EVALUATING THE IMPACT OF ACTION PLANS ON TRAINEE COMPLIANCE WITH LEARNING OBJECTIVES

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This mixed methods research study evaluated the use of technology-based action plans as a way to help improve compliance with the learning objectives of an online training event. It explored how the action planning strategy impacted subjects in a treatment group and compared them to subjects in a control group who did not get the action plan. The study revealed that the action planning process supported the compliance of the learning objectives and provided insights into how the action planning process contributes to this compliance. As a result, this study recommends the use of technology-based action plans, as opposed to paper-based action plans, as a simple and effective strategy to support the application and evaluation of training, specifically for online live training events.
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Chapter 1

INTRODUCTION

It is estimated that corporate America invests more than $125 billion a year in efforts to train their employees to perform better (ASTD, 2009). Executives want to see positive results for these investments that can further their companies’ goals, yet training departments invest less than 2.6% of their budget in evaluation, and continue to have difficulties in demonstrating the value of training (Basarab, 2011; Philips & Stone, 2002). Arguably, a training department cannot create value and demonstrate it unless the individuals or trainees that participate in their learning interventions take action and achieve results from these actions. Ideally, trainees should be able to apply the skills and knowledge imparted in the intervention, as part of a continuous improvement process (Basarab, 2011; Wick, Pollock, & Jefferson, 2010). If these actions and their results are captured in a systematic way, training departments can create evidence for the value of training to the organization, and can also enhance the transfer of training and facilitate a continuous improvement process by enabling others to provide feedback and encouragement on these actions and their results. This study intends to examine the impact that action plans can have on ensuring that trainees take action from learning interventions. The focus will be to examine if action plans can have a measurable effect on trainees’ compliance with the objectives of a learning event delivered synchronously over the Internet referred to as online training event. Establishing a critical link between learning objectives and evidence of actions and results may help training departments demonstrate value in a way that executives can understand and appreciate.
Research Question

This study intends to examine the impact that action plans can have, as part of a online learning intervention or event, to ensure compliance with stated learning objectives. Therefore, the research question is: can action plans support trainee compliance with specific learning objectives?

This simple approach holds the promise of demonstrating the value of learning interventions by aggregating the actions of trainees and their results so that they can be understood and appreciated by executives, potentially helping training departments increase their strategic significance within their organizations.

Statement of purpose

Tough economic times and a constantly changing competitive business environment are causing corporate learning departments to rethink their value, role and impact on the company’s business (Elkeles & Philips, 2007). The average Fortune 1000 company is spending around 2.5 percent of its operating budget in the learning function (Bersin, 2006); for all U.S. companies this amounts to $78.6 billion spent on the internal learning function, such as staff salaries and internal development costs, and $47.3 billion allocated to external services such as workshops, vendors and external events (ASTD, 2009). Executives are increasingly focusing their attention on trying to grasp the value of learning so they can decide on appropriate levels of investment (Elkeles & Philips, 2007). Not being able to provide an effective way of evaluating training reduces the strategic importance of the learning department making it an easy target for cutbacks when reductions in total operations need to be made (Brinkerhoff & Gill, 1994). Recently,
Bersin (2010) reported that as cost centers, learning and development (L&D) organizations of U.S. companies experienced cuts in their budgets by 11 percent from 2008 levels. Combined with the budget reductions that occurred in 2008, training budgets have fallen by 21 percent over the past two years. It is not surprising that learning departments are often seen as areas of expense rather than creators of value (Cronshaw & Alexander, 1986).

These factors are encouraging learning departments and specifically the executives that lead these departments, like Chief Learning Officers or Human Resource Directors, to demonstrate the value they create in a way that executives can understand and appreciate (Elkeles & Philips, 2007). Ultimately, the understanding and appreciation of the training investment by the executive team of any given organization will be reflected in budget allocations to corporate learning departments (Wiggenhorn, 2011). The action planning approach proposed in this study may hold the promise of allowing training departments to link training investments to actions and results that can be understood and appreciated by executives.

The context for the present study is provided by a number of assumptions found in the literature: that training transfer comes about through action with the intention of improving a given performance; that training evaluation is ultimately about demonstrating business impact or results; and finally that training should be a continuous improvement process based on the actions of trainees and the results created by these actions. It appears as though the action planning process has been perceived as a complicated and protracted process creating a gap in the literature about its effectiveness.
In its simplest definition action means “the state or process of acting or doing” (retrieved from http://en.wiktionary.org/wiki/action) and within the framework of this study it means actions trainees will take to implement the knowledge and skills gained in any given training event. Its opposite is inaction, or not doing or taking action, and within the framework of this study it means not applying the knowledge and skills offered in a training event.
Chapter 2

LITERATURE REVIEW

Literature review roadmap


I will present training as a continuous improvement process (CIP) undertaken by the individual to achieve a high level of proficiency. I will define CIP and provide background through the works of Baum and Singh (1994), Pink (2010), Knowles (1990), Salas & Bower (2002), and Wick et al. (2010). I will then define action plans through the works of Mosel (1957), Knowles (1990), Betof (2010) and Cowan, Goldman, and Hook (2010). I will illustrate how the action planning process enhances learning transfer by examining the works of Brinkerhoff and Gill (1994), Chien, Wai Chan, and Morrissey (2002), Heckhausen & Gollwitzer (1987), Oettingen, Honig & Gollwitzer (2002), Achtziger, Gollwitzer, and Sheeran (2008), Cheng and Hampson (2008), Fishbein and Ajzen (1975), Ajzen (1991, 2001), Bird (1988), Beitler (2002), and Bandura (1986).
I will conclude by summarizing the advantages of using the action plan approach, suggesting how technology can facilitate the implementation of action plans and describing the study to evaluate the strength of the approach in ensuring trainee compliance with learning objectives. I will review how technology-enabled (or Web-enabled) action plans can accumulate evidence of the business impact of training as reported by the individual trainee and verified by a supervisor or manager. In addition, I will propose the use of these action plans as communication tools that can provide feedback and encouragement to the trainee, and in this way enable a continuous improvement process. I will conclude with the study’s intended contribution to the body of knowledge.

Learning and training transfer

In this section I will define learning transfer and review major frameworks for its application. I will be suggesting that action is the way in which learning transfer is manifested and understood.

What is training transfer?

There are in the literature multiple definitions of ‘learning transfer’, which is sometimes referred to as ‘transfer of training’ (Alliger, Bennett, & Tannenbaum, 1995). Most definitions include the effective and continual application of the learning acquired...
from formal training environments back to the workplace (Noe, 2002). For example Baldwin and Ford (1988) suggest a definition that emphasizes the generalization of skills acquired during the training event to the work environment and the maintenance of the acquired skills over time. In this definition, ‘training maintenance’ pertains to the reproduction of trained skills in a new setting, and ‘training generalization’ refers to the adaptation of trained skills to a more complex task situation (Ford, Smith, Weissbein, Gully, & Salas, 1998). A different but similar view is that training transfer includes the process by which individuals effectively and continuously apply what they have learned (Baldwin & Ford 1988; Goldstein & Ford 2002). Broad & Newstrom (1992) further support this process definition by making it clear that training transfer is the effective and continuous application of the knowledge and skills gained in training, but that it may encompass both the maintenance of behavior and its generalization to new situations and applications.

Foxon (1993) distinguishes between two types of training transfer: specific point transfer and the process model of transfer. In specific point transfer, training transfer is evaluated at a specific point in time after a training event. In the process model, which Foxon (1993) bases on Lewin’s (1951) theory of force field analysis, Foxon (1993) describes training transfer as a diffuse, viral and ongoing process. It might appear that subscribing to Foxon’s process model would make the evaluation of training transfer a diffuse and protracted process.

However, training transfer ultimately depends on whether the learned outcomes of training are applied in the workplace (Salas & Cannon-Bowers, 2001), implying that if
the knowledge imparted in a training program is converted into action, training transfer is occurring. The simple application of knowledge to a novel task is called ‘reproductive transfer’ and when there is adaptation, mutation and enhancement it is referred to as ‘productive transfer’ (Robertson, 2001). In either case, Holton and Baldwin (2003) define transfer as “the degree to which trainees use newly acquired knowledge and skills to perform their job effectively and enhance organizational effectiveness” (p.165). The implication is that ultimately the trainee’s actions will determine if there was transfer (Marx & Burke, 2003 in Holton & Baldwin, 2003) and their continued actions will create an ongoing process.

**Major frameworks for learning transfer**

The major frameworks for learning transfer in the literature have been descriptive for the most part since authors have limited themselves to identifying, describing or measuring factors that may influence transfer instead of focusing on how to effectively change, manage, and impact these factors (Holton & Baldwin, 2003). Holton and Baldwin (2003) have adapted existing frameworks to fit a more intervention-oriented approach. They concern themselves with three major foci for transfer interventions: the learners, the learning event, and the organizational context. However, most of these frameworks have incorporated three categories of variables impacting training transfer which are key influencers, time period, and stakeholders (Hutchins & Burke, 2007).

Trainee characteristics, training design and characteristics, and work environment are identified as the key influencers in training transfer (Baldwin & Ford, 1988; Ford & Weissbein, 1997). Trainee characteristics are defined as the attributes of the individual
trainee in regards to his or her ability, motivation, personality, perceptions, expectations, or attitudes that can influence transfer. Training design and training delivery refer to the design of the learning event and the activities used in the delivery of the training, respectively. Work environment refers to any and all the influences on transfer that occur beyond the training event.

Time period refers to the period when an activity occurs. Broad & Newstrom (1992) incorporate three time periods to their learning transfer framework: before, during and after a training event. Holton & Baldwin (2003) use these three time periods but expand them to five which they refer to as time points one through five. Time point one refers to the learner or team who will participate in the learning event and considers their ability, motivation, individual differences and prior experiences (Holton, Bates, & Ruona, 2001). Time point two is similar to Broad and Newstrom “before” stage, time point three is similar to Broad and Newstrom’s “during” stage, and time point four is similar to Broad and Newstrom’s “after” stage. Time point five refers to the performance outcomes from the learning, suggesting that if trainees don’t take action there has been no transfer.

Stakeholders are the individuals who can most influence training transfer. These are the trainees, trainers, and supervisors or managers (Broad & Newstrom, 1992). Trainees are the learners who participate in the training. Trainers are the instructors who design, develop, and deliver the training. Drucker (1986) makes the statement that nothing could be more absurd for the organization than to assume responsibility for the development of individuals since this rests in the individual, his or her abilities and efforts. The implication is that trainees as stakeholders in training transfer must
implement or take action on what they learned, through their own effort to create effective transfer.

Trainers, trainees, and supervisors may shy away from being held accountable for training transfer and, ultimately, offer excuses when transfer does not occur or does not occur to the degree expected. Esque and McCausland (1997) describe how the responsibility for effective training transfer tends to fall into a gray area between trainers, trainees and management. Kopp (2006) states that transfer of trained skills seems to be viewed as “nice to have” since few if any stakeholders, especially trainers, are held accountable for evidence of transfer success in a meaningful way. Burke and Saks (2009) believe that trainers, trainees, and supervisors should be held accountable for transfer and for the transfer-related activities that they can affect.

Not unpredictably, research conducted to date has shown that 60 to 90 percent of the job-related skills and knowledge imparted in training programs are not being implemented on the job, which suggests that most of the corporations’ training investments are being wasted (Allen, 2008). According to Baldwin and Ford (1988), only ten percent of training investments result in the transfer of new skills and knowledge to the job. Furthermore Tannebaum and Yulk (1992), as cited in Phillips and Broad (1997), found in the literature that transfer of training was as low as five percent.

A set of organizing principles for the training and development efforts of corporations to ensure training transfer is offered in what Wick, et al., (2010) call the “The Six Disciplines of Breakthrough Learning.” These six principles encompass both training transfer and training evaluation as the authors take a holistic approach. These
principles are define, design, deliver, drive, deploy, and document. Define means having a clear understanding of success, describing what trainees will do and linking the training to desired business outcomes. Design means creating training experiences to teach actions and behaviors that will lead trainees to produce the desirable business outcomes. Deliver means delivering the training in a relevant and meaningful way. Drive refers to the need to establish systems that support training transfer. Deploy includes getting managers involved to provide feedback and coaching and to provide post-training performance support to bridge the learning- doing gap (Pfeffer & Sutton, 2000). Document stresses the importance of measuring the business impact of learning interventions, and using the insights gained to support continuous improvement. Wick et al., (2010) citing Kirkpatrick and Kirkpatrick (2006), emphasize that the best results are obtained when both support and accountability are present.

Without training transfer or the application of skills the investment in training is indeed wasted (Basarab, 2011; Elkeles & Philips, 2007; Philips & Stone, 2002; Wick et al., 2010). Therefore training transfer is a key imperative and is perhaps the most important activity undertaken by the training department—but to determine if transfer actually occurred, an evaluation is necessary (Basarab, 2011; Kirkpatrick & Kirkpatrick, 2006).

Training Evaluation

In this section I will define evaluation and focus on training evaluation. I will review major frameworks for training evaluation, and present training evaluation as beneficial for both the learning department and the trainee.
What is Evaluation?

Evaluation is defined by the Joint Committee (1994) as “the systematic assessment of the worth or merit of an object” (Stufflebeam & Shinkfield, 2007, p. 3). Stufflebeam & Shinkfield (2007) extend this definition of evaluation by adding that it includes the assessment of probity, feasibility, safety, significance and/or equity of an object beyond its worth and merit. The authors state that the presence of sound evaluations is only one of the components in quality assurance and improvement, since decision makers must then act on them if they are to have significance and impact. They suggest four main uses for evaluations: improvement, accountability, dissemination and enlightenment. Evaluations can provide information for improvement, not only of the process but of the results. Evaluations serve to create accountability by recording what was done or accomplished. Dissemination is defined as the sharing of information obtained from evaluations for the benefit of others. Enlightenment is described as the use of evaluation data to uncover new understandings.

Interestingly, it is much easier to find definitions of training evaluation in the literature than it is to find cogent reasons for, and models of, evaluation. Reasons for training evaluation may include justifying the training department’s existence by showing how it contributes to organizational goals, obtaining information to assess if training programs should be continued, and gathering information on how to improve future training programs (Kirkpatrick & Kirkpatrick, 2006). The Joint Committee’s definition of evaluation as applied to training would be the assessment of the worth and merit of the training investment. In corporations this final evaluation, the worth and merit of the
training investment, is done by the senior executive or executives who decide on the budget of the learning department (Phillips & Stone, 2002).

**Frameworks for training evaluation**

Kirkpatrick (1967) proposed one of the most widely recognized and accepted models for the evaluation of training. This model proposes four levels of evaluation: 1) reactions, or how trainees feel about program; 2) learning, or understanding and retention of concepts; 3) behavior, or application of what was learned; and 4) results, or the impact of training on the organization. Philips & Stone (2002) build upon Kirkpatrick’s model by adding a fifth level: return on investment (ROI). Others, like Wang, Zhengxia & Ning (2002), and more recently Wang & Spitzer (2005), have gone on to build on Phillips & Stone’s (2002) work by proposing a more mathematical approach to ROI calculations for the measurement and evaluation of training.

ROI is a financial calculation that resonates with executives, but applying it to training has proven to be difficult since estimates of benefits are based on statistical extrapolations and formulas that attempt to quantify subjective estimates of training’s contribution to a business outcome (Brinkerhoff & Dressler, 2003). The implication is that, when it comes to training investments, it is difficult to isolate variables, which is essential to a financial calculation like ROI. Brinkerhoff and Dressler (2003) address this problem with their Success Case Method for evaluation. They do not avoid ROI, but instead propose that ROI data is only meaningful when it is derived from actual cases, verifiable records, and direct evidence of the business value in specific cases of training usage (Brinkerhoff & Dressler, 2003). The Success Case Method is based on identifying
and surveying the most successful and the least successful participants in a training program in order to collect their feedback on what worked and what did not, with the intention of capturing an accurate picture of the value of the program and ideas about how it might be improved.

Although the Kirkpatrick evaluation model has been considered a standard across the training industry, it has not been applied extensively. Blanchard, Thacker, & Way, (2000) have suggested three fundamental reasons for this lack of application. First, organizations prefer to measure the first two levels (reaction and learning) instead of other two levels (behaviors and results), which are perceived to be harder to assess. Second, organizations choose to measure behavior instead of results since it is costly and difficult to isolate the impact that training had on the business. Third, those who try to assess the impact of training may find that the training is not worth the investment and this may be a finding that can encourage training departments to avoid the evaluation effort. Furthermore, Saari, Johnson, McLaughlin and Zimmerle (1998), and Sackett and Mullen (1993), as cited in Holton and Baldwin (2003), state that evaluations are “rarely rigorous, relying mostly on simple reaction surveys (“smile sheets”) that fail to address the learning-behavior change-job performance linkage” (p. 262).

However, Longnecker (2004) notes the importance of evaluation and suggests that the mere measurement of transfer affects trainees’ use of training at work. Drucker (1996) corroborates this statement by emphasizing that what gets measured is what gets attention. The implication is that the attention to evaluation alone will prove to be beneficial. However, organizations have been found to invest only about 2.6% of their
total training budget on evaluation, and they continue to have difficulties in how to practically determine the value of training (Bersin, 2006). Clearly, an effective but yet practical way of evaluating training would be highly desirable by learning departments.

**Training as a continuous improvement process**

In this section I will present training as a continuous improvement process undertaken by the individual to achieve a high level of proficiency or mastery. I will start by defining the process and providing background that suggests that training needs to be seen as a process, and ideally as a process that leads to continuous improvement of performance (Wick et al., 2010).

A continuous improvement process (CIP) is typically defined as an ongoing effort to improve products, services, or processes. These efforts seek incremental improvements over time (Basarab, 2010). The “quality movement” in corporate America, popularized in the middle of last century by W. Edwards Deming and J.N. Duran, generated an interest in CIP (Baum & Singh, 1994). For example, Collins (2001) states that the executives at “The Good-to-Great” companies he studied understood and appreciated that there was tremendous power in continued improvement and the delivery of results. Today CIP is being implemented across many different business functions within organizations. If CIP is to be applied to training, then training cannot be seen as an event that has a beginning and an end but rather as a CIP undertaken by the trainee to achieve incremental improvements in performance. This process perspective on training is supported by the training transfer definitions presented earlier of Broad and Newstrom’s (1992), Baldwin and Ford (1988), and Goldstein and Ford (2002).
Better performance will be the result of a process of self-improvement that leads the employee to achieve a level of mastery (Elkeles & Philips, 2007). The human brain seeks efficiency and constantly works to reduce the effort needed to accomplish a given task (Pink 2010). This implies that if the trainee applies the training repeatedly, there is a continuous improvement process already inherent that will drive towards improved performance. This process becomes a CIP as it seeks incremental gains with every attempt or action an individual takes. If with time a level of mastery is achieved then it will manifest itself in outputs or results that will further the objectives of the business (Salas & Bower, 2002). Furthermore, trainees are expected to apply the knowledge and skills imparted in training and to engage in a process of continuous self-improvement that will not only lead to mastery but innovations that drive business objectives (Basarab, 2010; Wick et al., 2010).

In addition to documenting results, CIP relies on measuring the process. Pfeffer & Sutton (2000) explain that it is important to measure the process of implementing knowledge and skills and not just the results. The authors state that if the process is not measured, then it cannot be improved, regardless of how many results are measured. Since it is ultimately the employees’ outputs that create value for an organization, and employees can always improve to deliver the right outputs (Elkeles & Philips, 2007), it is their actions that need to be captured to measure the process. Measuring training requires measuring what individuals were able to do with it and what results they achieved, as suggested by Brinkerhoff and Gill’s (1994) Success Case Method. Measuring training as
a process requires measuring the actions in addition to the results obtained, all of it on an ongoing basis.

However, it is the trainees who must own or take responsibility for achieving results (Drucker, 1986; Knowles, 1990). The implication is that to achieve a business result from a training investment, the trainee needs to apply the learning (Elkeles & Philips, 2007). Therefore to continuously improve, a trainee must be willing to take on a challenging action and get evaluated on it to get feedback and support or encouragement (Center for Creative Leadership, 2009).

**Action Plans**

I will define action plans, illustrate how the action planning process enhances learning transfer, how action plans can accumulate evidence of the business impact of training as reported by the individual and verified by a manager, and how technology enabled or Web-enabled action plans can become a communication tool used to provide feedback and encouragement on progress towards a continuous improvement process. I will conclude by summarizing the advantage of this approach and suggesting how technology can facilitate the implementation of action plans.

**What is an Action Plan?**

Knowles (1990) states that learning contracts, similar to participant action plans, are without question the most potent tool he ever came across in his more than half a century of practice. Knowles (1990) describes a series of problems that are solved through the use of this tool, primarily because it allows learners to develop a sense of ownership and take responsibility for outcomes. Learning contracts are defined by
Knowles (1990) as plans created by learners stating learning objectives, learning resources and strategies, evidence of accomplishment of objectives and the criteria and means for validating evidence. Participant action plans which can be traced back to the 1950’s were used by Mosel (1957) to get participants to state what they had learned, ways in which they could apply what they learned to improve performance, potential barriers and resources needed and a supervisory review of the plan for further development (Cowan, Goldman & Hook 2010). Therefore a document created by trainees or learners in which they state their objectives or goals and formulate a plan to implement them constitutes a participant action plan and a learning contract. In some instances such a plan may also be called an implementation plan (Betof, 2009). For the purpose of this study, I will be using the term action plan to include any type of document created by learners that states the actions they will undertake in relation to what they have understood to be the learning objectives or goals of any given learning, training, mentoring or coaching program. Furthermore, action plans can be used in both teacher-directed and learner-directed education (Beitler, 2000).

**Action Plans: enhance learning transfer and evaluate training**

Action plans hold the promise of being able to improve learning transfer and provide for an effective way of evaluating training (Brinkerhoff & Gill, 1994; Cowan, et al., 2010). Research has shown that participants’ autonomy and motivation is increased through the use of learning contracts (Chien, Wai-chi Chan, & Morrissey 2002). It appears that action plans are often dismissed as simple to-do lists with little or no impact and as an impractical evaluation tool since they can require substantial resources to be
used effectively (Cowan, et al., 2010). Additionally, in the academic world there seems to be little evidence that the main ideas underpinning action plans are being implemented by business education standard-setters, management educators, or leading business programs (Goodman & Beenen 2008). However, action plans have been known to improve learning transfer and have been utilized as evaluation tools when conducting a Level Three behavioral evaluation using Kirkpatrick’s four-level evaluation framework (ASTD,2008; Basarab & Root, 1992 in Cowan, et al., 2010). The articles examined in this study will further define how action plans contribute to learning transfer and their use as a practical evaluation tool.

**Action Plans Enhance Learning Transfer**

An explanation as to why the activity of creating an action plan helps learning transfer is explained by the Rubicon model of action phases which assumes that people naturally start by setting more desires or wishes than they have the time and opportunity to actualize (Oettingen, Honig & Gollwitzer, 2000). People must then select those wishes with the highest feasibility and desirability of actualization, which in turn become goals. Once goals are arrived at, individuals enter a phase of resolution which incites a feeling to act. When both desirability and feasibility are high, the determination to achieve the goal is set (Oettingen, et al., 2000).

Since learning transfer relies on the trainees transferring the newly-gained knowledge and skills into the workplace, which can be expressed as goals in action plans, it can be inferred that the process of formulating such goals in and of itself contributes to getting the individual closer to applying the learning. Goal-setting as a performance
improvement strategy is not new to effective managers, who understand the value in formulating goals very specifically by focusing on task-related outcomes, making them challenging rather than easy and measureable in a way that progress can be monitored (Holton & Baldwin, 2003). Holton and Baldwin observe that these goal-setting skills of effective managers have been rarely applied to learning. Furthermore, goal-setting can also be analyzed from a self-regulatory perspective: once a goal has been successfully achieved, this will then fuel the desire to set another challenging goal. This desire is said to be driven by the heightened sense of self-efficacy achieved by the individual (Oettingen et al., 2000). Therefore, once a goal has been achieved, even if simple, it can fuel further goal achievement or more learning transfer.

Goal intentions are defined as end states an individual wants to attain; they intend to turn desires into binding goals. Therefore, goal intentions can be thought of as goals in the common sense as they have the format of “I want to attain X!” (e.g., “I want to eat healthy!”) Implementation intentions cause goal intentions by specifying when, where, and how goal-directed responses should be initiated. Implementation intentions have the format of if-then plans: “If situation X arises, then I will do Y!” Thus in the case of goal intention “I want to eat healthy!” a supporting if-then plan could be “If I order something to eat in my favorite restaurant, then I will order a vegetarian meal!” (Achtziger, Gollwitzer & Sheeran 2008, p.381). Therefore, the creation of implementation intentions through an action plan can help achieve goals learners have set for themselves.

Additionally, the theory of planned behavior (TPB) (Cheng & Hampson, 2008), which has been viewed by many as an important social psychological theory, can help in
understanding the decision-making process that leads learners to choose what and how much of the training they will actually transfer to the workplace. The theory explains human actions (Fishbein & Ajzen, 1975; Ajzen, 1991, 2001) by uncovering the links between intentions (and their antecedents) and behaviors. The TPB can explain the transfer process by focusing on behavioral intention (i.e., transfer intention) and its antecedents. Generally defined, intention refers to a state of mind that directs an individual’s attention, experience, and behavior toward a certain object (Bird, 1988). In the TPB, intention is viewed as a cognitive representation of an individual’s willingness to perform a specific behavior, and it is assumed to be the immediate antecedent of behavior. In terms of learning transfer, the focus is on the intention or motivation to transfer the newly gained knowledge and skills into the work environment which an action plan helps manifest. As a learner completes or writes in a plan he or she is manifesting the intention to act (Cialdini, 2009).

Research suggests that forming implementation intentions increases the likelihood of goal achievement (Achtziger et al., 2008). Researchers assert that setting goal intentions does not mean that an individual will meet his or her goals. In essence, when an individual forms implementation intentions it stimulates and/or promotes different types of goals by creating a mental link between a particular cue and situation (Achtziger et al., 2008). This mental link then facilitates goal achievement in the sense that an individual is able to mentally acknowledge the specified cue which makes it more accessible (Achtziger et al., 2008). Further, forming an implementation intention produces a heightened cognitive accessibility which “makes it easier to detect the critical
cue in relevant situational contexts and to readily attend to it even if one is busy with other things,” which in essence significantly boosts the effectiveness of goal intentions (Achtziger et al., 2008, p. 382). The implication is that when a trainee formulates implementation intentions based on a training program’s learning objectives and writes them in an action plan, this process in and of itself facilitates training transfer.

As trainees create an action plan they are customizing their own learning and development plan (Beitler, 2000). Trainees do this by teasing out their ideas about how to accomplish a new task or goal. Through this exercise they engage in thinking through how they will apply the knowledge they are being exposed to and what goals they can commit to in doing so. Therefore, through this process the learning objectives as understood by the trainee are being reinforced and he or she is being given the autonomy to complete his or her action plan. This perceived behavioral control, increased through the formulation of their own actions, improves trainees’ confidence in their ability to initiate transfer. In this sense, perceived behavioral control is regarded as identical to the concept of self-efficacy (Ajzen, 1991). Bandura (1986) defines self-efficacy as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). He extends his definition by emphasizing self-efficacy as a cognitive force concerned with what one can do rather than with what skills he or she possesses.

**Action Plans as a Training Evaluation Tool**

Training evaluation is about business results or impact on the business (Brinkerhoff, 2003; Kirkpatrick & Kirkpatrick, 2006; Elkeles & Phillips, 2007; Phillips &
Stone, 2002) and since this impact can only be produced by the actions or continuous application of the training (Salas & Canon-Bower, 2001; Max & Burke, 2003 in Holton & Baldwin, 2003; Baldwin & Ford, 1988; Goldstein & Ford, 1992; Ford et al., 1988; Wick et al., 2010) it could be argued that getting trainees to commit to and take specific actions that link learning objectives to business results by documenting them in action plans would create evidence of the business impact of training.

Documenting these actions would be the equivalent of capturing the process by which knowledge turns into action (Pfeffer & Sutton, 2000). However, it would be insufficient if the results of these actions are not captured. Therefore, capturing the results of these actions will create evidence of the business impact (Wick, et al., 2010). When others such as managers validate these results, ROI statements from the trainees’ perspective can be made (Brinkerhoff, & Dressler, 2003). ROI statements from trainees include examples of how they applied the learning objectives and achieved a business result.

It appears that there could be resistance to evaluation (Esque & McCausland, 1997; Blanchard et al., 2000; Kirkpatrick & Kirkpatrick, 2006) since it has been proven hard to execute. Trainees have the responsibility for their own development (Drucker, 1996) and as such are in the best position to determine the value of the training investment (Brinkerhoff & Dressler, 2003). Therefore through the use of action plans where actions and their results are captured, the process of evaluation is assigned to the trainee. When managers validate these actions and results they add another layer of accountability to the process. The lack of management support to trainees after a training
event is often blamed for impeding learning transfer (Zenger, Folkman, & Sherwin in Wick, et al., 2010) as is the lack of accountability (Kirkpatrick & Kirkpatrick, 2006). However as a manager validates the actions (that they indeed took place) and their results, they are providing post-training support and helping to create evidence of the impact of the training.

For there to be something to evaluate, action must first take place (Stufflebeam & Shinkfield, 2007), so it becomes essential that trainees commit to these actions. Once a commitment is made, as stated in an action plan, there is a natural tendency to behave in ways that are consistent with such a commitment (Cialdini, 2009), specifically if this commitment has been made by the trainee (Knowles, 1996). Cialdini (2009) explains that once a commitment is made there is pressure from within the individual and pressure from outside. Pressure from inside arises from the desire to create consistency between the self-image of the trainee created by the commitment and the action to take. Pressure from outside arises from the desire to act in a way that is consistent with how others perceive us and the self-image created by the commitment. This external pressure increases when the commitment to act is made public (Cialdini, 2009).

Cialdini (2009) goes on to state that commitments are most effective when they are not only public but also active and effortful. Commitments are public when the action plans are made available to others, which can be trainers and/or managers. They are active when they pertain to specific behaviors or actions taken. They are effortful when the trainee has to put in effort to formulate the commitment. Cialdini (2009) suggests that the more effort that was put into making the commitment the stronger it will
be. Commitment is also referred to as taking ownership for an outcome or an action (Galindo, 2009).

**Technology-based Action Plans as a Communication Tool to Provide Feedback and Support**

Since the early work of Mosel (1957), most action plans have been paper-based. A paper-based action plan limits its use and does not allow for an efficient process, specifically for an efficient process to provide feedback and support to individuals. As opposed to a paper-based plan, a technology-enabled plan is one that is created in an electronic format and resides within a central repository allowing others such as managers and trainers to interact with it. Action plans not only serve as a guide for the learning transfer process but also work as an important mechanism or enabler for transfer-related feedback since information about transfer efforts (actions taken) and results can be shared and discussed (Holton & Baldwin, 2003).

The Center for Creative Leadership’s personal developmental model (2009) calls for a blend of challenge, support and evaluation or feedback as a continuous development process. Challenge in an action plan is represented by specific actions, goals and objectives a trainee must take to implement the learning through his or her own efforts (Drucker, 1996). Support is meant as encouragement and/or attention in the form of communication from the manager to the trainee, ideally after a trainee has taken an action, achieved a goal or an objective. Evaluation and feedback pertains to evaluating the actions and the results to provide feedback or actionable information the trainee can use to improve or continue improving. Feedback is essential on either total performance
or results and on specific task components or actions (Phillips & Broad, 1997). However, using paper-based plans would make this a protracted and complicated process as suggested by Foxon’s (1993) training transfer process model.

When trainees create a paper-based action plan, trainers will need to evaluate them manually. If these plans are created in an electronic format and saved to a central repository, the evaluation of the action plans to determine if the actions, goals and objectives trainees have committed to are appropriate given the learning objectives or desired business outcomes (Wick et al., 2010), would be easily done, managed, and tracked. Providing feedback and support using paper-based action plans poses the problem of not allowing the manager to know when and if an action has taken place. Feedback and support are most effective when provided immediately after an action (Center for Creative Leadership, 2009). A technology-enabled action plan can have mechanisms that generate an automatic email or any other type of communication once a trainee reports that an action has taken place or a result has been obtained. The implication is that the feedback and support would be more effective as it would take place immediately after an action has been taken.

**What can be Achieved with Technology-based Action Plans?**

I will conclude this section by summarizing the advantage of the approach, suggesting how technology can facilitate the implementation of action plans. In addition I will propose further research that could strengthen the approach.

Technology-enabled action plans can be both process- and content-neutral, meaning that they can be customized with relevant and meaningful content, and can be
implemented at any time period in any training transfer model. Holton and Baldwin (2003) stress three steps to ensure learning transfer: (1) Establishing high expectations via goal setting; (2) Monitoring progress towards these goals; and (3) Rewarding efforts or actions and successes or results. Therefore authoring, publishing, managing, scoring and tracking action plans for these three steps would only be efficient and effective if it is technology-based as opposed to paper-based which would make this a complex and protracted process. Multiple layers of managers or trainers can be assigned different rights to interact with these plans depending on who and what they are responsible for. Additionally, these plans can be organized by business unit or division making it feasible for large organizations with diverse needs. Automatic communication mechanisms that generate a written message to these managers or trainers can be incorporated into the action plans. Through these communication mechanisms, managers and trainers can provide immediate support or encouragement and feedback. Evidence questions as suggested by Brinkerhoff and Dressler (2003) Success Case Method, which can be verified by managers, can be incorporated into the action plans. Reminder emails at specific time intervals post training can be sent to a trainee to come back to the plan and answer evidence questions.

In summary, the literature suggests that creating action plans can enhance learning transfer, provide evidence of the business impact of training, and facilitate a continuous improvement process by allowing managers to provide feedback and support. However, it appears that the use of action plans is not widely adopted by training departments and the main reason could be that they are thought of as hard to manage, paper-based
instruments that are sometimes dismissed as simple to-do lists (Cowan, et al., 2010). Therefore, the research conducted in this study, focused on demonstrating the value created by technology-enabled action plans before, during and continuously after a synchronous online training event, could be very useful to training departments. This research can be especially useful for evaluations that can lead to improvements, accountability, dissemination and enlightenment (Stufflebeam & Shinkfield, 2007).

**Contribution to the Body of Knowledge**

As stated earlier, it appears as though the action planning process has been perceived as a complicated and protracted process creating a gap in the literature about its effectiveness. In addition, action plans can be dismissed as simple to do lists that are difficult to implement during all the time periods that impact transfer such as before, during and after a training event (Broad & Newstorm, 1992). The present study contributes to the body of knowledge by informing on the effectiveness of technology-based action plans and how to easily implement them in virtual classrooms or live-online training events, thus bridging the gap in the literature. The use and effectiveness of technology-based action plans to improve the compliance with learning objectives of a live-online training event does not exist in the literature.

Arguably, anyone can benefit by taking ownership (Cialdini, 2009; Galindo, 2009; Holton & Baldwin, 2003) of how and what to apply from a training, coaching or mentoring program. Arguably, anyone can benefit from being encouraged to do so and very importantly anyone can benefit from receiving feedback on the actions they take so they can improve the application or use of the knowledge acquired (Center for Creative
Leadership, 2009). As obvious as this sounds, the lack of follow-through on applying what is learned in any given training event, coaching or mentoring program plagues millions of employees here in the U.S. and worldwide. As such, it is estimated that 60 to 90 percent of job-related skills and knowledge imparted in training programs are not being implemented (Allen 2008). Furthermore, in review of the literature, estimates are that only five to ten percent of expenditures on training actually result in transfer of skills and knowledge (Phillips & Broad, 1997). In addition, the costs are also significant to the trainee as he or she is not taking advantage of the training opportunity to enhance his or her performance or contribution to the organizational goals (Drucker, 1996) and may lose potential career advancements as a result. This concept is made clear by Victor Frankl (2006) who writes “man is ultimately self-determining. What he becomes- within the limits of endowment and environment- he has made of himself” (p.160).

Capturing trainee’s actions and the results of these actions via paper-based action plans presents many implementation challenges that are easily overcome by using technology-based action plans. When a trainee completes a written test, the training department can assess if the individual has understood concepts and retained them as per a Level Two evaluation using the Kirkpatrick (1967) model. However, when a trainee completes an action plan the training department can assess if the trainee has understood how to apply the training. This implies that the trainee has decided and committed on specific actions, behaviors, goals and objectives that will drive business outcomes. In essence, the action plan can be interpreted as a manifestation of the intention to act by the trainee (Cialdini, 2009). This type of evaluation appears to fall in a gray area between a
Level Two and Level Three using the Kirkpatrick (1967) model which intends to assess if behavior change has occurred. Managing this process via paper-based instruments becomes difficult since paper-based action plans can be lost, don’t reside in a central repository and don’t have the ability to become an automatic communication tool to provide feedback and encouragement upon the individual’s progress.

This study informs on how action plans can be used to help individuals adopt healthy behaviors. By focusing on healthy behaviors that transcend the workplace and adding the technology-based action planning strategy this study offers a framework that could be leveraged by training departments to: create evidence of the impact of training, create accountability around the training transfer process, and ultimately empower trainees and managers to determine the worth and merit of the training investment the organization is making on them.
Chapter 3

METHODS

Mixed methods study

This study examines the impact that action plans have on trainee compliance with specific learning objectives administered within a learning intervention. Compliance with the learning objectives may indicate learning transfer and the documentation of this compliance may be considered as evidence of the value of the learning intervention. The research question that guided this study was: can action plans support trainee compliance with learning objectives?

In order to examine this question, the study used a mixed-methods research approach to obtain both quantitative and qualitative data from subjects who went through a synchronous online learning intervention devised and delivered by the author, focused on healthy behaviors. The quantitative data was collected from survey questions measuring the level of compliance with the learning objectives. The qualitative data was obtained from semi-structured interviews with the trainees who participated in the study. Semi-structured interviews were organized and guided by a protocol that identified specific questions to be asked (Riggan & Ravitch, 2011). The interview protocol used is in Appendix A.

Rationale for Study Methods

Drawing on the model of training transfer by Baldwin and Ford (1988) the factors that can impact the transfer process are divided into training inputs, training outputs and conditions of transfer. Training inputs refers to trainee characteristics, training design
and work environment. Training outputs pertains to the amount of learning that occurs in the learning intervention and the retention of the material. Conditions of transfer include the generalization of the training material to the job context and the maintenance of the learned material over time.

To isolate the impact of action plans, the study utilized a learning intervention focused on learning objectives composed of healthy behaviors. Healthy behaviors transcend the workplace since opportunities to exercise these behaviors can occur mostly outside the work environment. Additionally, the implications and consequences of adopting healthy behaviors transcend the work environment. For this reason the conditions of transfer—which include environmental factors such as supervisory or peer support as well as constraints and opportunities to perform learned behaviors on the job—were not part of the study (Baldwin & Ford, 1988). In addition, no tests were provided to measure learning or retention, referred to as training outputs by the Baldwin and Ford (1988) model.

In terms of the training inputs or trainee characteristics, training design and work environment, the study considered these as follows. Work environment refers to support and opportunity to use the training. Since the learning intervention was focused on healthy behaviors that can be performed within and without the work environment there was no need to control for these characteristics. In terms of the training design, the study used the same learning intervention both for a treatment group that received the action plan and for a control group that received only the learning intervention. This implies that any training design factors affected all subjects in this study equally.
However trainee characteristics can have an impact on trainee compliance (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Robinson, 1984; Trost, 1982). Some studies suggest that trainee characteristics account for the bulk of variability in training outcomes (van der Klink, Gielen and Nauta 2001). Trainee characteristics include the abilities, personalities, and motivation of the trainees (Baldwin & Ford, 1998).

The literature does not consider ability and personality to have a direct effect on training transfer (Baldwin & Ford 1988; Gordon & Kleinman, 1976; Miles, 1965). However, several studies have investigated the effects of motivational factors on transfer and they have found a direct effect (Baldwin and Ford, 1988; Ryman and Biersner, 1975; Tubiana & Ben-Shakhar, 1982). Motivation refers to the processes that account for an individual’s intensity, direction, and persistence of effort toward attaining a goal (Robbins & Judge, 2009). In addition to effort, motivation also involves self-efficacy (Hong & O’Neil, 2001). The concept of self-efficacy is a cognitive force concerned with what the individual can do rather than with what skills he or she possesses (Bandura, 1986). Self-efficacy can be defined as a judgment an individual makes about his or her abilities to perform a given task (Bandura, 1981, in Grossman & Salas, 2001).

The higher the motivation and the self-efficacy of the individual, the more confidence they will have in their ability to learn and to apply what they have learned (Grossman & Salas, 2001); therefore, both can have an effect on training transfer. Self-efficacy and motivation refer respectively to the questions: “Can I do it?” and “Is it worth it for me?” (Patterson, Grenny, Maxfield, McMillan, & Switzler 2008).
Furthermore, social scientists refer to them as feasibility and desirability and when both are high, individuals are more likely to learn and apply (Patterson et al., 2008).

As part of the screening process, a survey instrument was employed to measure the level of self-efficacy and motivation trainees had towards the subject of adopting healthy behaviors. The instrument had eight items with four measuring self-efficacy and four measuring motivation. The items were developed based on the study by Tziner, Fisher, Senior and Weisberg (2007) to understand the effects of trainee characteristics on training effectiveness. In addition, the survey contained three demographic questions: gender, job role and age range. The trainees or subjects were randomly selected to either the control group or the treatment group after pairing individuals based on their scores on self-efficacy and motivation. In this manner, both groups ended up composed of individuals that had the same self-reported level of self-efficacy and motivation about the topic of health behaviors. When the statistical analysis was done, the scores on this instrument were considered.

**Study Structure**

The following section will provide an overview of the steps followed in this study including the process by which the participants who registered became subjects by responding to all instruments and participating in the learning intervention. The graph below provides an overview of the study’s structure and the actual number of participants that went through the different stages, starting with 99 and ending with 40 subjects. Of these 40 subjects, 19 were in the treatment group and 21 in the control group.
Figure 1. Structure of the Study

Registered trainees (n=89)

Assessed for trainee characteristics: 1) Motivation, 2) Self-efficacy, 3) Basic demographic information (n=81)

Enrolled and randomized trainees (n=46)

Analyzing trainee characteristics to ensure uniformity of both groups

Treatment Group received survey before learning intervention (n=19)

Treatment Group received learning intervention (n=19)

Treatment Group received action plan as part of learning intervention (n=13)

Treatment Group received survey 30 days post-learning intervention (n=9)

Treatment Group received survey 45 days post-learning intervention (n=19)

Control Group received survey before learning intervention (n=21)

Control Group received learning intervention (n=21)

Control Group received no action plan (n=21)

Control Group received survey 30 days post-learning intervention (n=21)

Control Group received survey 45 days post-learning intervention (n=21)

Analyzing pre-intervention, 30 and 45 day survey data (Quantitative Data)

Interviews for treatment and control groups (Quantitative Data) (n=12)

Integrated qualitative and quantitative data
To recruit participants for the study, emails were sent out to the author’s personal contacts, social media connections, and business clients and partners. Approximately 1100 emails were sent. In total, 99 individuals registered to participate in the study. All registrants were emailed the assessment instrument on motivation and self-efficacy. This assessment contained four items on self-efficacy and four items on motivation as detailed in Appendix B. 81 individuals completed the assessment and were enrolled in the study. These 81 individuals were paired with others who had similar motivation and self-efficacy scores and were then randomly assigned to either the treatment or the control group. Of those 81 individuals, 66 confirmed participation in the learning intervention. Of those who confirmed participation, 58 completed the compliance with learning objectives instrument prior to the learning intervention, referred to as baseline to indicate the time period. This instrument can be found on Appendix C.

Five different learning interventions, delivered synchronously over the Internet using the Adobe Connect Pro platform, were conducted at different times to meet the schedules of the participants. 46 participants attended the learning interventions. Of those 46, 19 were selected to be part of the treatment group and 21 were selected to be part of the control group (some had to be dismissed from the study since they had not completed all required instruments). Therefore the total number of participants in this study was 40, referred to as subjects. The author analyzed the final subjects’ motivation and self-efficacy scores again to pair subjects equally in the control or treatment group.

The learning intervention was a 90-minute session for the treatment group and a 75-minute session for the control group. The 15-minute difference was based on the
time needed to introduce, explain, and have the treatment group complete the action plan online. Example of the online pre-formatted action plan can be found in Appendix D. Examples of the completed action plans can be found in Appendix E.

The learning intervention had three sections and within each section there were clearly defined learning objectives. These objectives were stated as healthy behaviors that contribute to the well-being of the individual. The content slides utilized by the author during the learning intervention can be found in Appendix F. The table below lists the learning objectives:

<table>
<thead>
<tr>
<th>Table 1 Learning objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Exercise for at least 10 minutes</td>
</tr>
<tr>
<td>2) Reduce the amount of food intake by a fifth or 20%</td>
</tr>
<tr>
<td>3) Increase the amount of water intake to 8-10 glasses per day (approximately 1 glass, 8 to 10 ounces, for every two hours of time awake)</td>
</tr>
<tr>
<td>4) Understand the importance of having a soft bowel movement</td>
</tr>
</tbody>
</table>

The action plans were not paper-based and were created using a Web-based tool, referred to as a technology-based action plan. The structure of the action plans followed the MCII methodology or mental contrasting implementation intentions methodology (Oettingen, 1999). Specifically, the action plans were pre-formatted allowing subjects to create their own goals, consequences for achieving them and consequences for not achieving them (mental contrasting) and implementation intentions of those goals. Implementation intentions are stated by individuals in the form of “if/then plans.” An example of a pre-formatted action plan can be found in Appendix D.

Both the treatment and the control groups took the instrument measuring compliance with learning objectives at three different time periods: prior to the learning
intervention or baseline, 30, and 45 days after the learning intervention. These two time periods are respectively referred to as 30-Day Post and 45-Day Post in this study. This instrument measured the individual’s level of compliance with the learning objectives imparted in the learning intervention. The potential value for each response ranged from one to seven (1-7), indicating the number of times during the week the individual performed the healthy behavior. This format applied to learning objective one through three above. For learning objective number four, improved bowel movement, at baseline had a scale of one to four and a binary response of either a yes or a no to an observable improvement in both the post 30-Day Post and 45-Day Post surveys. The questions used in this instrument can be found in Appendix C.

In addition to the action plan, the treatment group received three email reminders 10 days apart each. Each reminder was made up of a copied and pasted section of the subjects’ own action plan. To create each reminder the author copied and pasted into an email what each subject wrote in each of the first three learning objectives in their action plan. An example of these reminder emails can be found in Appendix G.

Sample

40 subjects completed all the survey instruments and attended the learning intervention. The demographic information of all the participants who registered for the learning intervention can be found in Appendix H. All 40 subjects were considered in the quantitative analysis.

For the qualitative part of this study, the author created four sub-groups from all subjects, resulting from the identification of the most and least successful subjects from
both the treatment and control groups. Successful subjects are defined as those who complied the most with the learning objectives. This means that these subjects showed the biggest gains from baseline to 30–Days Post and 45-Days Post time periods as recorded in their responses to the survey instruments. A total of twelve subjects were interviewed, respectively identified in each sub-group as follows:

Table 2
Subjects in each sub-group

**Most successful treatment sub-group:**
1S-Treatment
2S-Treatment
3S- Treatment
4S-Treatment

**Least successful treatment sub-group:**
1L- Treatment
2L- Treatment
3L- Treatment

**Most successful control sub-group:**
1S-Control
2S-Control
3S-Control

**Least successful control sub-group:**
1L- Control
2L-Control

**Instruments**

The study utilized two instruments to capture the data used in the qualitative analysis. The first instrument was the motivation and self-efficacy assessment containing eight items developed by the author based on the items developed by Tziner, Fisher, Senior and Weisberg (2007) to understand trainee characteristics. This instrument can be
found in Appendix B. The second instrument was developed by the author to measure
the level of the subject’s compliance with the learning objectives and was administered at
three time periods: prior to the learning intervention or baseline, 30 days after the
learning intervention or 30-Day Post and 45 days after the learning intervention or 45-
Day Post. This instrument can be found in Appendix C.

To capture the data for the qualitative part of this study the author created an
interview protocol with five questions. The questions were designed to capture the
influence of the action plan in the treatment group. For the control group who did not get
an action plan, the questions were designed to understand what led to the compliance or
not of the learning objectives. The interviews were conducted in a conversational manner
and allowed for freedom to digress (Berg, 2009). The interview protocol can be found in
Appendix A.

**Data**

The responses to the motivation and self-efficacy instrument generated a score for
each subject. The score for each potential response ranged from one to five. There were
eight items equally weighted; therefore there was a potential range of scores from eight to
40. The scores obtained by the subjects and this instrument can be found in Appendix I.

The responses to the instrument measuring compliance with the three learning
objectives—namely, to drink eight to ten ounces of water for every 2 hours awake, to eat
20% less and exercise at least ten minutes a day—were measured on a scale of one to
seven indicating how many times in the past week subjects complied. The scale for
improved bowel movement at baseline had a scale of one to four. The scale for improved
bowl movement was binary with only yes or no as potential responses in both the 30-Day Post and 45-Day Post surveys.

The responses of the twelve subjects interviewed were recorded and transcribed. Both the recordings and the transcriptions were used by the author to conduct the qualitative analysis. The transcriptions provided verbatim records of what the subjects had said and the recordings provided the author with the ability to return to specific parts of the interviews during the analysis process. The twelve interview subjects were selected based on purposeful sampling to identify the most and least successful from both the treatment and the control groups (Brinkerhoff & Dressler, 2003).

The qualitative data were specifically obtained from four interviews with the most successful subjects in the treatment sub-group, three interviews with the least successful subjects in the treatment sub-group, three interviews with the most successful subjects in the control sub-group and two interviews with the least successful subjects in the control sub-group.
Chapter 4

RESEARCH DESIGN AND RESULTS

Quantitative and qualitative research design and results

This section will present the results in the following order. First, the quantitative research design will be discussed. This will include listing the statistical analyses performed and then presenting the results of these analyses on the quantitative data obtained. Second, the qualitative research design and the use of the interview protocol will be discussed. The analysis methods used will be reviewed and the results of this analysis will then be presented.

Quantitative Research Design

The benefit of this quantitative analysis is that it will measure the results from all participants (a sample of 40 subjects) and will allow for a comparison and statistical aggregation of the data (Marshall & Rossman, 2006) to help answer the research question: can action plans support trainee compliance with specific learning objectives? The creation of an action plan after the learning intervention and the subsequent reminders based on what the subjects wrote in their action plans constitute the independent variable in this study. To study the effect of this variable, two groups were formed, the treatment group who received the action plans and reminders, and the control group who did not (Field, 2009).

A sample of 40 subjects with 19 in the treatment group and 21 in the control group were analyzed with three different types of models to assess the difference in compliance with learning objectives. The first analysis was conducted between subjects,
the second taking into account pairs of subjects with similar scores in the Motivation and Self-Efficacy instrument and the third using the Motivation and Self-Efficacy instrument score as a covariate.

The number of subjects when taking into account pairs decreased to 36. This resulted from the fact that some participants who had confirmed attendance were not able to follow through and participate in all the surveys of the study. Some of these absent participants had scores on the Motivation and Self-Efficacy instrument that would have allowed for additional pairs. The pattern of results among the three types of analyses were virtually identical, therefore the results of the analyses between subjects composed of 19 subjects in the treatment group and 21 in the control group for a total of 40 subjects (n=40) will be presented. Results for the other two analyses can be found in Appendix J.

A z-score composite was created for all the outcomes or learning objectives as stated in the survey instrument to measure compliance with the learning objectives. Z-scores allow variables on different scales to be compared in the same scale (May, 2011). A brief discussion on z-scores and how they are obtained can be found in Appendix K. The compliance with the three learning objectives namely, to drink eight to ten ounces of water for every 2 hours awake, eat 20% less and exercise at least ten minutes a day were measured on a scale of one to seven indicating how many times subjects complied with them in the past week. For learning objective number four, improved bowel movement, at baseline had a scale of one to four and a binary response of either a yes or a no to an observable improvement in both the post 30-Day Post and 45- Day Post surveys. The z-
score composite was created by z-scoring the individual learning objective variables and taking their average.

Mixed-design analyses of variance (ANOVAs) were used to understand the data and make inferences or deductions in order to explain the impact of action plans in ensuring compliance with learning objectives (May 2011). A 2x (condition) by 3x (time) mixed-design ANOVA was conducted with the z-score composite as the outcome (or compliance with the learning objectives). The ANOVA was a mixed-design since it included both within- and between-subject factors (Field, 2009). The 2x (condition) refers to either the treatment of the control group and the 3x (time) refers to the three time periods at which the survey instrument was administered namely, before the intervention (baseline), 30 days (30-Day Post) and 45 days (45-Day Post) after the learning intervention. These analyses were repeated with the different outcomes (learning objectives).

Results from the quantitative data

Group differences in change over time

Z-score composite

In a 2x (Condition) by 3x (Time) Mixed-Design ANOVA with the composite score as the outcome, the main effects of Condition and Time were not significant ($p_s > .05$). The Condition by Time Interaction was marginally significant ($F(2,76) = 2.91, p = .06$) suggesting that change in the outcome over time might differ by group. The treatment group did, however, improve significantly more from baseline compared to the
control group at both 30-day follow-up ($t(38) = -3.38, p = .002$) and 45-day follow-up ($t(38) = -2.27, p = .029$).

![Graph showing Z-score Composite as a function of condition and time.]

**Figure 2.** Z-score Composite as a function of condition and time.

**Table 3**

*Means and Standard Deviations for Changes in Outcomes by Condition*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Δ30-Day Post Treatment</th>
<th>Δ30-Day Post Control</th>
<th>Δ45-Day Post Treatment</th>
<th>Δ45-Day Post Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z-Score Composite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>0.36</td>
<td>-0.34</td>
<td>0.21</td>
<td>-0.22</td>
</tr>
<tr>
<td>$SD$</td>
<td>0.70</td>
<td>0.62</td>
<td>0.68</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>1.05</td>
<td>-0.05</td>
<td>0.79</td>
<td>0.57</td>
</tr>
<tr>
<td>$SD$</td>
<td>1.22</td>
<td>1.43</td>
<td>1.32</td>
<td>1.57</td>
</tr>
<tr>
<td><strong>Eat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>1.58</td>
<td>0.43</td>
<td>2.37</td>
<td>1.57</td>
</tr>
<tr>
<td>$SD$</td>
<td>1.35</td>
<td>1.43</td>
<td>2.14</td>
<td>2.11</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>1.63</td>
<td>0.33</td>
<td>1.79</td>
<td>1.05</td>
</tr>
<tr>
<td>$SD$</td>
<td>1.34</td>
<td>2.44</td>
<td>1.58</td>
<td>2.09</td>
</tr>
<tr>
<td><strong>Z-Score BM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.06</td>
<td>-0.05</td>
</tr>
<tr>
<td>$SD$</td>
<td>1.45</td>
<td>1.28</td>
<td>1.77</td>
<td>1.46</td>
</tr>
</tbody>
</table>
Note. $N = 40$.

Table 4  
*Mixed-design ANOVA Table for Z-Score Composite, Exercise, Eating, Water, and BM as the Outcomes*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z-Score Composite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between-Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>1.07</td>
<td>1</td>
<td>1.07</td>
<td>1.47</td>
<td>0.23</td>
</tr>
<tr>
<td>Error</td>
<td>27.84</td>
<td>38</td>
<td>0.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within-Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>0.05</td>
<td>2</td>
<td>0.03</td>
<td>0.10</td>
<td>0.91</td>
</tr>
<tr>
<td>Condition*Time</td>
<td>1.55</td>
<td>2</td>
<td>0.77</td>
<td>2.91</td>
<td>0.06</td>
</tr>
<tr>
<td>Error</td>
<td>20.15</td>
<td>76</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50.66</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Exercise**             |      |    |      |      |      |
| Between-Subjects          |      |    |      |      |      |
| Condition                | 7.12 | 1  | 7.12 | 1.37 | 0.25 |
| Error                    | 197.41| 38 | 5.20 |      |      |
| Within-Subjects           |      |    |      |      |      |
| Time                     | 9.94 | 2  | 4.97 | 4.67 | 0.012|
| Condition*Time           | 6.77 | 2  | 3.39 | 3.18 | 0.047|
| Error                    | 80.95| 76 | 1.07 |      |      |
| Total                    | 302.19| 119|      |      |      |

| **Eat**                  |      |    |      |      |      |
| Between-Subjects          |      |    |      |      |      |
| Condition                | 1.92 | 1  | 1.92 | 0.41 | 0.53 |
| Error                    | 179.67| 38 | 4.73 |      |      |
| Within-Subjects           |      |    |      |      |      |
| Time                     | 77.43| 2  | 38.71| 22.57| <.001|
| Condition*Time           | 6.93 | 2  | 3.46 | 2.02 | 0.14 |
| Error                    | 130.36| 76 | 1.72 |      |      |
| Total                    | 396.31| 119|      |      |      |

| **Water**                |      |    |      |      |      |
| Between-Subjects          |      |    |      |      |      |
| Condition                | 0.21 | 1  | 0.21 | 0.02 | 0.88 |
| Error                    | 337.79| 38 | 8.89 |      |      |
| Within-Subjects           |      |    |      |      |      |
Exercise

In a 2x (Condition) by 3x (Time) Mixed-Design ANOVA with Exercise as the outcome, the main effect of Condition was not significant \( (p = .25) \), but the main effect of Time was significant \( (F(2,76) = 4.67, p = .012) \), indicating that compliance increased over time. The Condition by Time Interaction was also significant \( (F(2,76) = 3.18, p = .047) \), suggesting that change in Exercise over time differed by group. The treatment group did, however, improve significantly more from baseline compared to the control group at 30-day follow-up \( (t(38) = -2.60, p = .013) \) but not 45-day follow-up \( (p = .64) \).
Figure 3. Exercise as a function of condition and time.

*Eating*

In a 2x (Condition) by 3x (Time) Mixed-Design ANOVA with Eating as the outcome, the main effect of Condition was not significant ($p = .53$), but the main effect of Time was significant ($F(2,76) = 22.57, p < .001$), indicating that compliance increased over time. The Condition by Time Interaction was not significant ($p = .14$), suggesting that change in Eating over time did not differ by group. The treatment group did, however, improve significantly more from baseline compared to the control group at 30-day follow-up ($t(38)=-2.61, p = .013$) but not 45-day follow-up ($p = .24$).
Figure 4. Eating as a function of condition and time.

**Water**

In a 2x (Condition) by 3x (Time) Mixed-Design ANOVA with Water as the outcome, the main effect of Condition was not significant ($p = .88$), but the main effect of Time was significant ($F(2,76) = 13.19, p < .001$) indicating that compliance increased over time. The Condition by Time Interaction was marginally significant ($p = .077$), suggesting that change in Water over time might differ by group. The treatment group did, however, improve significantly more from baseline compared to the control group at 30-day follow-up ($t(38)=-2.06, p = .047$) but not 45-day follow-up ($p = .22$).
In a 2x (Condition) by 3x (Time) Mixed-Design ANOVA with Z-Scored BM as the outcome, none of the effects were significant ($p$s > .05). Because BM was a binary categorical variable (yes or no to improvement) at follow-up, binary logistic regression analyses were also conducted. However, treatment was still not a significant predictor in binary logistic regressions with 30-day and 45-day follow-up BM as the outcomes controlling for baseline BM ($p$s > .05).

Figure 5. Water as a function of condition and time.
**Figure 6.** BM z-score as a function of condition and time.

**Group by motivation and self-efficacy score regression analyses**

Table 5  
*Summary of Regression Analyses Predicting Changes in the Composite Z-Score at 30- and 45-Day Follow-Up*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Δ30 Day Follow-up</th>
<th>Δ45 Day Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.34</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>0.70</td>
<td>0.48</td>
</tr>
<tr>
<td>Motivation</td>
<td>-0.03</td>
<td>-0.13</td>
</tr>
<tr>
<td>Condition*Motivation</td>
<td>0.06</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*Note.* Motivation is mean centered.
Figure 7. Changes in composite z-score at 30-day follow-up (DV) as a function of condition (lines) and motivation (IV).
Figure 8. Changes in composite z-score at 45-day follow-up (DV) as a function of condition (lines) and motivation (IV).

Regression analyses were conducted on 30-Day and 45-Day improvement on the z-score composites as the outcomes. Condition and Motivation (motivation and self-efficacy score) as well as their interaction were included as predictors. In the 30-Day improvement analysis, Condition was significant ($t = 3.32$, $p = .002$), but Motivation and the Condition by Motivation interaction were not ($ps > .05$). The 45-Day analyses produced similar results: Condition was significant ($t = 2.26$, $p = .03$), but Motivation and the Condition by Motivation interaction were not ($ps > .05$). While the interactions were not statistically significant, the pattern of results suggested that the treatment was more effective for subjects who scored higher in this instrument, as can be seen in Appendix L.

Qualitative research design

To further understand the impact that action plans had or did not have on trainee compliance with learning objectives, twelve semi-structured interviews were conducted by the author to gather qualitative data from participants in the study. Qualitative research seeks to gain a holistic understanding of the general descriptions and situational interpretations of the subjects (Stake, 2010). Interviews were selected for this study because they can inform our interpretation of the quantitative data results by helping us understand why there was or not compliance with the learning objectives. These interviews collect a greater degree of detail from the subjects (Marshall and Rossman, 2006) than the survey instruments used to collect the quantitative data. The protocol for
the semi-structured interviews conducted is in Appendix A. The intent was that through a qualitative approach, the author would gather additional information that may help interpret the survey results and illuminate the process (Riggan & Ratvich, 2011).

This semi-structured interview approach allowed for a personalized and detailed inquiry of the experience of the participants. The questions within the protocol provided guidance for the interviews and were adapted by the author to allow for a conversational style or freedom to digress (Berg, 2009). This semi-structured approach allowed for the subjects to respond according to their own interpretation of the questions (Stake, 2010). The author used these responses to formulate follow-up questions to generate responses that would provide context, details and intricacies of the subjects’ experiences. The assigned meaning each subject gave to the experience and the actual changes they made in their lives were captured in these interviews. The effort to understand the meaning of the interventions, situations and experiences of subjects and how they make sense of these was the ultimate goal of this qualitative research (Maxwell, 2005).

The subjects for the interviews were selected using the Brinkerhoff Success Case Method (Brinkerhoff & Dressler, 2003). This method uses purposeful sampling to select the subjects for the interviews. This sampling is conducted by selecting the subjects who were the most and least successful. The most successful and least successful subjects of each group were determined by their individual composite z-score on the compliance with all three learning objectives including improved bowel movement outcome.

The author created four sub-groups resulting from the identification of the most and least successful subjects from both the treatment and control groups. A total of
twelve interviews were conducted. The author conducted four interviews from the most successful subjects in the treatment group, three interviews from the least successful subjects in the treatment group, three interviews from the most successful subjects in the control group and two interviews from the least successful subjects in the control group, respectively identified in each sub-group in Table 1 below.

Table 6

Subjects in each sub-group

Most successful treatment sub-group:
1S-Treatment
2S-Treatment
3S-Treatment
4S-Treatment

Least successful treatment sub-group:
1L-Treatment
2L-Treatment
3L-Treatment

Most successful control sub-group:
1S-Control
2S-Control
3S-Control

Least successful control sub-group:
1L-Control
2L-Control

Interview protocol

The interview protocol contained questions designed to uncover how the subjects assigned meaning to the experience and if they did or did not comply with the learning objectives. Questions were posed to identify what subjects found most desirable and feasible. The protocol was composed of the following questions: Please describe the
learning intervention and what impacted you? Please describe the action plan and how you completed it? *(Treatment group only)* How did you keep track of whether or not you were doing things that you set out to do? *(Control group only)* Which of the learning objectives did you feel more compelled to apply? What did you find useful about the experience?

Using the semi-structured approach, interview questions were posed in the second person with the intention of capturing what subjects found most memorable and of value, as defined by worth and merit (Stufflebeam and Shinkfield, 2007). As an example subjects received the following first question: If somebody were to come up to you today and ask you about the learning intervention what would be the first thing that would come to mind? In addition, a question would be asked in different ways to verify consistency in the response. When a question can be asked in various ways and the same response is obtained it is said to have internal validity (Field, 2007). As an example the above question was also asked to the same subject as: So if today you had to pick the most impactful concept you learned from the whole experience, what would you think of first?

Each interview was conducted over the phone and recorded using a digital recorder. Recording allows for a careful review of what was actually said rather than having to rely on the researchers’ notes. This helps to reduce investigator bias in order to ensure objectivity (Patton, 2002) by exposing, verbatim, the responses of the subjects. The author personally conducted all interviews. A third party service completed the transcriptions.
Analysis methods used on the qualitative data

The data obtained through the interviews was analyzed. This section on analysis methods will describe the techniques and strategies used and decisions made in the process.

In order to identify patterns, themes and biases it was necessary to conduct a systematic and detailed inspection of the transcribed interviews (Berg, 2009). This process began with the creation of deductive codes by the author (Riggan & Ratvich, 2011). The coding structure was aligned with the conceptual framework of the research question to identify the impact the action plan had in the compliance of the learning objectives. This held true for the interviews with the treatment group who received the action plan. Conversely, the interviews conducted with the subjects of the control group did not allow for this exploration since they did not receive the action plan. The interviews with the control did serve as a way to explore the desirability, feasibility and actual behavior change perceived and experienced by these subjects. The information gathered from these interviews was used to compare and contrast with the findings of the treatment group. In addition, the instances where codes were notated on the transcriptions of the control group’s interviews were used in the overall analysis performed.

The coding structure was kept simple to identify the specific instances where subjects mentioned a learning objective, its feasibility and/or desirability. The following table details the codes created and their definition.

Table 7
**Deductive codes**

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>V</td>
<td>found value (worth and merit) in the experience</td>
</tr>
<tr>
<td>Learning Objective</td>
<td>LO</td>
<td>instance identifying a learning objective</td>
</tr>
<tr>
<td>Memorable</td>
<td>M</td>
<td>found the experience memorable</td>
</tr>
<tr>
<td>Usefulness</td>
<td>U</td>
<td>found the learning useful</td>
</tr>
<tr>
<td>Feasibility</td>
<td>F</td>
<td>overall feasibility of the learning objectives</td>
</tr>
<tr>
<td>Desirability</td>
<td>D</td>
<td>overall desirability of the learning objectives</td>
</tr>
<tr>
<td>Desirability</td>
<td>Dlo</td>
<td>desirability of a specific learning objective</td>
</tr>
<tr>
<td>Process</td>
<td>Ep</td>
<td>found easy about the process</td>
</tr>
<tr>
<td>Process</td>
<td>Dp</td>
<td>found difficult about the process</td>
</tr>
<tr>
<td>Behavior Change</td>
<td>BC</td>
<td>instance where behavior has changed</td>
</tr>
</tbody>
</table>

Throughout the interviews the author took notes and wrote memos based on the subjects’ comments and emphasis used when delivering them. The notes and the memos were very useful during the analysis and helped the author to reflect, analyze, and self-critique (Maxwell, 2005) what was being uncovered. The notes and memos were reviewed repeatedly and immediately after the interview transcripts were coded manually. The notes and memos were used to construct overall observations and identify patterns.

All the codes were reviewed and refined by clarifying definitions. There were no new codes created from the data, or inductive codes (Riggan & Ratvich, 2011). During this process the author continued to write memos regarding observations and identified quotations to review at a later time when writing about findings. These quotations were organized in a data display found in Appendix M. Memos were useful during the analysis since they provided a quick synopsis of the interview. The quotations allowed the author to select specific information that enlightened the analysis process and corroborated the findings.
As a next step the author created a data display to compare and contrast the findings based on the manual coding of all the transcribed interviews. This data display can be found in Appendix N. Themes were further examined for frequency and the display helped organize information in a way that allowed for conclusions and better understanding of what was unfolding (Huberman & Miles, 1984). When writing findings and drawing conclusions, which was an iterative process, the data displays proved to be particularly useful.

**Results**

The following table lists the objectives present in this analysis as the author reviewed all the notes, memos, transcriptions, and data displays created to arrive at the findings.

Table 8

*Objectives when analyzing the qualitative data*

- Understand why there was or not compliance with the learning objectives
- Help interpret the survey results and illuminate the process that led or not to the application of the healthy behaviors
- Understand the meaning of the interventions, situations and experiences of subjects and how they make sense of these
- Identify the assigned meaning each subject gave to the experience and the actual behavior changes they made in compliance with the learning objectives.

The interviews were rich with details and examples of how the subjects had improved and in some instances had failed in complying with the learning objectives. Examples of what subjects said will be included to illustrate the various threads, themes
and patterns identified. The findings will be presented first for the treatment group, second for the control group and third a comparison of the findings between these two.

**Treatment group findings**

All four subjects from the most successful sub-group in the treatment group attributed their behavior change, or compliance with the learning objectives, to the action plan. All of these subjects found the action plan experience useful and all of them mentioned the action plan in their interviews. Three subjects in this group found the action plan memorable. Two subjects found the action plan valuable. Two subjects found the action plan helped increase their ability to implement the learning objectives and two subjects found that the action plan made the process of adopting new behaviors easier. Examples of how subjects attributed their behavior change follow.

Having an action plan, and I’m not, again, new to creating action plans, but having this particular action plan I think is, you know, very beneficial in that you have the answer to the ever present question of: “What do I do here?” And because on any given day there could be a variety of challenges and new experiences that require one to figure out how to adhere to the action plan, that action plan in front of you tells you what you should do at those certain points. And try to make it work within those confines. (2S – Treatment)

I thought the action plan was good, a lot of it, when I wrote it out—some of it I knew, cause you had to write it [again] for each area and some were—I was writing things that I already do, but for a couple of the other ones, like the water it actually, really then forced me to pick into the next level in terms of problem solving for myself. So, for example, when I go to the city, which I do quite a bit, the offices don’t always have water, and you’re stuck in an office and you’re working all day, and you don’t really have access. It was thinking through, “Look, I can carry a bottle with me.” (3S – Treatment)
Subjects were impacted differently but a common thread was observed in the fact that all seemed to have benefited from the self-reflection exercise that occurs when creating the action plan. The following example illustrates this point.

The action plan gave me an ability to logically understand what are the impediments that I personally have in complying. It actually, I guess, woke me up towards certain simple steps that I should take in order to improve my health. (4S-Treatment)

Examples of how the subjects found the action plan useful, valuable and memorable follow. Within the following statements, the value of the self-reflection exercise when building the action plan is again evident.

The action plan was extremely beneficial, in the sense of like now I’m thinking about what I would eat, when I would eat it and how I eat. Since the time that we began, you know, I, I’ve almost entirely eliminated any meats and primarily processed foods. (2S – Treatment)

We make certain resolutions but it helps you think. What are the impediments? What are the difficulties in achieving those results, or achieving those things? It was the action plan that actually made you think: What are the issues here? What am I facing? Why am I or am I not going to be able to achieve it? (4S – Treatment)

Examples highlighting the value of the self-reflection exercise when building the action plan is again evident. As the examples demonstrates subjects considered the action planning process to be revealing.

Well, you know, I think that the action plan was good to give you a mindset initially. And helped reinforce the three principles by saying, you know, what do I need to do to stick to it. But it wasn’t an action plan that I felt compelled to consult after I wrote it, because I held pretty well in my mind what the challenges would be. I just had to deal with them. But in terms of making it something palpable at the outset, and sensitizing you to the fact that it does take some mental effort, organization and, you, you have to do something to make it happen. It’s not just a matter of saying: “Oh, I got the three principles. I didn’t get them today, but
I’ll try tomorrow.” Or what not. I think it’s, uh—I’m reading a book where they quote Yoda and they say: “It is do or not do, not try!” (1S – Treatment)

Subjects stated the usefulness of the action plan in bringing together the different tactics to comply with the learning objectives. The following example illustrates how the subject connects the action plan with an increased ability to comply with the learning objectives.

So, I ended up maintaining with it (action plan) by limiting the diet in how I would be eating and drinking and making sure that I wake up in the morning and having water first, and not eating before mid-day as best as I can. And trying to make sure I don’t go to bed on a full-stomach, you know, all those different types of things really integrated into a part of my life that may not have otherwise been integrated into. (2S – Treatment)

All three subjects interviewed from the least successful treatment group reported behavior changes. Examples of how subjects described these behavior changes follow.

Well, for instance, I was always a very everything or nothing person, up until the teleconference that I participated in and it was either I could go out and exercise for an hour a day, or at least forty-five minutes, or it wasn’t worth it. It wasn’t worth doing anything at all. So, the ten minutes a day, at least, you know, it changed my perspective and what happens is that I say, “Okay, at least ten minutes.” And then, you know, the majority of the time I end up doing a little more. But if I only get the ten minutes, then I’m fine and it’s an okay day. (2L – Treatment)

I did increase the water, I didn’t drink, like, eight glasses of water, but I increased the water. The thing is I drink a lot of tea. And I know that tea does not replace the water. (3L – Treatment)

Only one of the three subjects attributed the behavior change to the action plan. However, one of the subjects described how the plan was memorable even if it did not result in a behavior change. Examples of both follow.

I thought the, the, uh, plan and making yourself a plan and what the obstacles were, I think that was really effective cause it came to mind quickly for me. In my
daily schedules where I was falling short. Or what was keeping me from keeping my water level up where I want it and that’s still a challenge for me today, as I’m sitting here I’ve got a full, oh it’s 25 ounce cup of water with me. (1L – Treatment)

When I’m eating. I have, uh, learning the plan in my mind. It’s not that I’m eating less, but it’s in my mind. (3L – Treatment)

Interestingly subject 1L-Treatment had the lowest compliance with the learning objectives from all subjects in the treatment group. Interestingly, this subject demonstrated a very good recollection of the action planning exercise as noted below.

The questions that you posed, um, online, kind of, prompted me to think, “Okay, well what do I want to achieve from this?” and then if I don’t, “How am I gonna get there?” and then, “What obstacles are gonna be in my way?” and “How am I gonna get over those obstacles?” That’s a good thought pattern. I mean, that’s just a good, um, um, thought pattern to a lot of different things in life actually, but, um, what was the real goal? What is my real goal? Is it just—is it how I feel? Is it how I look? Is it—how I think? It really was a whole list of—view of what I wanted. You know, obviously we wanna look good, and we want to feel good, but we want our health and it comes right back to it—you only got the one body. (1L – Treatment)

The other two subjects in the least successful treatment group mentioned the action plan as valuable, useful and memorable. The common thread found among these subjects was that they recognized a need for personal commitment and that they were developing an increased awareness of what they needed to do.

The action plan helped put all the concepts that you talked about throughout the conference in a, you know, an organized chart, sort of way, which is definitely easier for me to relate to than just vague concepts that I’m trying to hold in my mind. (2L – Treatment)

It was life-changing, new perspective, new outlook. Actually, a new way to see concepts that I thought were one way, and now I totally change my way of seeing them, and it’s helped me immensely. (2L – Treatment)

The need for personal commitment is evident from the following two statements. The first statement indicates no behavior change but increased awareness and the second
indicates the desire to make a change and the need to take personal responsibility for making it happen.

No, I, I—no it was not the first time. I created action plans in my mind all the time. I think that I was not committed. (3L – Treatment)
I had an Aunt just recently pass away, um, 77 but still, a very, a very sad way diabetes and different things like that—complications. So, you know, just similar to your experience you see that and when you get into the action plan sequence you can come up with just things in your life that’s going on—quickly—that you can say, you know, “I need to change this.” Or “I know these obstacles stand in my way, and I need to get rid of them.” (1L – Treatment)

**Control group findings**

The control group did not get the action plan. However, all five subjects interviewed from both sub-groups, three from the most and two from least successful, described how their behavior had changed. The most common learning objective they complied with was increasing their water intake corroborating the quantitative findings. The subjects in the most successful control sub-group clearly identified personal responsibility in applying or not the learning objectives. The subjects shared what they found memorable, useful and valuable from the learning intervention.

All subjects in the control stated how their behavior changed. The common thread indentified indicated that all subjects had increased their awareness in the healthy behaviors and some of the concepts discussed in the learning intervention. Examples of statements indicating behavior change follow.

The first thing I do in the morning is I have a glass of water. And I couldn’t do, even if you pay me, a year ago I couldn’t do that. (1S – Control)
I am drinking more fluids in order to, first, stay more hydrated and then secondly to feel more full during my meals. (3S – Control)
So, the water, the intake of water and the six bottles a day of water I’m drinking now has made a big difference. (2S – Control)
The following statement identifies how the subject’s awareness has increased.

The learning event impacted how the subject thinks about drinking water and the behavior change or drinking more water has resulted in a tangible benefit.

Um, well, the first thing that I really took away from it was that I really needed to concentrate in the amount of water that I was drinking. I really realized I wasn’t drinking enough water. And that has made a big difference in the way I feel. And that was one of the, I think, one of the things that I remember the most. (3S – Control)
The importance of personal responsibility was manifested by all the subjects.

In some instances personal responsibility is provided as the reason for compliance or not with what they learned. Examples of these follow.

The information that was presented was excellent information. The way it was presented was easy to understand, but, of course, the participant needs to have the willingness—if you don’t have the willingness, the information is good, but it doesn’t go anywhere. (2S- Control)
But you have to act, you have to apply it to see the results. Because, just by listening you’re not going to, you know, I’m not sure if it’s going to be good or not. (1L-Control)

The increased awareness of the following subject is evident by acknowledging control over whether to comply or not with the learning objectives. However, the success of actually complying relies on the individual making the decision to comply, or change as indicated in the following statement.

I just think it’s so interesting how these are items that everybody encounters in their everyday life. These are things that we have control over and that we, you know, can change about ourselves. Given that we want to change them. (2L-Control)
From both the least and most successful sub-groups in the control group, the following statements where captured indicating what the subjects found memorable, useful and valuable. The learning intervention’s impact is manifested in these statements.

Um, well, the first thing that I really took away from it was that I really needed to concentrate in the amount of water that I was drinking. I really realized I wasn’t drinking enough water. And that has made a big difference in the way I feel. And that was one of the, I think, one of the things that I remember the most. (3S – Control)

Oh, first thing that would come to mind would be water; drinking a lot of water. And improving, um, the amount of exercise, you know, that we need to do on a daily basis and the importance of being active. Given its—and its simplicity, given that it’s only ten minutes, and, uh, basically, um, improving your life and uh, living a better life and a healthier life. (1S – Control)

The following statement indicates how the learning objective of consuming water was useful and memorable for this subject. The subject describes how the concept is both useful and how it became memorable.

The most useful thing I learned was drinking of the bottle—I mean drinking of the water, and how the water works throughout the body. And, I mean, I had heard that before, but not in the way that it’s presented. And how it works through the body and how it flushes—and how your body is so much percentage of water (2S – Control)

Finally, the control group subjects made references to the fact that they had changed the way they think about concepts learned and this had impacted them.

Examples of instances where this was indentified follow.

I try to exercise at least five-ten minutes that, for example before I thought that you got to, if you’re going to work out you say do forty minutes, and that’s the only way it’s going to help you. But that’s not true. The important [sic] is the frequency not the quantity. (1L – Control)

It’s, it’s that ten minute, like, by keeping in mind and realizing that all I gotta do is do ten minutes, it brought that wall down of creating an excuse of: “Oh, I don’t have time to exercise.” Because I would tell myself, “Oh, well it’s only ten
minutes.” And it’s interesting because it was never ten minutes, because I would get into it. (1S – Control)
I had heard that before, but not in the way that it’s presented. And how it works through the body and how it flushes—and how your body is so much percentage of water. (2S – Control)

The following statement described how the perspective of the individual had changed based on the learning intervention. This change was becoming evident when they were in a situation where they could apply the new perspective in this case not having to eat everything.

I always think about that every time I go to the restroom. Especially when I go to the restaurant- that I don’t have to eat everything on my plate. (3S – Control)

Interestingly, subject 2S- Control made a statement asking for additional support when asked how to improve the experience. The subject is acknowledging that additional support would have been useful.

I think the only thing that could’ve made it better was, just maybe having more, uh, maybe like a couple phone calls afterwards, to support each other in what you’re doing. (2S – Control)
Chapter 5

DISCUSSION

Study Contribution

The present study intends to contribute to the study of online training interventions by providing detailed information on the effectiveness of action plans, how to implement them efficiently, and their potential use as evidence of the value of a learning or training program, thus helping bridge the gap in the literature since the action planning process has been perceived as a complicated and protracted process with little to no effectiveness (Cowan, et al., 2010). In addition action plans have been dismissed as simple to do lists and that are difficult to implement during all the time periods that impact transfer such as before, during and after a training event (Broad & Newstorm, 1992). The following discussion will connect the findings back to the literature, suggest implications for future studies, offer a framework for evaluating learning programs, and present the limitations of this study.

The effectiveness of the action plan

As discussed earlier, the quantitative data indicated that the treatment group did improve significantly more from baseline than the control group at both the 30-Day follow-up and 45-Day follow-up. The qualitative data established that all subjects in the successful treatment sub-group attributed their behavior change directly to the action plan. Qualitative data from subjects in the treatment group showed the usefulness of creating an action plan: engaging in this process forced subjects to consider their own shortcomings, and identify significant obstacles to the accomplishment of learning
objectives. This finding from the qualitative data has direct relevance to the exercise of creating implementation intentions during the creation of the action plan, to feeling pressure to follow through or comply and to considering the importance of self-responsibility.

The mental contrasting implementation intentions methodology or MCII (Oettinger, 1993) used in creating the action plans by the treatment group appears to have contributed to helping individuals comply with the learning objectives. In addition, the reminders that were sent to all subjects in the treatment group were based on what each subject wrote in their action plan using this methodology. The author presented to each subject in the treatment group a sample completed action plan and each subject then proceeded to complete their own action plan using the online pre-formatted action plan which can be found in Appendix D. The process of completing the action plan was a personal experience that forced the subject to consider and prescribe his or her own obstacles and remedies in implementing the learning objectives.

Having to work through the creation of the action plan required the subject to exert some effort. As reviewed in the literature, commitments are most effective when they are not only public but also active and effortful (Cialdini, 2009). They are active when they pertain to specific behaviors or actions taken which were clearly stated in the action plan. They are effortful when the trainee has to put in effort to formulate the commitment as in having to create the implementation intentions. These findings correlate with what Cialdini (2009) suggests regarding effort. Essentially, the more effort put into making a commitment the stronger it will be. Further, forming an
implementation intention produces a heightened cognitive accessibility which “makes it easier to detect the critical cue in relevant situational contexts and to readily attend to it even if one is busy with other things,” which in essence significantly boosts the effectiveness of goal intentions (Achtziger et al., 2008, p. 382). The implication is that when the subject formulated implementation intentions, this process in and of itself contributed to the compliance with the learning objectives.

Once subjects created their own goals, they became objectively aware of these goals. As Cialdini (2009) explains, once a commitment is made there is pressure from within the individual and pressure from outside. Pressure from inside arises from the desire to create consistency between the self-image of the subject created by the commitment and the actions they take. Pressure from outside arises from the desire to act in a way that is consistent with how others perceive us and the self-image created by the commitment. This external pressure increases when the commitment to act is made public (Cialdini, 2009). The action plan was not public, but the subjects knew the author had access to their action plans and in this way the commitment became at least shared, if not fully public.

Self-responsibility or the willingness to accept personal responsibility for outcomes was markedly present in the interviews with the treatment group subjects of both the least and most successful subjects. It could be inferred that the self-reflection that occurs when creating the action plans helps the individual become more aware that it is up to him or her to implement the healthy behaviors. As Drucker (1986) states, nothing could be more absurd for the organization (or anyone else) than to assume
responsibility for the development of individuals since this rests in the individual, his or her abilities and efforts. The implication is that engaging in the activity of creating their own plans heightened the subjects’ awareness of being personally responsible for their success.

As noted earlier the quantitative data showed that the control group did not improve more than the treatment group from baseline to both the 30-day follow-up and 45-day follow-up. However, the control group subjects showed improvement and the qualitative data captured helped understand how this happened.

The behavior changes in the control group were attributed by the subjects to the concepts learned. The implication is that the learning intervention was successful in creating real learning which occurs when a deeper level of understanding is achieved instead of simply replicating any given reference behavior (Wortham, 2003). This type of learning would support the cognitive theory of learning which concerns itself with expanding individuals’ mental models and appealing to their intrinsic motivation. Lewin’s field theory as cited by Knowles (1996) would support this assumption, since it states that learning occurs as a result of a change in cognitive structures produced by two changing forces: change to the cognitive structure itself and change in the internal needs or motivation of the individual. Therefore, the learning intervention appears to have impacted the subjects’ mental models or cognitive structures and the strategies used to appeal to their intrinsic motivation or internal needs were successful to the degree that each subject improved.
Mental models are described by Senge (1992) as the internal constructs or pictures that people carry in their heads to make sense of the world. These models are simplifications that individuals may or may not be aware of, and that often impact how they will behave (Wortham 2003). The importance of mental models is further illustrated by Kim (1993) who states that these mental models determine how stored information is relevant to a given situation.

Intrinsic motivation is defined by Knowles (1996) as the inner drives and urges of an individual that are not based on external or environmental influences. Research in cognitive science has demonstrated that individuals often act based on this intrinsic motivation instead of simply responding to external reinforcements (Pink, 2009; Wortham, 2003). Knowles (1996) who cites Lewin’s field theory states that appealing to the ego and levels of aspiration of individuals impacts success. The implied assumption is that if subjects understood the value of healthy behaviors and acted upon this understanding instead of acting based on the consequences and implications of not applying the healthy behaviors, the leaning intervention was successful in appealing to their intrinsic motivation.

The learning intervention was successful on its own in helping subjects comply with the learning objectives and this needs to be discounted from the success attributed to the action plan since both groups participated in the same learning intervention. Therefore the effectiveness of the action plan was evident in helping individuals comply with the learning objectives, while the learning intervention was effective in helping change subjects’ mental models and appeal to their intrinsic motivation.
Implementing action plans

It is important to discuss how to implement action plans since action planning has been viewed in the literature as a complicated and protracted process (Chien, et al., 2002; Cowan, et al., 2010; Foxon, 1993). Furthermore, it appears that the use of action plans is not widely adopted by training departments and the main reason could be that they are thought of as hard to manage, paper-based instruments that are sometimes dismissed as simple to-do lists (Cowan, et al., 2010).

The technology-based action plan utilized in this study made action planning a simple and easy process. Each subject in the treatment group got access to an online tool that contained a pre-formatted action plan with each column representing an item that needed to be completed by the subject. Appendix D contains a screenshot of the pre-formatted action plan. The subject generated information that was captured and stored in the online system which was later retrieved by the author to create the reminder emails. The only actual manual process was the creation of the email reminders. However, this was not a time consuming process since the information in the emails was simply copied and pasted from each subject’s action plan. There is an investment of time but it is not considerable. The author estimates this process took less than 15 minutes for all 19 subjects in the treatment group who received the reminders.

The technology-enabled action plan utilized can be both process- and content-neutral, meaning that it can be customized with relevant and meaningful content, and can be implemented at any time period in any training transfer model. For example Holton and Baldwin (2003) stress three steps to ensure learning transfer: (1) Establishing high
expectations via goal setting; (2) Monitoring progress towards these goals; and (3) Rewarding efforts or actions and successes or results. Authoring, publishing, managing, scoring, and tracking action plans for these three steps can be made efficient and effective if it is technology-based, as the results of this study indicate. Additionally, others in the organization like managers or trainers who can provide feedback and support can be assigned different rights to interact with these plans. Automatic communication mechanisms can be assigned to the individual who created the plan and others. Through these communication mechanisms, managers and trainers can provide immediate support or encouragement and feedback to individuals as they advance in their goals.

**Action plans as evidence of the value of learning**

Action plans can serve as part of the evidence to demonstrate the effectiveness and the value of a learning intervention. However, evidence questions as suggested by the Brinkerhoff and Dressler (2003) Success Case Method can be easily incorporated into the action plans. Evidence questions and their responses are those that can be verified by others and contain specific instances in which the individuals have either implemented an objective or achieved a goal or result.

Therefore, the research in this study, focused on demonstrating the value created by technology-enabled action plans before, during, and continuously after an online synchronous training intervention could be very useful to training departments. This research can be especially useful for evaluations that can lead to improvements, accountability, dissemination, and enlightenment (Stufflebeam & Shinkfield, 2007).

**Action plans as a training evaluation tool**
The study did not intend to use action plans as a way of evaluating the learning intervention. The study’s intention was to examine if action plans contributed to the compliance of learning objectives. However, when subjects create an action plan the actions they are committing to get documented and stored. If these actions are aligned with the learning objectives then it could be implied that the individual understood how to apply the learning objectives.

When an individual completes a written test, it is possible to assess if he or she has understood concepts and retained them as per a Level Two evaluation using the Kirkpatrick (1967) model. In the case of the action plan, it is possible to assess if the individual has understood how to apply the learning. Additionally, this implies that the individual has decided and committed on specific actions, behaviors, goals and objectives. In this way the action plan can be interpreted as a manifestation of the intention to act (Cialdini, 2009). Interestingly this type of evaluation, specifically how to apply, appears to fall in a gray area between a Level Two and Level Three using the Kirkpatrick (1967) model which intends to assess if behavior change has occurred.

Managing this process via paper-based instruments becomes difficult since paper-based action plans can be lost, don’t reside in a central repository and don’t have the ability to become an automatic communication tool to provide feedback and encouragement upon the individual’s progress. However, if these are managed electronically, this type of evaluation could be feasible in addition to the other benefits such as giving access to others who can support and encourage individuals to attain the goals they committed to in their action plans.
When documenting these actions from learners, the process by which knowledge turns into action (Pfeffer & Sutton, 2000) would be captured. Additionally, results of these actions can be captured at different time periods. Capturing the results of these actions can create evidence of impact (Wick, et al., 2010). When others such as managers validate these results, statements of value can be made by the learners (Brinkerhoff, & Dressler, 2003). Statements of value include examples of how learning objectives were applied to achieve a desired result.

Evaluating learning programs can encounter resistance (Esque & McCausland, 1997; Blanchard et al., 2000; Kirkpatrick & Kirkpatrick, 2006) since it has been proven hard to execute. Subjects from both the control and treatment groups acknowledged personal responsibility as a key ingredient in successfully complying to the learning objectives or healthy behaviors. Individuals have the responsibility for their own development (Drucker, 1996) and as such are in the best position to determine the value of the learning (Brinkerhoff & Dressler, 2003). Therefore through the use of action plans where actions and their results are captured, the process of evaluation is assigned to the individual. If others validate the actions that took place and the results that were achieved, it could be argued that they are creating evidence of the impact of the training.

In summary, the literature suggests that creating action plans can enhance learning transfer, provide evidence of the impact of learning, and facilitate a continuous improvement process by allowing others to provide feedback and support. The findings in this study corroborate these statements found in the literature.

**Implications for future studies**
The lack of follow-through in applying learning objectives from training programs delivered by corporations plagues millions of employees here in the U.S. and worldwide. As such it is estimated that 60 to 90 percent of the job-related skills and knowledge imparted in training programs are not being implemented (Allen 2008). It has furthermore been estimated that only five to ten percent of expenditures on training actually result in transfer of skills and knowledge (Phillips & Broad, 1997). In addition, the costs are also significant to the individual as he or she is not taking advantage of the training opportunity to enhance his or her performance or contribution to the organizational goals (Drucker, 1996) and may lose potential career advancements as a result.

Based on the above it would appear that it would be in the best interest of organizations to further explore technology-based action plans as a way to help individuals apply what they learn. In addition, the use of action plans as communication tools that allow others to provide feedback and support can be further explored using technology-based action plans which allow this process to be efficient. It is troublesome to consider that such a simple strategy could be easily dismissed considering the amount of resources being spent on training programs and the growing popularity of online training events.

Finally, further exploration into the use of technology-based action plans as a way of capturing trainees’ actions and results to demonstrate the value of learning investments could prove to be very valuable, especially since executives want to see actions and results (Luntz, 2007). Establishing this critical link between the learning objectives of an
online training investment and trainees’ actions and results can contribute to creating evidence of the value of training investments. If these actions and results are assigned a number or a monetary value they can be aggregated to express the value created in dollars generated or saved. To further explore this approach the author suggests designing similar studies with larger samples and agreeing beforehand on the monetary value of the actions and results the training intervention intends to achieve. This way the results between a treatment and a control group can be expressed in dollars saved or earned.

**Limitations and Constraints**

This study had two main limitations and one significant constraint. The first limitation is that the findings are based on a sample size of 40 subjects and a larger sample size would have allowed for more statistically valid results (May, 2011). The second limitation is that the qualitative data collected was based on 12 subjects. There is a possibility that findings might have been different or more detailed if additional subjects would have been interviewed. Originally the author had considered six interviews and due to this limitation the author increased it to 12.

A significant constraint of this study was that it did not intend to demonstrate the effectiveness of the MCCI or mental contrasting implementation intentions methodology (Oettingen, 1999). Specifically this methodology requires individuals to create their own goals, consequences for achieving them and consequences for not achieving them (mental contrasting) and state implementation intentions. Implementation intentions are stated by individuals in the form of ‘if then, plans” to execute a behavior or an action. The
findings indicated that individuals obtained value from this exercise when creating their action plans and as such the methodology can be in part responsible for the better compliance of the treatment group.
Appendix A – Interview Protocol

1. Please describe the learning intervention and what impacted you? (Listen for what the individual finds most memorable and the value they place on the experience as a whole)

2. *Treatment Group Only*: Please describe the action plan and how you completed it? Please describe what you found most useful? (Listen for how the individual understood the process and how useful they thought it was)

3. *Control Group Only*: How did you keep track of whether or not you were doing things that you set out in your questions? What were the most desirable LOs? (Listen for how they prioritized the LOs and how they understood their importance – how desirable and in what order of desirability)

4. Which of the LOs did you feel more compelled to apply? (Listen for how confident, capable- or how feasible they thought the LO was)

5. What did you find useful about the experience? (Listen for what they found most valuable –worth and merit- of the LOs as it relates to their individual goals)
Appendix B – Motivation and Self-Efficacy Instrument

<table>
<thead>
<tr>
<th>Assessment on Motivation and Self-Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. What is your first name?</strong></td>
</tr>
<tr>
<td><strong>2. Please provide the email you used to register.</strong></td>
</tr>
<tr>
<td><strong>3. Please grade this statement: I am capable of learning healthy behaviors.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>4. Please grade this statement: I feel confident that I can succeed with what I commit to.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>5. Please grade this statement: I am capable of using what I learn.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>6. Please grade this statement: I am confident that I can succeed in adopting healthy behaviors.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>7. Please grade this statement: I am going to exert effort to learn.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>8. Please grade this statement: I will devote myself to improving</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>9. Please grade this statement: I will maintain myself focused on achieving my goals.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
<tr>
<td><strong>10. Please grade this statement: I am willing to set high achievements for myself.</strong></td>
</tr>
<tr>
<td>I strongly disagree</td>
</tr>
</tbody>
</table>
Appendix C – Instrument to measure compliance with learning objectives

Compliance with Learning Objectives Survey - 30 days

1. How many times did you exercise at least 10 minutes or more in the past week?
   - Once
   - Twice
   - Three times
   - Four times
   - Five times
   - Six times
   - Every day this week

2. How many days were you able to eat less than 20% than what you normally eat, in the past week?
   - Once
   - Twice
   - Three times
   - Four times
   - Five times
   - Six times
   - Every day this week

3. How many days were you able to consume at least 8-10 glasses of water?
   - Once
   - Twice
   - Three times
   - Four times
   - Five times
   - Six times
   - Every day this week

4. Have you seen improvements in your bowel movements, more regular and easier?
   - Yes
   - No
# Appendix D – Preformatted Action Plan

## Health Success Action Plan

<table>
<thead>
<tr>
<th>Daily Objective</th>
<th>Achieving It means...</th>
<th>Not achieving It means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE ONE:</strong> Exercise for 10 minutes or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OBJECTIVE TWO:</strong> Eat 20% less</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OBJECTIVE THREE:</strong> Drink 8-15 oz. of water every 2 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix E – Examples of Completed Action Plans

**Subject: 3S – Treatment**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE ONE</strong> Exercise for 16 minutes or more</td>
<td>1. Feel alert and awake 2. My body feels good 3. I have good energy</td>
<td>1. Feel restless towards what did not allow me to work out 2. I feel lazy and lack of energy 3. I have muscle pain and fatigue</td>
<td>1. Injury may prevent me from doing my favorite exercises 2. Work and travel time may interfere with my ability to complete my exercise 3. Time of day during the week</td>
<td>1. Plan activities that work even if not ideal 2. Just do it, 10 minutes is better than nothing</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE TWO</strong> Eat 20% less</td>
<td>1. My body feels good, especially my stomach 2. My body is thankful when I give it good food 3. I am a good example for my family, especially my kids and I can teach them as they are older now</td>
<td>1. My body feels sluggish 2. My stomach starts to bother me 3. Longer-term health issues may crop up</td>
<td>1. If traveling or eating out, I don’t have control of what I put into my mouth (i.e., I eat better or something prepared in a good way) 2. Maybe temptation – desire for a particular food or combination of food 3. I get home late and don’t have access to dinner until close to bedtime</td>
<td>1. Ask questions of restaurant food and make requests for preparation 2. If eating out, try to find a dinner that is compliant</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE THREE</strong> Drink 0-16 oz of water every 2 hours</td>
<td>1. Good hydration for my body 2. Long-term health benefits 3. Proper processing of food</td>
<td>1. Poor hydration 2. Bowel movements not as smooth/soft as needed 3. Don’t feed as well all day</td>
<td>1. Preparation - not always having ready access to water all day 2. Desire - don’t really love drinking that much water, especially if it’s cold out or I’m not exercising fully</td>
<td>1. Be prepared with a steady supply of water 2. Place it during the day</td>
<td>0%</td>
</tr>
</tbody>
</table>

---

**Subject: 2L – Treatment**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE TWO</strong> Eat 20% less</td>
<td>1. More energy 2. Feel good 3. Look good</td>
<td>1. Feel tired 2. More cravings 3. Not sleep well</td>
<td>1. Life external situations trigger finding comfort in food 2. Cravings 3. Lack of willpower</td>
<td>1. Preran control 2. Focus on only carbs or only protein meals 3. Increase high water content meals</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>Status</th>
</tr>
</thead>
</table>

---

**Subject: 1L – Treatment**
### Subject: 1S - Treatment

<table>
<thead>
<tr>
<th>Daily Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OBJECTIVE ONE: Exercise for 10 minutes or more</strong></td>
<td>1. Improved Strength 2. More Energy 3. Look better</td>
<td>1. Weakness 2. Too tired 3. Stay the same</td>
<td>1. Work schedule 2. I don't have proper equipment 3. Too tired</td>
<td>1. Wake up earlier 2. Use what I do have 3. Exercise in the morning rather than the afternoon</td>
<td>0%</td>
</tr>
<tr>
<td><strong>OBJECTIVE TWO: Eat 20% less</strong></td>
<td>1. Reduce portions 2. Reduce one of the small meals 3. Use more concentrated meals</td>
<td>1. I will think I'm still hungry 2. Over-eating 3. Poor digestion</td>
<td>1. Poor habits 2. Feeling hungry 3. Work schedule</td>
<td>1. Forge new habits 2. Tell myself I do not need it and drink water 3. Make conscience effort to use juice/more</td>
<td>0%</td>
</tr>
</tbody>
</table>
Appendix F - Content Slides used in the Learning Intervention

Training Intervention Presentation Slides

“Health Success”
Ancient and Modern Wisdom
Michael J. Aumann
University of Pennsylvania
November 2012
**Past personal results**

<table>
<thead>
<tr>
<th>Test Name</th>
<th>LDL decrease</th>
<th>HDL increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35%</td>
<td>26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Name</th>
<th>In Range</th>
<th>Out of Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAP/TM. CHOLESTEROL TEST</td>
<td>DIRECTLY MEASURED</td>
<td></td>
</tr>
<tr>
<td>TOTAL LDL-C DIRECT</td>
<td>118</td>
<td>&gt;190 mg/dl or its equivalent</td>
</tr>
<tr>
<td>TOTAL HDL-C DIRECT</td>
<td>62</td>
<td>&gt;60 mg/dl</td>
</tr>
<tr>
<td>HDL total CHOLESTEROL</td>
<td>44</td>
<td>+35 mg/dl</td>
</tr>
<tr>
<td>TRIGLYCERIDES-DIRECT</td>
<td>304</td>
<td>+150 mg/dL</td>
</tr>
<tr>
<td>Note: [T-Glycrides may be elevated if patient has not fasted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL HDL-C(=LDL-VLDL)</td>
<td>118</td>
<td>&lt;160 mg/dl</td>
</tr>
<tr>
<td>TOTAL APOLI 100 GRAMS</td>
<td>83</td>
<td>&lt;100 mg/dl</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Name</th>
<th>In Range</th>
<th>Out of Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIPID PANEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHOLESTEROL TOTAL</td>
<td>183</td>
<td></td>
</tr>
<tr>
<td>HDL CHOLESTEROL</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>TRIGLYCERIDES</td>
<td>304</td>
<td></td>
</tr>
<tr>
<td>LDL CHOLESTEROL</td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>
Objectives

Terminal objective: Learn to adopt healthy behaviors that will improve the quality of your overall health.
Maimonides Health Principles

- Who was Maimonides?
- It was not about disease but remaining healthy
- Guarantee for healthy and good quality of life
- Backed by modern science
What we will be answering

We will address two Key Questions:

1) Is it **worth it** for me to improve my health? (desire)

2) **Can I** improve my health? (ability)
Is it worth it?

What is your definition of success?

Where do you live?
– in One place
Where?
– One body
Is it worth it?

One Body = One Life

Questions for all of us to consider:

- How do you want to live it?
  - What quality of life do you want to have?
- How do you want to exist?
  - Do you want to feel more energy and less lethargic? Be self-sufficient?
- How do you want to age?
  - Anti-oxidizing. Scientifically proven that we age at different rates based on oxidation (like your car). You can choose your longevity.
Is it worth it?

Statistics:
✓ 78% of people who lead a healthy lifestyle lower their risk of chronic diseases.
  ✓ 93% lower their risk of diabetes
  ✓ 81% lower their risk of heart disease
  ✓ 50% lower their risk of stroke
  ✓ 36% lower their risk of cancer
  (Lifestyle and Chronic Disease Study, 2009)

✓ Men who were fit, never smoked, had small abdominal girth had a 62% lower cancer mortality rate and had 12 year longer life expectancy (The Aerobic Center Longitudinal Study, 2011)
Can I do it?

I have no choice but to eat the way I eat...this is just how I am...I have tried other things before...I lack the discipline...

Really?
Can I do it?

Cue → Routine → Reward

Can I do it?

Cue → Routine → Reward → Cue
The Guarantee

Every day you must:

› Exercise

› Eat less than what you need

› Drink at least 8–10 ounces of water for every two hours awake

› Have a soft bowel movement
“What fits your busy schedule better, exercising one hour a day or being dead 24 hours a day?”
Exercise

Frequency and intensity are far more important than time spent

Three types:
- Aerobic - Heart rate is what matters
- Stretching
- Strengthening
Eat Less Than What You Need

- What does it mean?
- What does it require?
- Practical advise – drink your food
- Change of Behavior
Heart attack with extra cheese, heart attack with bacon, double bypass no pickles, --hey! Where's my diabetes and large stroke?
The Role of Water

» What does it mean?
» What does it require?
» Practical advise
» Change of Behavior
No Digestion, No Health – Soft Bowel Movement

- The importance of portion control
- The time of the last meal of the day (late eating)
- It is all about the water
- Raw foods at night

Energy:
- 70% digestive system
- 14% your brain
- 15% Muscles and bones
- 1% other tasks
The Meals of the Day

- High Water Content Meal -- until noon
- One Concentrated Food Meal
- One Mixed Food Meal

Three processes:
- Elimination: 4am - 12pm
- Ingestion: 12pm - 8 pm
- Assimilation: 8pm - 4am
High Water Content Meal

- During the Elimination Phase or until noon
- What makes up high water content foods?
- The power of apples and other high fiber foods
Concentrated Food Meal

- Either protein or carbs
- Good Protein vs. bad
- Good Carbs vs. bad
Mixed Meal

- Both Good Carbs and Protein are consumed
- Eliminate this meal when trying to lose weight – substitute with a Concentrated Meal
- Limit the variety of foods
- Characteristics of herbivores vs. carnivores
The Protein Hoax

No meat at all? Are you sure you’re getting enough protein?
Can I do it?

Simple and straight-forward formula

1) Identify the most important health behaviors you can adopt

2) Set yourself up for success by breaking it down into small successes

3) Become aware of how your choices impact the quality of your life
Behavior Modification Techniques

- Hunger pains may not be real

- Many are thirst calls, some are generated by the mind and not the body

- **BUT don’t deprive yourself!** (the negative response is augmented)
Behavior Modification Techniques

- Sugar or Carb cravings are usually salt and water deficiencies.
- Key to drink water 20 minutes prior to the meal.
- The misconception about salt.
Behavior Modification Techniques

- Sub-conscious Accumulation Process: *ask* and convince yourself, let it sink in (repeat), be patient

- The point of entry of Food: Today is the past, *the future is the present* - Create the Awareness within You
Behavior Modification Techniques

- Meditate/Breathe

- Reduce stress-related toxins and increase your metabolism: Play with little kids and pets, laugh, DISCONNECT.
Applying the Objectives

- Find ways to incorporate exercise to your day for at least 10 minutes
- Easily reduce the amount of food intake by a fifth or 20%
- Drink water constantly, 8–10 ounces for every 2 hours awake
- Keep track of your bowel movements, which should be daily with little to no effort
Any Questions?
Next Steps

- Survey will be sent to you in 30 and then 45 days

- This is the same survey you took today in the beginning of the learning event

- Thank you for participating and I wish you all strength to apply what we have learned today!
Action Plan for Treatment Group

- Create an Action Plan: Set yourself up for success (www.theaktionplan.com)

Usernames: The email you used to register
Password: 123456
Action Plan for Treatment Group

Complete your plan!
Next Steps

- Survey will be sent to you in 30 and then 45 days
- This is the same survey you took today in the beginning of the learning event
- You will get weekly email reminders to report back your weekly successes
- Thank you for participating and I wish you all strength to apply some of the things that we have learned today!
Appendix G – Example of Reminder Emails

Hi Name,
Thank you for participating in the study. Below please find what you wrote in your plan about drinking more water. Will yourself into doing it every day little by little. Brgds, Michael

<table>
<thead>
<tr>
<th>Daily Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>status</th>
</tr>
</thead>
</table>

Hi Name,

Thank you for participating in the study. Below please find what you wrote in your plan about exercise. Will yourself into doing it every day little by little. Brgds, Michael

<table>
<thead>
<tr>
<th>Daily Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>status</th>
</tr>
</thead>
</table>

Hi Name,

Thank you for participating in the study. Below please find what you wrote in your plan about eating less. Will yourself into doing it every day little by little. Brgds, Michael

<table>
<thead>
<tr>
<th>Daily Objective</th>
<th>Achieving it means...</th>
<th>Not achieving it means...</th>
<th>Obstacles</th>
<th>How will I counter this obstacle</th>
<th>status</th>
</tr>
</thead>
</table>
Appendix H – Demographic Information of Participants

Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>47.5%</td>
<td>47</td>
</tr>
<tr>
<td>Female</td>
<td>52.5%</td>
<td>52</td>
</tr>
</tbody>
</table>

Answered question: 99
Skipped question: 0

Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
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<tbody>
<tr>
<td>21-30</td>
<td>6.1%</td>
<td>8</td>
</tr>
<tr>
<td>31-40</td>
<td>13.1%</td>
<td>13</td>
</tr>
<tr>
<td>41-50</td>
<td>37.4%</td>
<td>37</td>
</tr>
<tr>
<td>51-60</td>
<td>33.3%</td>
<td>33</td>
</tr>
<tr>
<td>61-70</td>
<td>10.1%</td>
<td>10</td>
</tr>
</tbody>
</table>

Answered question: 99
Skipped question: 0

Level of Responsibility
<table>
<thead>
<tr>
<th>Position</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual contributor</td>
<td>36.4%</td>
<td>30</td>
</tr>
<tr>
<td>Manager</td>
<td>20.3%</td>
<td>20</td>
</tr>
<tr>
<td>Director</td>
<td>18.2%</td>
<td>18</td>
</tr>
<tr>
<td>Executive</td>
<td>12.1%</td>
<td>12</td>
</tr>
<tr>
<td>Senior executive</td>
<td>13.1%</td>
<td>13</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Number of responses:
- Answered question: 99
- Skipped question: 0
Appendix I – Scores Obtained on the Motivation and Self-Efficacy Instrument

<table>
<thead>
<tr>
<th>SCORE</th>
<th>28-29</th>
<th>30</th>
<th>31</th>
<th>32</th>
<th>33</th>
<th>34</th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38</th>
<th>39</th>
<th>40</th>
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</thead>
<tbody>
<tr>
<td>Subjects</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
Appendix J - Results of the Analysis Within Pairs and with Motivation as a covariate

Results Within Pairs

### Z-Score Composite

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>30-Day Post</th>
<th>45-Day Post</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>-0.32</td>
<td>-0.01</td>
<td>-0.17</td>
</tr>
<tr>
<td>SD</td>
<td>0.53</td>
<td>0.63</td>
<td>0.71</td>
</tr>
<tr>
<td>SE</td>
<td>0.12</td>
<td>0.15</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>0.30</td>
<td>0.09</td>
<td>0.08</td>
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<tr>
<td>SD</td>
<td>0.51</td>
<td>0.57</td>
<td>0.64</td>
</tr>
<tr>
<td>SE</td>
<td>0.12</td>
<td>0.14</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Note. Treatment n = 18; Control n = 18.

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>df</th>
<th>p</th>
<th>η²p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>5.431</td>
<td>1, 17</td>
<td>0.032</td>
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<tr>
<td>Time</td>
<td>0.18</td>
<td>2, 34</td>
<td>0.83</td>
<td>0.011</td>
</tr>
<tr>
<td>Treatment*Time</td>
<td>4.631</td>
<td>2, 34</td>
<td>0.017</td>
<td>0.214</td>
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<tr>
<td></td>
<td>Baseline</td>
<td>30-Day Post</td>
<td>45-Day Post</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>-------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>(t)</td>
<td>4.69</td>
<td>0.5</td>
<td>1.33</td>
<td></td>
</tr>
<tr>
<td>(df)</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>(p)</td>
<td>&lt;.001</td>
<td>0.62</td>
<td>0.2</td>
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<table>
<thead>
<tr>
<th></th>
<th>(\Delta)30-Day</th>
<th>(\Delta)45-Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>(t)</td>
<td>-2.48</td>
<td>-2.1</td>
</tr>
<tr>
<td>(df)</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>(p)</td>
<td>0.024</td>
<td>0.051</td>
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</table>

Results between subjects with Motivation as a covariate
Z-Score Composite

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>30-Day Post</th>
<th>45-Day Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>-0.24</td>
<td>0.04</td>
<td>-0.14</td>
</tr>
<tr>
<td>$SD$</td>
<td>0.62</td>
<td>0.64</td>
<td>0.71</td>
</tr>
<tr>
<td>$SE$</td>
<td>0.14</td>
<td>0.15</td>
<td>0.16</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>0.23</td>
<td>-0.05</td>
<td>0.04</td>
</tr>
<tr>
<td>$SD$</td>
<td>0.51</td>
<td>0.65</td>
<td>0.74</td>
</tr>
<tr>
<td>$SE$</td>
<td>0.11</td>
<td>0.14</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Note. Treatment $n = 19$; Control $n = 21$.

<table>
<thead>
<tr>
<th></th>
<th>$F$</th>
<th>df</th>
<th>$p$</th>
<th>$\eta^2_p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>2.53</td>
<td>1, 37</td>
<td>0.12</td>
<td>0.064</td>
</tr>
<tr>
<td>Time</td>
<td>0.1</td>
<td>2, 74</td>
<td>0.91</td>
<td>0.003</td>
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<tr>
<td>Treatment*Time</td>
<td>2.86</td>
<td>2, 74</td>
<td>0.064</td>
<td>0.072</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>30-Day Post</th>
<th>45-Day Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>$F$</td>
<td>7.85</td>
<td>0.123</td>
<td>1.03</td>
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<tr>
<td>df</td>
<td>1.37</td>
<td>1.37</td>
<td>1.37</td>
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<tr>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>$p$</td>
<td>0.008</td>
<td>0.73</td>
<td>0.32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Δ30-Day</th>
<th>Δ45-Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>11.13</td>
<td>4.98</td>
</tr>
<tr>
<td>$df$</td>
<td>1.37</td>
<td>1.37</td>
</tr>
<tr>
<td>$p$</td>
<td>0.002</td>
<td>0.032</td>
</tr>
</tbody>
</table>
Appendix K – Z-scores, a brief discussion

Z-scores are obtained by converting a variable to have a mean of zero and a standard deviation of one (Field, 2009). To center the data around zero, it is necessary to subtract the mean of all scores from each score. Then the resulting score is divided by the standard deviation to ensure the data have a standard deviation of one. The resulting score is a z-score. A z-score of higher than zero indicates that the subject is above average and z-score of less than zero indicates they are below average. In this study the z-score composite for all outcomes allowed for an analysis of the outcomes of both treatment and control groups in order to identify overall trends (Field, 2009).
Appendix L – Pattern of Results of Group by Motivation Regression Analyses

The pattern indicates that the treatment was more effective for more motivated individuals.
Appendix M – Data Display with Quotations from the Interviews

Qualitative Analysis

Data Display
Quotations

Successful Treatment Group

1S - Treatment - Value – Action Plan
Well, you know, I think that the action plan was good to give you a mindset initially. And helped reinforce the three principles by saying, you know, what do I need to do to stick to it? But it wasn’t an action plan that I felt compelled to consult after I wrote it, because I held pretty well in my mind what the challenges would be. I just had to deal with them. But in terms of making it something palpable at the outset, and sensitizing you to the fact that it does take some mental effort, organization and, you, you have to do something to make it happen. It’s not just a matter of saying: “Oh, I got the three principles. I didn’t get them today, but I’ll try tomorrow.” Or what not. I think it’s, uh—I’m reading a book where they quote Yoda and they say: “It is do or not do, not try.”

1S - Treatment – Value - Learning Event
I widened my framework of what I understood about, you know, physiology in relation to general health in applying certain disciplines.

1S - Treatment – BC - Water
Drinking two glasses in the morning when I woke up and two glasses in the evening and trying to inter-space—intersperse during my workday the other four glasses…like many people, I was under the illusion: Oh, well, I eat a lot of fruit, and I drink green tea, and I do this that and the other, but that made me conscious of the fact that, that wasn’t really pure water. That was a real eye-opener to reinforce that practice.

2S - Treatment – BC – action plan
So, I ended up maintaining with it by limiting the diet in how I would be eating and drinking and making sure that I wake up in the morning and having water first, and not eating before mid-day as best as I can. And trying to make sure I don’t go to bed on a full-stomach, you know, all those different types of things really integrated into a part of my life that may not have otherwise.

2S - Treatment – Usefulness – action plan
was extremely beneficial, in the sense of like now I’m thinking about what I would eat, when I would eat it and how I eat. Since the time that we began, you know, I, I’ve almost entirely eliminated any meats and primarily processed foods.

2S - Treatment – Personal Responsibility
I believe that looking inward is the first step to success.

2S - Treatment – Usefulness – action plan
having an action plan, and I’m not, again, new to creating action plans, but having this particular action plan I think is, you know, very beneficial in that you have the answer to the ever present question of: “What do I do here?” And because on any given day there
could be a variety of challenges and new experiences that require one to figure out how to adhere to the action plan, that action plan in front of you tells you what you should do at those certain points. And try to make it work within those confines.

**3S - Treatment - Action BC**

like the water it actually, really then forced me to pick into the next level in terms of problem solving for myself. So, for example, when I go to the city, which I do quite a bit, the offices don’t always have water, and you’re stuck in an office and you’re working all day, and you don’t really have access. It was thinking through, “Look, I can carry a bottle with me.”

**3S - Treatment - Usefulness of Action Plan**

I think that, it was not useful in areas that weren’t meaningful to me.

**3S - Treatment - Usefulness of LO (exercise)**

And especially, you’re not really prescriptive in what that means, so it could mean walking, it could mean, you know when I go to Manhattan, I could take the stairs *

*laughs. at the World Trade Center and that’s like ten minutes of walking. You know, and that could count. So I think it’s the fact that you put the time parameters around it was really good. And that makes it acceptable to people. It makes it acceptable, so, for example, when I say to myself, “God, I didn’t exercise this week.” But when I really look back at it, I’m like wait I walked two miles to go pick up a car, I walked from the train station to the office (that’s a mile and a half). And in some cases I wouldn’t have counted those things.

**4S - Treatment - Usefulness and Value - action plan**

the action plan gave me an ability to logically understand what are the impediments that I personally have in complying.

**4S - Treatment - Usefulness and Value - action plan**

I’ve participated many times in different workshops, and lectures and to actually have them [make you] create a personalized action plan where you can follow and understand the issues, that to me was a completely unique approach. It’s novel to me, and I think it’s very valuable.

**4S - Treatment - Value of Experience**

It actually, I guess, woke me up towards certain simple steps that I should take in order to improve me health.

---

**Least Successful Treatment Group**

**1L - Treatment - Memorable - BC - Water**

You know, where you hit, you know, where do you live? You only live in one place, you know, one body… So, the change in behavior and the role that water has in that behavior that far outweighs anything that I’ve seen in, you know, P90X or some other programs like that.

**1L - Treatment - Value - Action Plan**

I thought the, the, uh, plan and making yourself a plan and what the obstacles were. I think that was really effective cause it came to mind quickly for me. In my daily
schedules where I was falling short. Or what was keeping me from keeping my water level up where I want it and that’s still a challenge for me.

That’s where it really kicked in, otherwise, you know, it’s good informational, but, you know, you don’t get to the practical sense until you get into your action plan.

**1L - Treatment – BC – Action Plan**

having that action plan that says, you know, I need to get up the first thing I need to do is hydrate and then get to exercising. Don’t even try to start doing push-ups and sit-ups in the morning without first hydrating… that helped a lot. And I’m sure [I] will build proper habits going forward.

**1L - Treatment – Experience of creating the action plan**

Yeah, the questions that you posed, um, online, kind of, prompted me to think, “Okay, well what do I want to achieve from this?” and then if I don’t, “How am I gonna get there?” and then, “What obstacles are gonna be in my way?” and “How am I gonna get over those obstacles?” That’s a good thought pattern. I mean, that’s just a good, um, um, thought pattern to a lot of different things in life actually, but, um, what was the real goal? What is my real goal? Is it just—is it how I feel? Is it how I look? Is it how I think? It really was a whole list of—view of what I wanted. You know, obviously we wanna look good, and we want to feel good, but we want our health and it comes right back to it—you only got the one body.

**1L - Treatment – BC – personal commitment - action plan**

had an Aunt just recently pass away, um, 77 but still, a very, a very sad way diabetes and different things like that—complications. So, you know, just similar to your experience you see that and when you get into the action plan sequence you can come up with just things in your life that’s going on—quickly—that you can say, you know, “I need to change this.” Or “I know these obstacles stand in my way, and I need to get rid of them.”

**2L - Treatment– Value**

Life-changing, new perspective, new outlook. Actually, a new way to see concepts that I thought were one way, and now I totally change my way of seeing them, and it’s helped me immensely.

**2L – Treatment -BC- Exercise**

Well, for instance, I was always a very everything or nothing person, up until the teleconference that I participated in and it was either I could go out and exercise for an hour a day, or at least forty-five minutes, or it wasn’t worth it. It wasn’t worth doing anything at all. So, the ten minutes a day, at least, you know, it changed my perspective and what happens is that I say, “Okay, at least ten minuets.” And then, you know, the majority of the time I end up doing a little more. But if I only get the ten minutes, then I’m fine and it’s an okay day.

**2L - Treatment– Value – Action Plan – reinforces LOs**

It helped put all the concepts that you talk about throughout the conference in a, you know, an organized chart, sort of way, which is definitely easier for me to relate to than just vague concepts that I’m trying to hold in my mind.

**3L - Treatment – No personal commitment**
No, I, I—no it was not the first time, I created action plans in my mind all the time. I think that I was not committed.

**3L - Treatment – BC – water**
I did increase the water, I didn’t drink, like, eight glasses of water, but I increase [sic] the water. The thing is I drink a lot of tea. And I know that tea does not replace the water.

**3L - Treatment – Awareness but no BC [MENTAL MODEL]**
When I’m eating. I have, uh, learning the plan in my mind. It’s not that I’m eating less, but it’s in my mind.

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**Most Successful Control Group**

**1S - Control – Memorable**
Oh, first thing that would come to mind would be water. *laughs.* Drinking a lot of water. And improving, um, the amount of exercise, you know, that we need to do on a daily basis and the importance of being active. Given its—and it’s simplicity, given that it’s only ten minutes, and, uh, basically, um, improving your life and uh, living a better life and a healthier life.

**1S - Control – BC – Exercise**
It’s, it’s that ten minute, like, by keeping in mind and realizing that all I gotta do is do ten minutes, it brought that wall down of creating an excuse of: “Oh, I don’t have time to exercise.” Because I would tell myself, “Oh, well it’s only ten minutes.” And it’s interesting because it was never ten minutes, because I would get into it

**1S - Control – BC- Exercise, water [MENTAL MODEL]**
You know, 15 minutes, 20 minutes, and so on. Because in my mind it’s like, okay, you don’t have to do 30 minutes, so it’s sort of like tricking your mind into overcoming that excuse of: “I don’t have time to exercise.” And again [additionally] by exercising ten/fifteen minutes, I would get thirsty. And it would help me to get back into the mode of drinking water. And now it’s, I’m drinking water like a fish. *laughs.*

**1S - Control – BC- water**
The first thing I do in the morning is I have a glass of water. And I couldn’t do, even if you pay me, a year ago I couldn’t do that.

**1S - Control – Improvement in Bowel Movement**
I’ve seen results, believe it or not. It’s not like I’ve lost a tremendous amount of weight, but I’ve seen results. I’ve seen that I perform better in the morning. And, uh, also, you know, my digestive system is a lot better.

**2S - Control – How to improve the experience – asking for action plan?**
I think the only thing that could’ve made it better was, just maybe having more, uh, maybe like a couple phone calls afterwards, to support each other in what you’re doing.

**2S - Control – BC- U-V [MENTAL MODEL]**
The most useful thing I learned was drinking of the bottle—I mean drinking of the water, and how the water works throughout the body. And, I mean, I had heard that before, but not in the way that it’s presented. And how it works through the body and how it
flushes—and how your body is so much percentage of water. So, the water, the intake of water and the six bottles a day of water I’m drinking now has made a big difference

2S - Control – Personal responsibility
The information that was presented was excellent information. The way it was presented was easy to understand, but, of course, the participant needs to have the willingness—if you don’t have the willingness, the information is good, but it doesn’t go anywhere.

2S - Control – BC – Exercise
I actually walk every day, every morning. At 6:30 in the morning. Not a lot, I walk about a mile and a half to two miles. And that is totally a change from my past habits of working out once a week and not walking at all.

3S - Control – Memorable – BC (MENTAL MODEL)
Um, well, the first thing that I really took away from it was that I really needed to concentrate in the amount of water that I was drinking. I really realized I wasn’t drinking enough water. And that has made a big difference in the way I feel. And that was one of the, I think, one of the things that I remember the most.

3S - Control – BC and Feasibility of LO – eating (MENTAL MODEL)
I always think about that every time I go to the restroom. Especially when I go to the restaurant, that I don’t have to eat everything on my plate. *laughs.

3S - Control – Desire more follow up?
Author: can you think of something that, maybe, would’ve made it better? Would’ve made the event better?
Well, I don’t know, um, do, um—to keep track of, like, your progress, like, like, when you came back and you asked, you know, um, how is your progress. And uh, that’s, uh, that’s like a reminder.

3S - Control – Memorable
Well, I—it’s sounded very informal which was very good. Because sometimes when I hear—I’ve heard other things that, especially on the internet, and it sounds like people are lecturing and general—and like, I turn it off. But this, the way you describe the, uh, benefits and everything and the way you related the whole event was very—it was kind of informal it was casual it was more personal. I don’t know, maybe because, I don’t know, um, it just didn’t feel, like, intimidating or as lecturing.

Least Successful Control Group
1L - Control – Flo – water and exercise (MENTAL MODEL)
For example, by drinking water—this is one of the main that I really like—by drinking water, by, try to exercise at least five-ten minutes that, for example before I thought that you gotta, if you’re going to work out you say do forty minutes, and that’s the only way it’s going to help you. But that’s not true. The important [sic] is the frequency not the quantity.

1L - Control – BC – water and eating
I’m applying it, I’m more conscious during the day to stop certain times and get a cup of water. And it helps me, I guess, to, I don’t know psychologically but maybe to clean or, uh—

Author: It makes you feel better?
B: Yeah, yeah. Not only that but also it helps me to eat less than I need [sic]. Because when I apply the cup of water before eating it makes you feel full, so you don’t have to overeat. *Which is very very good technique.*

**1L - Control – BC – personal responsibility**

Well, the only advice that I would give people is, if they’re looking for any type of this type of learning, not just listen it or, or, or read it. But you have to act, you have to apply it to see the results. Because, just by listening you’re not going to, you know, I’m not sure if it’s going to be good or not.

Author: Right, right, so what advice would you give them to be successful in applying it? Just, not think about it, just start doing it. That’s it. Don’t think twice, just start doing it.

**2L - Control – BC – (MENTAL MODEL)**

I am drinking more fluids in order to, first, stay more hydrated and then secondly to feel more full during my meals.
## Appendix N – Data Display and Codes

### Data Display

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### Codes

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References


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