content with a friend or family member

How can I be a part of this exciting study (please say “yes”) or learn more about it?
♥ Please e-mail Betsy at goldmiller@aol.com

Thank You!
APPENDIX B

INFORMED CONSENT FORM

Informed Consent Form for Social Science Research
The Pennsylvania State University

Title of Project: The Meaning of Health-related E-mail Messaging at the Worksite and Health Behavior

Principal Investigator: Betsy Aumiller, M.Ed
392 Benyou Lane, New Cumberland, PA  17070
bba104@psu.edu; 717-215-7110

Advisor: Dr. Edward Taylor, Associate Professor
Penn State Harrisburg, 777 West Harrisburg Pike, Middletown, PA  17057
Ewt1@psu.edu; 717-948-6364

1. **Purpose of the Study:** The purpose of this research is to explore how employees at the worksite make meaning of the lived experience of health-related e-mail messaging and how those meanings impact current and future health behavior.

2. **Procedures to be followed:** If you agree to take part in this research, you will be asked to recall and reflect upon a variety of health-related e-mail messages that you have received in the prior six months at your worksite. The researcher will be conducting two, one-hour, face-to-face interviews with you to discuss your perceptions of the e-mail content and appearance. All interviews will be tape-recorded by the researcher and then transcribed. Interview transcriptions will be shared with each participant in order to clarify information and researcher interpretation. In addition, you will be asked to participate in a one-hour focus group, along with all other study respondents (approximately 12 – 15 persons) to review the study processes, share insights, and clarify key findings. This focus group will be recorded.

3. **Benefits:** The benefits to participants include learning about your perceptions and reactions to health-related e-mail messaging at the worksite. In addition, the benefits of this study to society include a better understanding of the mechanisms through which employees perceive health information received via e-mail and the potential impact of such messages in regards to employee health risk reduction and positive health behavior change.

4. **Duration/Time:** Your participation in the study will be approximately three to four hours over a three month period.

5. **Statement of Confidentiality:** Your participation in this research is confidential. The data will be stored and secured at the researcher’s premises in a secured/password protected computer file. Recorded data will be stored at the researcher’s premises in a locked file drawer until 2011 when the recordings will be destroyed. Only the researcher will have access to recordings during this time. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared. Confidentiality of the results of this study will be maintained as participant pseudonyms will be assigned to respondent data. If you speak about the contents of the
focus group outside the group, it is expected that you will not tell others what individual participants said.

6. **Right to Ask Questions:** Please contact Betsy Aumiller at 717-215-7110 with questions or concerns about this study.

7. **Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer.

You must be 18 years of age or older to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this form for your records.

______________________________________________ _____________________
Participant Signature      Date

______________________________________________ _____________________
Person Obtaining Consent     Date
APPENDIX C

INTERVIEW GUIDE

The Meaning of Health-related E-Mail Messaging at the Worksite

1. Briefly, please provide some background information about yourself (approximate age, occupation, length of employment, computer use).

2. Describe your current state of health and any health behaviors that you have, are or will contemplate changing in the future.

3. Describe your experience with e-mail messaging at home and at work.

4. What is your reaction to these weekly e-mail messages?

5. When and where do you read them at work?

6. Describe the meaning that you attach to the experience of receiving an e-mail as an information delivery method.
   - How does the meaning differ when the message is received at your workplace vs. another venue?
   - In what ways does the nature of the e-mail content impact the meaning that you give to the message?
   - Describe how you interpreted the information in the message. Personal meaning vs. general meaning?

7. How has the message impacted your awareness of the health issue addressed in the e-mail?
   - What basic knowledge have you gained?
   - Describe how this knowledge may have changed former beliefs about this health issue.
✓ Describe how your attitudes or opinions regarding the health issue have been affected over the course of the last weeks/months.

✓ Describe how the message and its contents have impacted your discussions with other people at the workplace or at home.

✓ In what ways have the messages impacted your health behavior? Please categorize your answer into what you would consider “minor” or “major” impact.

✓ What role, if any, have these messages played in choices made regarding your overall lifestyle and health?

8. What aspects of the message had the greatest impact?

✓ How did the e-mail topic affect the meaning of the message for you?

✓ How did the actual contents of the message impact the meaning of the message for you?

✓ Describe how the design/layout of the message affected the meaning and/or experience of the message for you.

✓ How did the graphics impact the meaning of the message?

✓ How might the timing of the message arrival (time of day, time of month, etc.) impacted the meaning of the message for you?

✓ Describe how the author/originator of the message impacted your experience of interpreting the message.

✓ What aspects of the message had the least impact/importance to you?
9. How have the messages impacted your awareness of the health issue addressed in the e-mail?

   ✓ What basic knowledge have you gained?

   ✓ Describe how this knowledge may have changed former beliefs about this health issue.

   ✓ Describe how your attitudes or opinions regarding the health issue have been affected over the course of the last weeks/months.

   ✓ Describe how the message and its contents have impacted your discussions with other people at the workplace or at home.

   ✓ In what ways have the messages impacted your health behavior? Please categorize your answer into what you would consider “minor” or “major” impact.

   ✓ What role, if any, have these messages played in choices made regarding your overall lifestyle and health?

10. Considering the messages that you have received in the last six months, please describe the type of messages that have been especially interesting or of value to you.

11. What aspects of the messages had the greatest impact?

   ✓ How did the e-mail topic affect the meaning of the message for you?

   ✓ How did the actual contents of the message impact the meaning of the message for you?

   ✓ Describe how the design/layout of the message affected the meaning and/or experience of the message for you.

   ✓ How did the graphics impact the meaning of the message?
✓ How might the timing of the message arrival (time of day, time of month, etc.) impacted the meaning of the message for you?

✓ Describe how the author/originator of the message impacted your experience of interpreting the message.

✓ What aspects of the message had the least impact/importance to you?

12. Please describe any further aspects of your experience that you feel would be important to this experience.
APPENDIX D1

WORKSITE 1 E-MAIL MESSAGES

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**Make Your Resolutions Rock Solid**

This time it's going to be different; you are going to lose weight, start exercising, stop smoking....How?

- **Experience is a great teacher.**

  If you failed at this goal before think about what went wrong. Good goals are like good DREAMS –

  Desirable Realistic Exciting Attainable Measurable Specific:
  - My Short term goal (right now) –
  - My Mid term goal (1-12 months) –
  - My Long term goal (1 year - ?) –

- **Don’t tell me no- tell me yeah, yeah, yeah!**

  Keep an eye on your excuses. They are seeds of failure and don’t produce good fruits. We find time for those things we value as important. How can you adjust your schedule and what changes are you willing to make?

  List some obstacles to the successful achievement of your behavior change. How will you address these obstacles?

- **Lightning is impressive, but the thunder does the work.**

  Are you the type of person who starts off with a bang, but quickly runs out of steam? If so, staying motivated is the key to your success. One great way to stay motivated is to establish small goals and reward yourself for each goal that you achieve.

  How will you reward yourself for positive steps during the change process?

  (These must be desirable and attainable.)
  - My Short term reward –
  - My Mid term reward –
  - My Long term reward –

- **Move over Lewis & Clark, I’m coming through!**

  Many times our resolutions become just drudgery in the long list of things we must do. Think of your resolution as an exploration into new territory. Try something new and exciting like taking healthy cooking classes or trying a new style of exercise!

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Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center!

(717) 848-3064 or wellnessworks@byrneshec.com

Visit our Website at: www.Byrneshec.com
Blood, Sweat and Tears? No way!

January is National Blood Donor Month

- The need for blood affects everyone because you never know when you or a loved one will need it.
- Your single donation of one unit of blood can save 3 to 4 lives.
- Only 5% of our population donates blood - but 95% of us will need it.
- Type O blood is used in emergency situations and a single shock trauma victim can use up to 100 units of type O blood in less than one hour.
- To donate blood, you must be healthy, at least 17 years old, weigh at least 110 pounds, and not have donated in the last 56 days.
- For a complete listing of Donor Eligibility Guidelines, log on to http://www.redcross.org/services/biomed/0,1082,0,557,00.html

Please watch for upcoming blood drives at your location.

Donating blood is the life-blood of your community, and it only takes a few moments of your time!

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Visit our Website at: www.Byrneshec.com
Mirror Mirror on the wall...

* In a recent poll by People magazine, 80% of women reported that the images of women on TV, movies and magazines make them feel insecure about their looks.

* Women are made to feel so insecure that they are willing to try diets that pose health risks (34%), go "under the knife" (34%) and 93% indicated they had made various and repeated attempts to lose weight to measure up to the images.

Developing a Healthy Body Image

Attention -- Refers to listening for and responding to internal cues (i.e., hunger, satiety, fatigue).

Appreciation -- Refers to appreciating the pleasures your body can provide.

Acceptance -- Refers to accepting what is -- instead of longing for what is not.

Other Ways to Love Your Body

✓ Create a list of all the things your body lets you do. Read it and add to it often. Respect your body!

✓ Be realistic about the size you are likely to be based on your genetic and environmental history.

✓ Exercise regularly in an enjoyable way, regardless of your size or shape. Do it to make your body strong and healthy.

✓ Say to yourself “Life is too short to waste my time hating my body this way; it’s time to enjoy it!”

“Count your blessings, not your blemishes!”


Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center! (717) 848-3964 or wellnessworks@byrneshec.com

Visit our Website at: www.byrneshec.com
February is National Dental Health Month

Healthy teeth and gums are vital to overall health.

In fact, there is a link between gum disease and heart disease!

Periodontal disease (gum disease) is an infection of the gums caused by bacteria that slowly destroys the gum and the bony socket that holds teeth in place. The end result is tooth loss unless treatment is received in the early-moderate stages.

Symptoms of periodontal disease include: bleeding gums, swollen puffy or receding gums, bad breath, and a bad/metallic taste in the mouth.

*In recent years, many studies have shown that people with periodontal disease have an elevated risk of cardiovascular disease as well.

**How to Protect Your Gums & Teeth from Periodontal Disease**

- See your Dentist/Dental Hygienist regularly for check-ups (at least 2 a year)
  (People with gum disease may need more frequent cleanings 2-4 times a year)

- Brush your teeth at least twice a day and floss especially before bedtime.
  (Bacteria thrive in an environment that is warm, moist, and dark, brushing and flossing before bed inhibits bacteria from harming teeth & gums while you sleep)

- Ask your Dentist or Hygienist if your gums appear healthy. If not, they may prescribe special mouth rinses, medications or a consult with a periodontist (dentist specializing in treatment of the gums)

* For More Information on dental health go to American Dental Hygienist Association at [www.adha.org](http://www.adha.org)

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APPENDIX D5

WORKSITE 1 E-MAIL MESSAGE

Breakfast

Why?

40 years of studies show … jump-starting the day with breakfast benefits everyone!
“Eating breakfast is very important for the brain and the body first thing in the morning,”
said Los Angeles-based registered dietitian Gail Frank, spokesperson for the American
Dietetic Association. “Breakfast skippers often feel tired, restless or irritable in the
morning.”

Breakfast is the first chance the body has to refuel its glucose levels, also known as blood
sugar, after 8 to 12 hours without a meal or snack.

Blood glucose is …

• Essential for the brain & is the main energy source
• Also helps fuel the muscles needed for physical activity throughout the day.

“Breakfast is also very important for weight loss and weight management,” Frank said.
“You break the fast of not eating for the past 8 to 12 hours. It helps curb your hunger and
prevent binge eating later in the day.”

The American Dietetic Association suggests simple ideas to help add breakfast to your daily
eating plan:

• Ready-to-eat whole-grain cereal topped with fruit and a cup of yogurt
• Whole-grain waffles topped with peanut butter, fruit or ricotta cheese
• A whole-wheat pita stuffed with sliced hard-cooked eggs
• Hot cereal topped with cinnamon, nutmeg, allspice or cloves
• Peanut butter on a bagel with fresh fruit (banana or apple wedges) and
  low-fat milk
• Breakfast smoothie (milk, fruit and teaspoon of bran, whirled in a

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A Healthy LUNCH? - It's in the Bag!

At the Salad Bar

Green is Good! The greener the leaf the higher the nutrients. Pile on the green food (Romaine, spinach, green beans, snow peas, broccoli) are all excellent sources of vitamins and are fat free.

*Watch out for those creamy, white salads, calorie-laden dishes (macaroni, potato, tuna salad) they are usually blended with sour cream, or Mayo, all high in fat).

At the Drive-Thru

When bigger isn't better. Compare a McDonald’s “Kid Meal” at 25 grams of fat VS. the “Big Mac Value Meal” at 59 grams of fat, which is more fat then what you are supposed to have in one day - Some value!

*The need to know. Ask for menus at your favorite restaurants. When you find out that Taco Bell’s Taco Salad has 548 calories and 46 grams of fat you may choose instead a Chicken Ranchero Soft taco with only 270 calories and 14 grams fat.

At Your Desk

Need a munchable lunchable? Bring on the veggies and fruit (carrot/celery sticks, bananas & apples) with light or low fat dip if you wish.

*Sick of Sandwiches? Create a veggie wrap – Using a whole-wheat pita spread 1 tbsp. of low-fat cream cheese, stuff with lettuce, tomato, onion, cucumber, and crumble some feta or blue cheese on top. Other good wrap fillers include tuna, skinless chicken, rice, any kind of beans, & veggies.

The Power to Choose Belongs To You!

Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center! (717) 846-3064 or wellnessworks@byrneshec.com Visit our Website at: www.Byrneshec.com
APPENDIX D7

WORKSITE 1 E-MAIL MESSAGE

Donate Life
Become an Organ Donor

“Without my heart transplant, I know I would not have lived to see my 18th birthday. Today I am looking forward to graduating college and have wonderful plans for the future. Thank you for my new heart and my new life!” - Jessica Schwartz (heart recipient)

As of today there are over 900,000 people in the US waiting for organs

Myths & Facts

Myth: If emergency room doctors know you’re an organ donor, they won’t work as hard to save you.

Fact: If you are sick or injured, the number one priority is to save your life. Organ donation can only be considered if you die and your family has been consulted.

Myth: Having organ donor noted on your driver’s license is all you have to do to become a donor.

Fact: While a signed donor card and a driver’s license noting organ donor are legal documents, organ tissue donation is always discussed with family members prior to donation. To insure that your family understands your wishes, it is an important that you share your decision to donate LIFE.

How to Become a Donor

Tell Your Family and Friends – There are several ways to do this. Go to http://www.donatelife.net/become.asp

✓ Send an electronically e-postcard, view or forward a special Flash presentation via e-mail.
✓ Download & print a family notification form and donor card.
✓ E-mail: coalition@donatelife.net for a brochure that answers many questions about organ donation and includes a family notification form and donor card.

For More info contact Coalition on Donation at # (904) 792-4930
e-mail: coalition@donatelife.net

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APPENDIX D8

WORKSITE 1 E-MAIL MESSAGE

Foot Health Awareness

The human foot has 26 bones, 33 joints, and more than 100 tendons, muscles, and ligaments. With such a complex structure, a lot can go wrong. While some foot problems are inherited, many occur because of years of wear and tear.

Source: U.S. Food and Drug Administration

Signs of Foot Trouble:
- Pain
- Excessive dry skin
- Thickened or discolored nails
- Swelling
- Redness
- Unusual sensations

According to the American Podiatric Medical Association (APMA), consumers should know that these symptoms are not normal. Pain in the feet can trigger pain in the legs, hips, and back. Some foot problems can even signal a larger disease, which is why the APMA suggests that people take their socks off when they go to their primary care physician for a regular checkup. In a recent APMA survey of more than 600 people, 73 percent said their feet were not routinely inspected at doctor visits.

Foot Hygiene

The foot has more than 250,000 sweat glands. It’s the mixture of sweat and bacteria in our shoes and socks that makes feet smelly. Clean, dry feet can lower the risk of both foot odor and fungus infections.

Source: American Podiatric Medical Association APMA www.apma.org
U.S. Food and Drug Administration www.fda.gov

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Just Sleep on It!

“Shut Eye”
Speeds Problem Solving

Maybe it’s happened to you. A problem that’s nagging you all evening somehow seems more manageable after a good night’s sleep.

- Evidence now exists that a good night’s sleep can improve insight and problem solving.
- When posed with a specific problem during training, volunteers who were allowed to sleep after the training were twice more likely to find a solution than those we were forced to stay awake.
- So, get your 40 winks! Sleep can impact and restructure newly acquired memories in the brain, increasing solution insights and stimulating creative thinking.

So, what can you do to get the most out of your sleep?
The National Sleep Foundation recommends the following for everyone:

- Maintain a regular sleeping schedule—even on the weekends.
- Establish a regular, but relaxing bedtime routine.
- Only use your bedroom for sleep and for intimate activities.
- Make sure you are done eating at least 2-3 hours before heading to bed.
- Exercise regularly.
- Avoid caffeine and alcohol close to bed time.
- Avoid Nicotine.

For more information, visit www.sleepfoundation.org

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APPENDIX D10

WORKSITE 1 E-MAIL MESSAGES

Hang 10 and Losen Up

Would you like to:

- Prevent back & knee aches, pains & injuries
- Improve your flexibility
- Achieve optimal results from your workouts
- Feel refreshed & relaxed

Just 10 minutes of basic stretching can bring you BIG benefits! As you age, your muscles tighten and range of motion in a joint can be minimized. This can put a halt to an active lifestyle and hinder day to day activities. Regular stretching keeps your muscles and joints tuned up.

Try these three basic stretches to start:

Upper Back/Shoulder Stretch

Grab your elbow with the opposite hand and gently pull the elbow upward across your body until your hand reaches down to "scratch" your back. Gently pull your elbow to guide your hand down your back as far as it will comfortably go, stretching your triceps and shoulders. Stretch both arms.

Hip & Lower Back Stretch

Sit on the ground with your leg crossed. Lift your right leg and cross it over the left, which should remain bent. Hug your right leg to your chest and twist the trunk of your body to look over your right shoulder. Change legs and repeat (i.e., look over your left shoulder).

Quad Stretch

Stand one foot while one hand on the wall for balance. Hold the other foot with the opposite hand and raise the heel of the lifted foot to the buttock, stretching your quadriceps. Keep your body upright throughout. Change leg and repeat.
Our House is a Very... Fine House

How safe is your home?

Each year 7 million Americans suffer injuries.
Another 28,000 die as a result of injuries sustained in the home.

Top Tips for Home Safety

Does Your Home Have ...?

☆ **Smoke Alarms** – Most fire deaths occur between 10 pm and 6 am. Many deaths are caused by smoke and toxic gases, not the fire. Install smoke alarms on every level of your home, especially near sleeping areas.

☆ **Carbon Monoxide Alarm** – Because CO is odorless, colorless, and tasteless, it often goes undetected. Every home should have at least one CO alarm placed near sleeping areas.

☆ **Fire Extinguishers** – A multipurpose Class ABC fire extinguisher is the best choice for general home use. All adult occupants in the home should know when and how to use the extinguisher properly.

☆ **First Aid Kit** – Keep a well-stocked first aid kit in your home. Make sure everyone knows where to find it and how and when to use the items in it.

For more home safety information and free brochures call 1(800)-SAFE-HOME

Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center!
(717) 848-3064 or wellnessworks@byrneshec.com
Visit our Website at: www.Byrneshec.com
Old Wives’ Tales – Truth or Spoof?

If you go outside with wet hair, you’ll catch a cold.
False. Cold weather, wet hair, and chills don’t cause colds. Viruses do. People tend to catch colds more often in the winter because these viruses are spread more easily indoors, where there may be more contact with dry air and people with colds. Dry air - indoors or out - can lower a person’s resistance to infection.

Reading in dim light will damage your eyes.
False. Although reading in a dimly lit room won’t do any harm, good lighting can help prevent eye fatigue and make reading easier.

Feed a cold, starve a fever.
False. Both high fevers and colds can cause fluid loss. Drinking plenty of liquids such as water, fruit juice, and vegetable juice can help prevent dehydration. And with both fevers and colds, it’s fine to eat regular meals - missing nutrients may only make a person sicker.

Wait an hour after eating before swimming.
False. According to the American Red Cross, it’s usually not necessary for you or your child to wait an hour before going in the water. However, it is recommended that you wait until digestion has begun. The Red Cross also advises against chewing gum or eating while in the water, both of which could cause choking.

Spicy foods can cause ulcers.
False. Spicy foods may aggravate ulcer symptoms in some people, but they don’t bring about ulcers. A bacterial infection or overuse of pain medications such as aspirin or anti-inflammatory drugs is the usual cause.

Cracking knuckles causes arthritis.
False. However, habitual knuckle cracking tends to cause hand swelling, decreased grip strength, and can result in functional hand impairment.

For more Old Wives’ Tales and health information about kids and teens visit: www.kidshealth.org

Source: Kids health website
Water – Got to Have It! 
Fast & Fun Facts about Fabulous H₂O:

- Up to 60% of your body is made up of water, but women typically have a bit less.
- Each person may need to consume a different amount of water daily, based upon a number of factors, including: your health, activity level, whether or not you are pregnant or nursing, and the climate in which you live.
- Water can leave your body through urine and perspiration, as well as by breathing and bowel movements.
- You may need to take in 8-13 glasses of water in a day to replenish what you have excreted.
- When exercising intensely and for long periods of time (one hour or more), you should consider sports drinks and ades which add electrolytes back into your system – keeping you in tip-top condition.
- Mild dehydration can leave you feeling tired and lethargic. – Next time you need a boost, reach for the water fountain instead of the soda machine or coffee mug.
- Mayo Clinic suggests these tips for most adults to stay hydrated:
  - Drink a glass of water with each meal and between each meal.
  - Hydrate before, during and after exercise.
  - Substitute sparkling water for alcoholic drinks at social gatherings.

For more information, visit the Mayo Clinic online at: [http://www.mayoclinic.com/print/water/NU00283](http://www.mayoclinic.com/print/water/NU00283)
APPENDIX D14

WORKSITE 1 E-MAIL MESSAGE

Are Our Kids Too Busy?

“He’s not that good at soccer and doesn’t really like it, but all of his friends are doing it.” — mother of a 5 yr. old

“She wants to take gymnastics, art, dance and cooking. I’m not pushing her but she’s got to eliminate something her schedule is killing me.” — mother of a 7 yr old

“I don’t have anything scheduled on Sunday afternoons. That’s when I have my life.” — a 14 yr. old

Clearly some kids have too much to do and not enough time to do it!

Why are kids so busy?

• Younger kids might not want to feel left out. Teens might feel pressure to "look good" for college scouts.
• Parents might feel like they have to keep kids occupied rather than letting them play and explore on their own.
• Parents might sign kids up for activities so that they don’t "miss out."

How can you tell if Your Child is too busy?

• Feeling tired, anxious or depressed
• Complaining of headaches or stomachaches, which may be due to stress, missed meals, or lack of sleep
• Falling behind on schoolwork, causing grades to drop

Family life can suffer when there is no time for family dinners, connect time or downtime!

Tips for Busy Families:

• Schedule things in moderation and keep your child’s temperament, interest and abilities in mind.
• Agree on ground rules first (like one sport per season or only two evenings during the school week).
• Keep a calendar to stay organized and try to carpool with other parents.
• Allow your child to miss sessions on occasion – hanging out on a beautiful day as a family can be more important than going to one more activity, even if you’ve already paid for it!

Do you have questions or comments for the Wellness Works staff?

Contact us at the Byrnes Health Education Center!
(717) 848-3064 or wellnessworks@byrneshec.com
Visit our Website at: www.Byrneshec.com
Sizzling Summer Picnics

Planning a summer picnic?
When choosing foods that are going to be part of our summertime fun we need to consider their nutritional value as well as their “safety” in the summer heat.

**Great Grains** - ideas for including healthy grains into summertime meals include:
- Whole-wheat pitas & breads for sandwiches and lean hamburgers.
- Whole grain or vegetable pastas for pasta salads
- Unsalted pretzels and tortilla chips for snacks

**Fabulous Fruits and Veggies** – Make these the center of your summer meals. Fruit can be looked at as nature’s candy!
- Grilled vegetables or fruit & veggie kebobs make a great summer meal
- Garden salads using a variety of color (romaine, spinach, carrots, red peppers, tomatoes, chickpeas, mushrooms)
- Steamed corn on the cob, asparagus and broccoli are delicious and nutritious compliments to any meal.
- Fresh watermelon or strawberries over low-fat ice cream makes a great dessert.

**Marvelous Meats** – Protein foods can often dominate our portions during summer months. Though grilled meats taste great, we must remember to limit our portions based on our needs. A portion of meat is considered to be 3-4 oz. or the size of a deck of cards. When you really just need some meat, try one of these lean and tasty choices.
- Pork Tenderloins
- Orange Roughy
- Skinless chicken
- Beef top loin steak
- Ground turkey
- Salmon

*Kick it up a notch with some great low-sodium marinades or use a fresh fruit salsa for fish and chicken.*

Ready to Fire up the Barbie?

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**Wellness@Work Programs and Services are sponsored by**

The Carlisle Area Health and Wellness Foundation

**BE WELL**

Cumberland County

Do you have questions or comments for the Wellness Works staff?

Contact us at the Byrnes Health Education Center!

(717) 848-3064 or wellnessworks@byrneshec.com

Visit our Website at: www.Byrneshec.com
Summer’s Heating Up

Tips for safe activity in the HEAT:
- Drink plenty of fluids (if you are thirsty - you are already dehydrated!!)
- Eat regularly (5-6 small meals per day)
- Wear light, loose fitting clothes (cotton or wick away)
- Wear sunscreen (continue to reapply if sweating)
- Exercise early in the morning or later in the evening
- Check the weather... go indoors if heat index is high

Indoor exercises:
- exercise machines,
- stair climbing,
- take the long way to the fax machine,
- weights,
- exercise classes...

More information: www.topendsports.com/medicine/heat2.htm
Here Comes the Sun…
And as it slowly rises in the east, it brings with it the sound of singing birds, the hope of a new day, and squamous cell carcinoma?

That's Right – Skin Cancer!
The 3 main types of skin cancer are Basal Cell, Squamous Cell, and Melanoma, all of which have been linked to excess exposure to UV radiation (a.k.a. sunshine).

What to look for: Most people have brownish spots (freckles and moles) on their skin. Many are normal, but warning signs that a mole or freckle may be skin cancer are:

A = Asymmetry – Most cancers are not round: If you draw a line through the middle, it would not create matching halves.

B = Border – The borders of most cancers are often uneven and may have notched edges.

C = Color – Varied shades of brown, tan, or black are often the first sign of cancer. As skin cancer progresses, moles may turn red, white, or grayish blue.

D = Diameter – Early skin cancers tend to grow larger than common moles, generally to the size of a pencil eraser (1/4 inch in diameter).

How Can You Prevent Skin Cancer?
◆ Wear sunscreen rated SPF 15 or higher and protect your lips with sunblock, too.
◆ Don’t sunbathe between 10 am - 3 pm.
◆ Stay away from tanning beds.
◆ Wear a hat when outside.

For more information: http://www.cancer.gov/cancertopics

Wellness@Work Programs and Services are sponsored by Carlisle Area Health and Wellness Foundation and Be Well Cumberland County.

Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center:
(717) 945-3964 or wellnessworks@byrneshec.com
Six Tips for Dining at Your Desk

Working through lunch again? Here’s how to dine at your desk with your health on the menu.

#1 Watch your food intake.

When eating at your desk, you are often focused on other things besides food such as e-mail, paperwork, or filing. If you have to eat at your desk, pay attention to how much you are eating.

#2 Bring your lunch.

Packing your own lunch is a great way to ensure you have a healthy meal. Avoid takeout lunches which tend to be expensive, oversized, and heavy in fat and calories. Pack your lunch the night before to avoid grabbing unhealthy items as you head out the door in the morning.

#3 Keep moving.

Spending lunch at your desk means you are doing more of what you do all day—sitting on your bottom. No matter how busy your day, make a conscious effort to move during your lunch break even if it’s means taking a short, brisk walk.

#4 Disinfect your desk.

Your desk is covered in bacteria when you turn it into a cafeteria. Keep a container of disinfecting wipes nearby and clean your desk with them daily.

#5 Use a placemat.

Provide some extra protection for your food even after you wipe down your desk. A placemat can create an extra barrier between your food and your germy desk.

#6 Don’t let lunching at your desk become a habit.

The lunch hour is a time to relax and refuel, both for your mind and your body. If you don’t take that time for yourself you will experience burnout.

Source: Heather Hafelf, WebMD Weight Loss Clinic, March 2006
Hang 10 and Losen UP

Would you like to:

1. Prevent back & knee aches, pains & injuries
2. Improve your flexibility
3. Achieve optimal results from your workouts
4. Feel refreshed & relaxed

Just 10 minutes of basic stretching can bring you BIG benefits! As you age, your muscles tighten and range of motion in a joint can be minimized. This can put a halt to an active lifestyle and hinder day-to-day activities. Regular stretching keeps your muscles and joints tuned up.

Try these three basic stretches to start:

Upper Back / Shoulder Stretch
Grab your elbow with the opposite hand and gently pull the elbow upward across your body until your hand reaches down to "touch" your back. Gently pull your elbow to grab your hand down on your back as far as it will comfortably go, stretching your trapezius and shoulders. Stretch both arms.

Hip & Lower Back Stretch
Sit on the ground with your legs crossed. Lift your right leg and cross it over the left, which should remain bent. Hold the right leg to your chest and twist the trunk of your body to look over your right shoulder. Change legs and repeat (or look over your left shoulder).

Quad Stretch
Stand on one foot with one hand on the wall for balance. Hold the other foot with the opposite hand and raise the heel of the lifted foot to the buttocks, stretching your quadriceps. Keep your body upright throughout. Change legs and repeat.
Worksite 2 E-mail Message

Hey, Guys This One’s For You!
Prostate Cancer Awareness

A word to all the great husbands, dads, uncles, brothers, grandpas and boyfriends
It’s time to get the facts.

What YOU need to know about Prostate Cancer

- Prostate cancer is the 2nd most common cancer found in American men!
- 1 in 5 men you know will develop prostate cancer – 3% die from it.
- Men over age 50 and African-American men are at higher risks.

There are usually no symptoms in the early stages of prostate cancer

How can it be detected?

The best way to detect prostate cancer is to have an exam given by your doctor.
Your doctor will perform a digital exam and feel your prostate gland. If it feels lumpy or firm it might indicate a PSA screening. PSA (prostate specific antigen) screenings show an elevated level of PSA in the blood and can signal the presence of cancer.

Treatments for Prostate Cancer include removal of the prostate gland, radiation therapy, and hormone therapy.

Follow your doctor’s advice and get an annual screening!

Get more info at: http://www.phoenix5.org/menumain.html and http://www.cancer.org/docroot/lrn/lrn_0.asp

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The Carlisle Area Health and Wellness Foundation

Do you have questions or comments for the Wellness Works staff?
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(717) 498-3064 or wellnesswork@byrneshec.com
Visit our Website at: www.Byrneshec.com
APPENDIX E7

WORKSITE 2 E-MAIL MESSAGE

Walking......

Question:
How useful is walking for your health?

Answer:
Exercise, including walking, decreases the risk of death, heart attacks, stroke, hypertension, some cancers, osteoporosis, depression, anxiety, and obesity. It improves overall health, helps osteoarthritis and diabetes, boosts HDL (good cholesterol) levels, and lightens mood.

As long as there are no medical conditions that walking may worsen (such as predisposition to falls or advanced degenerative joint disease), walking is an excellent, inexpensive form of exercise.

Do you have questions or comments for the Wellness Works staff? Contact us at the Byrnes Health Education Center!
(717) 848-3064 or wellnessworks@byrneshec.com
Visit our Website at: www.Byrneshec.com
APPENDIX E8

WORKSITE 2 E-MAIL MESSAGE

Walk, Jump, Swim, Mow, ETC.!

Just Choose an Activity and GO!

! Be moderately physically active at least 30 minutes a day on 4 or more days a week. If you can’t do 30 minutes, try increments of 10 or 15 minutes, adding up to 30 minutes a day.

! Keep in mind that proper nutrition and physical activity go hand in hand. One without the other is a recipe for failure. Just because you walked for 30 minutes doesn’t mean you can reward yourself with a pint of your favorite ice cream!

! Build physical activity into your daily routine. Adding 30 minutes of walking to your daily schedule will use, on average, around 150 calories per day, enough to lose over a pound a month. You can lose more than 15 pounds in a year, if you keep it up and follow a healthy diet. Try building small amounts of physical activity into your day at work - take the stairs, park your car further away, get off the bus a stop earlier, take a walk at lunch.

! For added health benefits, do 20 minutes of vigorous physical activity three or more times a week. This might include running, aerobics, swimming, or working out on cardiovascular equipment in a gym. Also try strength training and flexibility activities at least 2 times per week. (NOTE: if you are habitually sedentary/ inactive, see your health care provider before beginning a program of physical activity).

! Avoid being obsessed with weight as it appears on a scale. People who do vigorous physical activity may increase lean body mass while decreasing their overall fat level. This can result in a loss of inches without weight loss, since muscle weighs more than fat. Weigh once, then put the scale away while you focus on physical activity and nutrition.
OCTOBER IS NATIONAL DENTAL HYGIENE MONTH

- **Drink fluoridated water and use a fluoride toothpaste.** Fluoride's protection against tooth decay works at all ages.
- **Take care of your teeth and gums.** Thorough tooth brushing and flossing to reduce dental plaque can prevent gingivitis—the mildest form of gum disease.
- **Avoid tobacco.** Smokers have 4 times the risk of developing gum disease compared to non-smokers. Tobacco use in any form—cigarette, pipes, and smokeless tobacco—increases the risk for gum disease, oral and throat cancers, and oral fungal infection.
- **Limit alcohol.** Heavy use of alcohol is also a risk factor for oral and throat cancers. When used alone, alcohol and tobacco are risk factors for oral cancers, but when used in combination the effects of alcohol and tobacco are even greater.
- **Eat wisely.** Avoid snacks full of sugars and starches. The recommended five-a-day helping of fiber-rich fruits and vegetables stimulates salivary flow to aid remineralization of tooth surfaces with early stages of tooth decay.
- **Visit the dentist regularly.** Check-ups can detect early signs of oral health problems and can lead to treatments that will prevent further damage, and in some cases, reverse the problem.

Source: Centers for Disease Control and Prevention: [http://www.cdc.gov/oralHealth/factsheets/adult.htm](http://www.cdc.gov/oralHealth/factsheets/adult.htm)
Water – Got to Have It!
Fast & Fun Facts about Fabulous H₂O:

- Up to 60% of your body is made up of water, but women typically have a bit less.
- Each person may need to consume a different amount of water daily, based upon a number of factors, including: your health, activity level, whether or not you are pregnant or nursing, and the climate in which you live.
- Water can leave your body through urine and perspiration, as well as by breathing and bowel movements.
- You may need to take in 8-13 glasses of water in a day to replenish what you have excreted.
- When exercising intensely and for long periods of time (one hour or more), you should consider sports drinks and ales which add electrolytes back into your system – keeping you in tip-top condition.
- Mild dehydration can leave you feeling tired and lethargic. – Next time you need a boost, reach for the water fountain instead of the soda machine or coffee mug.
- Mayo Clinic suggests these tips for most adults to stay hydrated:
  - Drink a glass of water with each meal and between each meal.
  - Hydrate before, during and after exercise.
  - Substitute sparkling water for alcoholic drinks at social gatherings.

For more information, visit the Mayo Clinic online at: http://www.mayoclinic.com/print/water/N000283


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Visit our Website at: www.Byrneshec.com
APPENDIX E11

WORKSITE 2 E-MAIL MESSAGE

Can’t Find Your Keys – Again?

Walking May “Jog” Your Memory

- Scientists found in a recent study of 6,000 women, that those who walked regularly were less likely to experience memory loss and other mental declines linked to the aging process.

- “This research emphasizes that you should exercise if you want to be fit and healthy, not only physically but mentally” – Caroline Bradley (American Academy of Neurology)

And if that’s not reason enough to start Walking...

Walking Will:
- Give you more energy
- Help you sleep better
- Help control your appetite
- Reduce your stress level
- Tons your muscles
- Improve your quality of life

Time Management Tip 101: Make staying active a priority. Schedule some time for physical activity every day. Indoors or out, go for a 20 - 45 minute walk today!
APPENDIX E12

WORKSITE 2 E-MAIL MESSAGE

Count Down to Thanksgiving
Tips for a Trimmer and More Thankful You

1. **Savor the Flavor** – Slow down and enjoy your food and the people you are sharing it with. If you can clear your plate in less than 15 minutes you’re eating way too fast. Come up for air and chat with friends and family.

   FYI - It takes 20 minutes for your stomach to signal the brain that it’s full.

2. **Enough to Feed an Army** – What about great-aunt Tilly’s 20lb fruitcake? Food is good, but everything in moderation. A serving size of mashed potatoes is ½ cup, not ¼ of your plate. A serving of meat is 3-4oz (the size of a deck of cards).

   *Try this, start with smaller portions and go back for seconds if you are still hungry.

3. **Start an Annual “Turkey Trot”** – What better way to end a great dinner than to take a quick walk to help with digestion and burn-off extra calories. Make taking a 15-30 minute “Turkey Trot” your new family tradition!

   Good rule of thumb: Take one step for each bite that you chew.

For Tasty, Healthy, & Fun Holiday Recipe Ideas go to: [www.foodfit.com](http://www.foodfit.com)
Is Holiday Stress Turning You into a Grinch?

No wonder many of us feel a little “Grinchie” around the holidays with all the hurly and scurry, obsessing about weight and what to eat at holiday parties, dealing with family, not to mention out-of-control spending. Ugh!

So instead of suffering through the dreaded holiday season (like the Grinch), try these ideas:

**Holiday “To Do” List**

- **Plan Ahead** – Try to get your shopping done before the holiday blitz. Shop online or by catalog to avoid crowds and hostile shoppers.

- **Keeping Your Perspective** – Since everything will not be perfect, decide what really matters. Do you need to bake cookies for everyone in the Northern Hemisphere? Or would giving someone a “cut” in line at the post office or bank be just as meaningful?

- **Remember the Reason** – No matter what your beliefs, a time of giving can be uplifting! Go caroling at a nursing home, offer to help a single mother change her car’s oil, buy and deliver a warm hat, scarf, and mittens to a needy child. The ripple effects will be far reaching!

- **Get Support** – Even Santa couldn’t pull off the holiday without his elves. Who can help? Hire a caterer for your holiday party, get your presents wrapped by a charity at the mall, save time by sending Christmas cards a family thing (provide pizza and they’ll be there).

Take time to enjoy the sights, sounds, and splendor of this wondrous season!
Think of a pound of fat as a “glob” of bodily tissue that contains blood vessels!

**Fill in the blank:** 1 pound of fat = ________ miles of blood vessels?

It takes 200 miles of blood vessel to support just 1 pound of body fat!

**Just What is …..The Skinny on Fats?**

We do need fat in our diet. It's recommended that 30% of total daily calories should come from fat - of this 30%, only 10% (approx. 13 g) should come from saturated fat. However, too much fat leads to increased risk of heart disease, obesity, diabetes, and high cholesterol among other health problems.

Remember to cook with monounsaturated oils and to buy and eat foods low in saturated and hydrogenated fats...reading labels is a must! Keep in mind.....all oils have the same amount of calories, so use in moderation!

**Keep total fat to 40 – 60g a day!**

If one test tube = 30 grams of fat

This is the amount of fat in one taco salad – 60 Grams – one day’s worth!
Vita
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EDUCATION:
The Pennsylvania State University, Harrisburg, PA
D.Ed. in Adult Education; 2009, GPA: 4.0
The Pennsylvania State University, Harrisburg, PA
M.Ed. in Health Education; 1998, GPA: 4.0
The Pennsylvania State University, State College, PA
B.S. in Individual and Family Counseling; 1982, GPA: 3.86

EXPERIENCE:
6/07 - Present

Senior Research Consultant
Penn State College of Medicine, Hershey, PA
Cancer Education and Research
- Develop and implement South Central PA Cancer Education Network via grant funding from the PA Department of Health with worksites, primary care offices, school districts, and other community organizations
- Conduct cancer education research connected with this project regarding changes in cancer knowledge, attitude and intent to screen and potential correlates to screening rates and cancer incidence

11/06 – 5/07
Team Lead
Nationwide Better Health, Hunt Valley, MD
Online Health Coaching Program
- Manage team of health coaches delivering telephonic and online health behavior change programs to a variety of worksites nationwide

2/00 – 12/06
Director, Adult Education, e-Learning
Susan P. Byrnes Health Education Center, York, PA
Program Development and Instruction
- Created, managed, and implemented successful, comprehensive worksite health education programs and services for a variety of employer groups intended to decrease corporate health care costs and build employee awareness of accurate health insurance benefit usage
- Lead internal development efforts and teams for creation of web-based health education curricula, lesson plans for award-winning site, www.LearntobeHealthy.org
- Guided and designed development of a web-based learning management system

5/89 – 8/99
Health Education Coordinator
HealthAmerica, Harrisburg, PA
Worksite Wellness Educational Programming
- Facilitated over 600 worksite health education programs for over 250 HealthAmerica employer groups; evaluated qualitative and quantitative outcomes of educational class series
- Developed all health education curricula including cholesterol reduction, cardiovascular disease prevention, stress management, nutrition/weight management, and general wellness.
- Originated and initiated all wellness programming policies, procedures, budgets, and strategic plans