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Evaluation of learning transfer outcomes of a Certified Occupational Safety Specialist (Coss) training course

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EVALUATION OF LEARNING TRANSFER OUTCOMES OF A
CERTIFIED OCCUPATIONAL SAFETY SPECIALIST (COSS) TRAINING COURSE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

in

The School of Human Resource Education
and Workforce Development

By:

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August 2013

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This work is dedicated to my late father, John Louis Hebert, and mother, Camille Barrosse Hebert, who ingrained in me the importance of family, the dedication to family, the value of hard work, the respect for others, and the importance to do the best you can in all endeavors. Their support and personal sacrifices, along with the moral standards for which they lived their lives, have made an everlasting impression on me for which I am forever grateful. This dissertation stands as a tribute to them for everything they instilled in me.

This dissertation is also dedicated to my devoted wife, Susan, and our two children, Sarah and Scott, who are the loves of my life. This achievement would not have been possible if not for Susan's support, confidence, and understanding. She has provided a source of inspiration and encouragement that helped me overcome times of challenge and doubt. She is a primary reason that I persisted, as I sought to make her proud of me. It was also important to show my children the value of goal setting and perseverance, and the importance of completing a task. It is my hope that this educational accomplishment will provide inspiration as they pursue their goals, as they can achieve anything they set out to do through commitment, discipline, and hard work. Susan, Sarah and Scott, thank you for your support, I love you always.

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ABSTRACT

The purpose of this study was to generate a “transfer of training” assessment of a Certified Occupational Safety Specialist (COSS) certification training course provided by the Alliance Safety Council, a non-profit organization which provides COSS training throughout the United States targeting individuals who work in the safety and health field that coordinate corporate safety and health plans for their companies. This course consists of a five day, forty hour in-class course designed to build competencies in the field of safety with specific learning outcomes. This study described graduates of the COSS training on selected personal and professional demographic characteristics, determined what variables influenced a graduate’s ability to transfer training within the workplace, and assessed the degree to which graduates of this training engaged in transfer of training activities in their respective workplaces. This paper makes recommendations regarding potential future research efforts designed to further examine COSS participation and sponsorship, barriers to transfer of training, and the impact of transfer of training on an organization’s safety performance. Finally, this paper provides feedback to COSS program designers, instructors, related practitioners.

CHAPTER 1: INTRODUCTION

This section introduces the study topic, purpose statement, and related study questions. This section also identifies the need for the study and the operational definitions for the study.

Rationale

The selection of this topic was born out of the current demand for and the projected shortage of Occupational Safety and Health (OSH) professionals, and the need for additional scholarly assessments focusing on the degree to which transfer of training occurs in the workplace.

According to the National Assessment of the Occupational Safety and Health Workforce (2011), “the estimated number of OSH professional employers expect to hire over the next 5 years is substantially higher than the number to be produced from OS&H training programs.” A Study of the Impact of Occupational Safety and Health Training and Education Programs on the Supply and Demand for Occupational Safety and Health Professionals (Cox & Johnston, 1985, p.2) stated “a number of factors, including changes in the regulatory and business climate, may have impacted the need/demand for OSH personnel and influenced the nature of training needs.” Additionally, this study stated “the apparent overall decline in funding for OS&H programs from university, college or department sources, particularly among programs not provided funding by the National Institute for Occupational Safety and Health (NIOSH), along with the projected decline in the numbers of OSH students, is troubling given employers’ hiring expectations, anticipated retirement figures, the “graying” of some of the disciplines, and the quality of students enrolling in programs.”

Statement of the Problem

The Alliance Safety Council, a non-profit organization provides OSH and other safety related training throughout the United States. One such program provides its participants the

Certified Occupational Safety Specialist (COSS) designation. According to the Alliance Safety Council, the COSS program is designed for those individuals who work in the safety and health field that coordinate corporate safety and health plans for their companies. This program consists of a five day, forty hour in-class course which builds competencies in the field of safety with specific learning outcomes.

To date, no scholarly evaluation of the COSS program's transfer of training has been conducted.

Purpose of the Study

The COSS program was the focus of this research. More specifically, this research assessed the degree to which graduates of this program engaged in "transfer of training" activities in their workplaces. Additionally, this study described the graduates of the COSS program on selected personal and professional demographic characteristics, and determined to what extent transfer of training occurred given the objectives of the course.

The intent of this study was to generate an assessment of the COSS program and determine the program's transfer of training effectiveness, thus providing related feedback to both the COSS program designers and instructors.

Objectives

In an effort to guide the activities of this study and accomplish the study's purpose, the following objectives were developed.

1. Describe COSS graduates on the following selected personal and professional characteristics.

- a) gender

- b) age

- c) level of education
- d) ethnicity
- e) employment status
- f) industry type
- g) personal income
- h) number of years since the most recent completion of the COSS program
- i) status of the individual's COSS designation

2. Describe COSS graduates on specific training measured by components of the Learning Transfer System Inventory, version 4 (LTSI), developed and described by Holton, Bates and Hatala (2011).

- a) learner readiness
- b) motivation to transfer
- c) positive personal outcomes
- d) negative personal outcomes
- e) personal capacity for transfer
- f) peer support
- g) supervisor support
- h) supervisor sanctions
- i) perceived content validity
- j) transfer design
- k) opportunity to use

3. Describe COSS graduates on general training factors measured by components of the Learning Transfer System Inventory (LTSI).

- a) transfer effort
 - b) performance –outcomes expectations
 - c) resistance – openness to change
 - d) performance self-efficacy
 - e) performance coaching
4. Determine the extent to which COSS graduates were able to successfully transfer their training to the work environment.
 5. Determine if there is a relationship between selected demographic characteristics and the degree to which successful transfer of training occurred.
 6. Determine if there is a relationship between training specific factors as measured by the LTSI and the degree to which successful transfer of training occurred.
 7. Determine if there is a relationship between general factors as measured by the LTSI and the degree to which successful transfer of training occurred.
 8. Determine if a model exists which explains a significant portion of the variance in transfer of training from the following measures: gender, age, level of education, ethnicity, employment status, industry type, personal income, number of years since the most recent completion of the COSS program, and status of COSS designation.

Significance of the Study

According to the American Society for Training, “U.S. organizations spent about \$171.5 billion on employee learning and development in 2010,” (Green & McGill, 2011, p.46). Given this figure, it is very important for a business to experience a reasonable return on any investment in training and development. Assessing the effectiveness of such training and

development efforts is crucial given that “only 10 percent of content which is presented in the classroom is reflected in behavioral change on the job,” (Georgenson, 1982, p. 75).

“In a knowledge economy, knowledge sharing is becoming increasingly important,” (Baharim & Gramberg, 2005, p.23). Unfortunately, managers tend to find that following the training of employees, “the newly acquired skills were not being put into practice once the participants left the classroom,” (Michalak, 1981, p.22).

Operational Definitions

For the purposes of this study, the following terms were operationally defined:

Transfer of training is defined as the degree to which individuals effectively apply the skills and knowledge gained from a training program to a job situation (Baldwin & Ford, 1988).

Learning Transfer System Inventory, version 4 (LTSI) is an instrument developed and described by Holton, et al (2011) for the purpose of measuring factors influencing transfer of training.

CHAPTER 2: LITERATURE REVIEW

This section reviewed selected research efforts on transfer of training. This topic is referred to in many ways. For the purposes of this paper, the terms “transfer of training,” “transfer of learning,” “training transfer,” and “learning transfer,” should be viewed as synonymous.

For over a century the subject of transfer of training has been examined and re-examined in an attempt to understand, improve, and ultimately predict “the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job,” (Newstrom, 1984). These studies represent a broad spectrum of research designs and objectives. Much effort has been invested in identifying and quantifying those factors that influence the overall transfer process. Other researchers have built upon these identified influence and designed conceptual frameworks in an attempt to manage the overall training transfer process. Finally, several qualitative studies have been conducted in an effort to contribute to the knowledge base through “explanatory clues for empirical generalizations,” (Komarovsky, 1967, p. 349).

Given the large volume of existing research associated with transfer of training, an attempt was made to select those research efforts that, in sum, would provide a reasonable depiction of the research landscape on this topic in order to describe the current state of research associated with transfer of training, understand researchers’ recommended areas of new research, and provide a rationale for this proposal. This review examined the literature related to two categories of research: studies designed to assess the effects of certain factors on the degree of transfer, and studies focusing on the development or validation of a system designed to assess the transfer system.

One of the most cited research efforts reviewed is an article published by Baldwin and Ford (1988). The authors' stated purpose was to conduct a review of the research and critique the research transfer reported in the organizational training literature. The goal was to identify areas in need of additional study, thus pointing to potential directions of future research. The researchers found a "limited knowledge base about which input factors have the greatest impact on transfer under various conditions," (Baldwin & Ford 1988, p. 99). The researchers also pointed out their review indicated the absence of a focus on the development of a framework which could account for the various factors that potentially impact the transfer process. Focusing on the effects of trainee characteristics on the transfer process, this study revealed that most research efforts only accounted for a single input factor, rather than attempting to identify additional factors, thus accounting for more complex interactions.

Assessing the Effects of Certain Factors

Michalak (1981) conducted a study involving six offices of a major division of a large manufacturing company. An evaluation of the effects of various maintenance-of-behavior activities in an effort to understand what happened when these activities were implemented after an interpersonal skills training program was conducted with supervisors. The maintenance-of-behavior activities were defined as "anything which keeps an acquired skill or knowledge up to a performance standard" (p.22). The maintenance-of-behaviors activities utilized in the study included: those used as a part of the training session, those used by managers whose offices showed an improvement in the questionnaire results, and those used by managers whose offices showed a decrease in the questionnaire results. Conclusions drawn from the results included perceived interest by the supervisor had a positive effect; management commitment to the

concepts and practices is a critical factor, and continuing a maintenance-of-behavior program when there is a change in management is difficult.

Blume, Ford, Baldwin and Huang (2010) generated a meta-analysis of 89 studies that explored the impact of predictive factors such as trainee characteristics, work environment and training interventions on the transfer of training process. Among their conclusions was a description of the potential effects with same-source and same-measurement-context (SS/SMC). These researchers found “the issue of SS/SMC is so profound in inflating relationships and so problematic in interpreting relationships that we call for a moratorium on such studies” (p. 1094).

Gist, Stevens and Bavetta (1991) studied the processes involved in the acquisition and maintenance of complex interpersonal skills. Specifically, the effects of trainee self-efficacy and two post-training interventions: goals setting and self-management. According to the researchers, all participants received basic training in negotiation skills. Behavioral measures of negotiation performance were taken following the training. During the second phase, alternative post-training interventions of goal setting and self-management were provided to trainees. Additional behavioral measures were taken six weeks later. These researchers stated that initial self-efficacy was significantly related to initial performance levels as well as to skill maintenance over a seven week period. Additionally, the influence of self-efficacy on maintenance may be moderated by post-training intervention.

Clark, Dobbins and Ladd (1993) studied the effects of contextual factors on training motivation. Twelve training groups, consisting of two hundred forty five participants, were given surveys designed to measure pre-training motivation, expected job and career utility of training, peer and supervisor training transfer climate, involvement in decision to be trained, and decision-maker credibility. These researchers stated four major findings: perceived job and career utility

were significant predictors of training motivation, decision involvement resulted in higher levels of perceived job utility, decision-maker credibility affected perceived job and career utility of training, and anticipated supervisor training transfer climate affected perceived job utility.

Brown (2005) conducted a field study with the stated goal of examining the extent to which transfer interventions containing proximal plus distal goals would affect the transfer of training. Seventy two Canadian supervisory level government employees participated in the study. These individuals were selected by their employers to participate in a university-based training program designed to address skills deemed critical for managerial effectiveness. According to the researcher, because this sample consisted of full time employees performing organizationally relevant tasks, the sample overcame a limitation of past research concerning goal-setting transfer of training interventions and concerns regarding proximal and distal goals (e.g. the use of students performing simulated tasks). The stated procedure included the delivery of core training, study invitation, transfer condition assignment and training, time to data collection, and calculation of time to variables. Results of the study indicated self-efficacy did not differ between the experimental conditions. Distal outcome goals were not effective transfer-of-training interventions.

Chiou, Lee and Purnomo (2010) studied the relationships among transfer of training, knowledge characteristics of work design and work outcomes. More specifically, the aim of this study was to examine the hypothesis that transfer of training moderates the relationship between knowledge characteristics and outcomes. A questionnaire was administered to two hundred fifty two teachers and administrative staff from various school levels in Indonesia. Utilizing a Likert-type scale, this questionnaire measured five sub-dimensions of knowledge characteristics. These sub-dimensions included job complexity, information processing, problem solving, skill variety

and specialization. Additional items were also included in the questionnaire designed to measure both transfer of training and job satisfaction. The results of this study demonstrated a positive relationship between knowledge characteristics and different aspects of work outcomes. On the other hand, job complexity, information processing, problem solving and skill variety demonstrated strong relationships with job performance, while skill variety strongly related to job satisfaction. These researchers suggest the study's results indicate that in order to achieve satisfaction and performance, training should be designed to provide trainees the ability to enhance both knowledge and skill.

A study involving the effects of trainee choice of training on motivation and learning was conducted by Baldwin, Magjuka and Loher (1991). This study focused on two hundred seven randomly selected trainees, each randomly assigned to one of three conditions: no choice of training, choice of training provided but not received, and choice of training provided and received. After controlling for cognitive ability, the researchers reported those trainees having a choice of training and providing the trainee with that choice, exhibited greater motivation to learn. Conversely, trainees given a choice of training but not provided that choice exhibited less motivation and subsequently learned less compared to trainees not provided a choice. The researchers concluded these findings "lends empirical support to the notion that motivation to learn can be enhanced by providing trainees with choices of training content, but only under the condition that they ultimately receive the training they choose" (p. 61).

Rouiller and Goldstein (1993) conducted a study of organizational transfer climate involving one hundred two trainees of a large franchise owning and operating over one hundred fast food restaurants within a large metropolitan area. These trainees attended an assistant manager training program. Upon completion of the program, the trainees were randomly

assigned to one of the two physically separate units that participated in the study. Surveys designed to measure organizational transfer climate were completed by two to three managers of each unit prior to the new trainee's arrival. Survey results were aggregated per unit. After the trainees were on the job for several weeks, supervisory personnel completed transfer behavior surveys rating the performance of each trainee. These surveys were also aggregated per unit. Additionally, standard performance appraisal information representing a measure of good performance was collected. According to the researchers, this study's results indicated the setting's attributes and organizational transfer climate did influence the transfer of learning behavior onto the job. Finally, "since the climate by learning interaction was not significant, both the degree of learning in training and the positive transfer climate appear to directly affect the degree of transfer behavior to the job situation" (p. 388).

Seyler, Holton, Bates, Burnett and Carvalho (1998) conducted a study assessing the relationship of motivation to transfer skills and knowledge learned in a computer based training (CBT) program with five groups of variables. These variables were individual or general attitudes, situational specific attitudes, reactions, learning and work environment factors. This study was a subset of a larger project designed to evaluate a CBT program which was developed to provide training in compliance with Occupational Safety and Health Administration (OSHA) regulations. While eighty-eight trainees participated in the CBT program, a usable sample of seventy four was ultimately obtained. Various instruments were completed by the trainees in an effort to measure motivation to transfer. These survey instruments were hand delivered to the trainees, along with instructions. According to the researchers, "the most important finding to emerge in this study was that environmental factors (opportunity to use, peer support, supervisor sanctions, and supervisor support) explained a large amount of variance in motivation to

transfer” (p.11). Finally, while learning was not significantly correlated with motivation to transfer, the researchers point out this result may be due to how this variable was measured. More specifically, learning scores were obtained from computer generated reports of test scores generated following the trainees’ CBT participation. According to the researchers, there was no opportunity to audit the tests to assure content validity.

Wexley and Baldwin (1986) conducted a study designed to assess the effectiveness of three post-training strategies: assigned goal setting, participative goal setting and a behavioral self-management approach based on the relapse prevention model. Trainees included two hundred fifty six students (one hundred forty three women and one hundred thirteen men) enrolled in an upper management course at a large university. The researchers chose time management as the topic of training due to its relevance to the trainees. All trainees participated in a three hour training workshop conducted by a professional trainer. Sixty subjects were assigned the assigned goal setting condition, sixty five subjects were assigned the participative goal setting condition, sixty three subjects were assigned the relapse prevention condition, and sixty eight subjects were assigned to the control. The control group subjects did not participate in any transfer sessions following their attendance of the time management workshop. With the exception of the control group, all subjects received a one and a half hour session designed to address the condition assigned. These sessions occurred two days following the time management workshop. According to the researchers, “the effectiveness of the time management workshop and the transfer strategies was evaluated in terms of reaction, learning, and behavioral change” (p.509). The results of the study demonstrated that both the assigned and participative goal setting conditions were more effective than behavioral self-management and the control conditions in maintaining behavioral change over a two month period.

Facteau, Dobbins, Russell, Ladd and Kudisch (1995) designed a study to measure the effects of employees' attitudes and beliefs related to training on pre-training motivation and perceived training transfer. This study was a subset of a large scale training needs assessment focusing on training needs and curricula for various levels of management within state government. This subset effort consisted of nine hundred sixty seven supervisory personnel, of who sixty one percent were male, while eighty seven percent were Caucasian. These subjects were asked to complete a comprehensive survey designed to measure fourteen constructs. Only those supervisory personnel who completed one or more of the courses in the curriculum were included in the analysis. According to the researchers, the study's results revealed the importance in examining factors related to training motivation and training transfer. Attitudinal variables such as intrinsic incentives, training reputation, organizational commitment and compliance were found to be highly related to pre-training motivation. Additionally, supervisory personnel who expressed more intrinsic reasons to attend training reported higher levels of both motivation and learning given the training provided.

A study was conducted by Noe and Schmitt (1986) as part of a much larger project focused on the evaluation of a training program designed to improve the administrative and interpersonal skill of educators. The purpose of this smaller study was to test an exploratory model designed to measure the influence of trainee career and job attitudes on training outcomes (learning, behavior change and performance improvement). Sixty randomly selected educators were chosen to serve as study subjects, approximately equal number of males and females. These subjects previously participated in a training program, but had not yet been promoted to a school principal position. Prior to the training program, the subjects completed a survey designed to measure learning behavior change and performance improvement. Additionally, each subject's

supervisor, along with several co-workers and support staff were provided a similar survey designed to measure these variables. Approximately three months following the training, all participants were once again asked to complete a set of criteria measures. According to the researchers, the results of the study indicated that job involvement and career planning are both preceding conditions to such training outcomes as learning, behavior change and performance improvement.

Xiao (1996) conducted a study targeting the electronics industry in Shenzhen, China. The researcher was interested in assessing whether organizational factors common in the United States, were also of benefit in the transfer of learning process in Shenzhen. Four companies (two state owned and two joint venture) were selected due to the pending industry training scheduled for their employees. The trainees consisted of young females, who were rural high school graduates. Each company represented 156 – 186 trainees within the study. Training consisted of a five and a half week duration and was provided by managers and engineers employed by each respective company. The training content was reflective of the job requirements of the trainees. Following each training session, a test designed to assess learning achievement was administered to each participant. About nine months later, each trainee completed a questionnaire designed to measure training achievement, worker characteristics, transfer behavior and five organizational variables. Study findings included learning in training is significantly related to improved job performance, perception of working in a state owned or joint venture company did not change transfer behavior and rewards did not significantly impact transfer behavior. The researcher noted the later finding may have been due to the fact that rewards were not associated with performance improvement within each company. Among the conclusions reached was “human factors in the workplace appear to be the most influential factors in the transfer process” (p. 71).

Tziner and Haccoun (1991) studied the effect of including relapse prevention (RP) module within a two week Advanced Training Methods training program utilized by the Israeli Defense Forces. This study also examined the impact of trainee locus of control and self-perceptions of the work environment. Eighty-one participants (thirty nine men and forty two women) completed the study. The RP module taught transfer strategies and emphasized the importance of implementing strategies for increased transfer. Forty five of the trainees were randomly assigned to participate in the RP module, while the other thirty six trainees received no exposure to RP. Following the training, trainees were administered a series of questionnaires designed to measure the following outcome measures: locus of control, work environment support, motivation to transfer, training reactions, mastery of training and self-reporting of transfer of training. The researchers concluded that when compared to the control group, those trainees who participated in the RP module demonstrated higher levels of training mastery, were more likely to utilize transfer strategies as well as to apply their newly acquired skills. No significant difference was found between the two groups in the areas of locus of control and work environment factors.

A study designed to measure the relationship between learning and performance was conducted by Mathieu, Tannenbaum and Salas (1992). This study also addressed the possible relationship between training motivation and learning. One hundred six trainees successfully completed the study. These trainees, clerical and administrative employees of a large state university, participated in an eight hour training session designed to enhance proofreading skills. Each participant completed a pre-test and post-test survey which assessed participants' perceptions of their work environments, training-related motivation and individual variables. Additionally, pre-training and post-training work samples were measured. This study revealed a

significant relationship existed between learning and performance, as well as a positive relationship between training motivation and learning. More specifically, both high training motivation and self-assignment led to positive reactions to training.

Tracey, Tannenbaum and Kavanagh (1995) examined the relationship of the work environment to the transfer of trained behaviors. More specifically, the work environment was defined in terms of both the training climate and learning culture. The study engaged five hundred five members of a privately owned company which operated seventy seven supermarkets in four northeastern states. These employees represented one hundred four managerial trainees, their supervisors, and various co-workers. Three weeks prior to the training, a questionnaire designed to establish each trainee's behavior baseline was completed by each trainee and their supervisor. Following the training, each trainee was given six to eight weeks to establish the transfer of trained skills. A post-training questionnaire designed to measure the same areas as the pre-training questionnaire was then completed by each trainee, their supervisors and identified co-workers. Results indicated that both training climate and learning culture were directly related to the transfer of learned behaviors. Additionally, the researchers stated the importance of a work environment which values continuous learning and the resulting improvements.

Using a standardized, behavioral measure of performance, Gist, Bavetta and Stevens (1990) contrasted a self-management training method with a goal setting only method regarding their transfer of training effectiveness. Potential study participants were enrolled in a core Master of Business Administration course at a large state university. These potential participants were randomly assigned to sections by the graduate program office. These students were offered extra credit to participate in a negotiation skills training program. Sixty eight students (forty five

males, twenty three females) volunteered to participate in the study. All participants completed a seven hour training course in negotiation skills, followed by negotiation simulations designed to establish a performance baseline. This course was followed by an experimental manipulation consisting of two workshops. One workshop offered a two hour session of instruction in the use of self-management (including goals setting), while the other offered a goal setting only method of similar duration. The participants were randomly assigned to the treatment groups. At the conclusion of the workshops, participants were provide a second simulation and their performances were recorded. Results indicated the self-management condition outperformed goal setting.

Ford, Quinones, Sego and Sorra (1992) studied the opportunity to perform, which they defined as breadth, activity level and type of tasks performed, as a factor affecting the transfer of training to the workplace. Graduates of the Air Force Aerospace Ground Equipment (AGE) Airmen Basic-in-Residence (ABR) technical training course, along with their supervisors, were surveyed in an effort to measure the extent trainees were given the opportunity to perform tasks taught during the course. The survey was provided four months following the course, thus allowing sufficient time for transfer opportunities to present themselves. The researchers found trainees experienced different opportunities to transfer their training to the workplace, in large measure due to the supervisors' perceptions of the trainees. These perceptions included the trainees' capability, skills and likability. Each supervisor and workgroup was "possible gatekeepers relevant to providing support for a newcomer to obtain opportunities to perform trained tasks" (p. 524).

A study was conducted by Hutchins, Burke and Berthelsen (2010) assessing the current and preferred learning methods utilized by trainers for learning about transfer of training.

An electronic survey was created and administered to four hundred thirteen email addresses of members of a regional American Society of Training and Development (ASTD) chapter, resulting in one hundred seventy two responses. One hundred thirty nine responses were ultimately deemed usable for the study. Survey results indicated current methods for learning training transfer included more informal methods. Learning through job experiences was the most frequent choice, followed by discussion with training professionals and the use of the internet. These choices were influenced by accessibility factors. The most preferred method was formal external training programs, followed by attending conferences and talking informally with external trainers. These more formal sources were chosen as they were perceived to be of a higher quality of information. The researchers stated that “trainers’ use of less scrutinized, proximate methods to learn about best practice transfer strategies could contribute, in fact, to the enduring transfer problem” (p. 613).

The study of the effects of workplace climate and peer support was conducted by Martin (2010) targeting two hundred thirty seven managers who attended a twelve week long training session. Prior to the training, the supervisors of these managers were provided an orientation explaining their role in the study. Each supervisor was sent a performance rating instrument with instructions to complete an instrument prior to the manager’s training, six weeks following the training and at a three month post training milestone date. The completed instruments were mailed directly to the researcher. Analysis of the data focused on both the effects of climate and peer support on the transfer of training process. Results indicated a more favorable climate and greater peer support led to a greater degree of transfer. However, a negative climate appeared not to have a significant effect on the transfer process leading the researcher to conclude the possibility of peer support may overcome the effects of a negative climate.

Jodlbauer, Selenko, Batinic and Stiglbauer (2011) studied the effects of job satisfaction on the transfer of training process. These researchers, with the cooperation of an affiliate of the Austrian Federal Economic Chamber, collected data from two hundred twenty participants representing a variety of attended courses approximately one year following the completion of the course. Areas of measure included implementation rate, job dissatisfaction, motivation to transfer and expected positive transfer consequences. Results of the study revealed that job dissatisfaction does indeed have a negative effect on the transfer of training process. The researchers pointed out, however, that both motivation to transfer and the expectation of a positive transfer did offset much of the potential effects of dissatisfaction.

System Development and Validation

Alvarez, Salas and Garofano (2004) reviewed research that focused on training evaluation and training effectiveness. Integrating four prior evaluation models and the research results of several studies targeting training effectiveness, these researchers developed the Integrated Model of Training Evaluation and Effectiveness (IMTEE). According to the researchers, the IMTEE is unique in that it examines relationships between post-training attitudes, and effectiveness variables and evaluation measures. These researchers offer their model as a comprehensive and effective approach for evaluating training. Finally, the areas of reaction measures, motivation and organizational characteristics were identified as in need of further research.

Major transfer of training studies that were conducted during the 1990's were reviewed by Cheng and Ho (2001) in an effort to both develop a conceptual framework that "specify the transfer of training to the workplace," and provide direction for future research efforts. Following their literature review, the researchers developed a framework consisting of pre-

training motivation, learning, training performance, and outcomes. According to the researchers, this framework was an attempt at providing further understanding between nine independent variables (locus of control, self-efficacy, career/job attitudes, organizational commitment, decision/reaction to training, post-training interventions, organizational support, continuous learning culture and task constraints), and the four-stage transfer process consisting of pre-training motivation, learning, training performance and transfer outcomes. Areas targeted by the researchers for future studies include a longitudinal study for measuring transfer outcomes, as well as the development of new individual, motivational and environmental constructs.

Subedi (2004) focused on existing literature and previous training research in an effort to identify common trends and themes. This review resulted in the conclusion that findings resulting from transfer of training studies could be broadly grouped into three categories: trainee characteristics, training design & delivery characteristics, and work environment & supervisory support characteristics. Included in the researcher's conclusions was a list of questions about transfer of training not yet critically examined, as well as the need for transfer of training research in the context of developing countries.

Tracey, Hinkin, Tannenbaum and Mathieu (2001) integrated the results of previous studies in an effort to develop a model designed to link several individual and organizational factors with two training effectiveness measures.

Specifically, we examined: (1) the influence of job involvement, organizational commitment, and the work environment on pre-training self-efficacy; (2) the link between pre-training self-efficacy and pre-training motivation; (3) the influence of pre-training motivation on two levels of training reactions and learning; and (4) the hierarchical relationships between the levels of training reactions and learning. (p. 6)

This study targeted approximately two hundred fifty managers employed by the owner and operator of approximately forty hotels throughout the southern United States.

Completed questionnaires were received from one hundred fifteen trainees, including their supervisors and co-workers. This trainee sample consisted of fifty one percent females and forty nine percent males. The training program consisted of a two and one half day program. Approximately one week prior to the training, the surveys were completed by the participants. Following the training, the trainees completed an additional survey designed to measure training outcomes. According to the researchers, the results provided three noteworthy findings. First, a significant relationship existed between job involvement and motivation to learn during training. Second, a significant relationship existed between the work environment, and the pre-training self-efficacy and pre-training motivation. Finally, the researchers found “support for the hierarchical relationships between the varying levels of training outcomes” (p. 19), thus providing insights that may facilitate potential future research efforts.

Holton, Bates and Ruona (2000) expanded the concept of the learning transfer system and reported on the validation of the Learning Transfer System Inventory (LTSI). Utilizing a heterogeneous sample of 1616 subjects, this study examined version 2 of the LTSI in an effort to develop a valid and generalizable instrument to assess the transfer system. The researchers concluded that exploratory common factor analysis revealed an interpretable factor structure of sixteen transfer system constructs. Additionally, information about the instrument’s development process, factor structure and use of the LTSI as a diagnostic tool is also contained in this article.

CHAPTER 3: METHODOLOGY

This exploratory study examined factors that influence the transfer of training associated with graduates of the Certified Occupational Safety Specialist (COSS) program provided by the Alliance Safety Council, a non-profit organization providing training to Occupational Safety and Health professionals nationwide. Principal factors selected for investigation included factors specific to the COSS program, factors associated with training in general, the extent transfer of training to the work environment occurred, as well as personal and professional characteristics of COSS graduates. This section presents information regarding procedures utilized in this study. Specific areas addressed include: the population and sample, instrumentation, data collection procedures, and data analysis.

Population and Sample

The target population is defined as OSH professionals who have successfully completed the COSS training since the program's inception approximately ten years ago. The accessible population was defined as individuals who have graduated from the COSS program May 29, 2005 thru May 29, 2009. The certification associated with this training is valid for three years following completion of the training. While the course objectives represented both short term and long term challenges to the graduates of the course, it was determined that focusing on individuals in this three to seven year post-graduation timeframe would provide adequate opportunities to determine the extent to which transfer of training occurred.

In order to establish the frame of the accessible population, the researcher contacted the Alliance Safety Council and obtained indirect access to the list of graduates of the COSS training. Due to a confidentiality agreement between the Alliance Safety Council and its graduates, direct access to the information by the researcher was not possible. However, the

Alliance Safety Council agreed to provide summary information, as well as the direct distribution of any instrument required by the study. The researcher was given access to the Alliance Safety Council's survey distribution software, within which the instrument was developed and made available to the National Program Director for distribution to those graduates who completed their training May 29, 2005 thru May 29, 2009.

The frame established from the Alliance Safety Council's records included 1,739 graduates. The sample size was determined using Cochran's sample size determination formula for continuous data (Snedecor & Cochran, 1980). Using the formula, the minimum required sample size was calculated to be 215. It was the intent of the researcher to provide the survey instrument to every member of the accessible population in an effort to meet the minimum sample size.

Equation:

$$n_o = \frac{t^2 s^2}{d^2}$$

$$n_o = \frac{(1.96)^2 (1)^2}{(.125)^2}$$

$$n_o = 246$$

$$n = \frac{n_o}{1 + \frac{n_o}{N}}$$

$$n = \frac{246}{1 + \frac{246}{1739}}$$

$$n = 215$$

Legend for Cochran's sample size determination formula:

d^2 = acceptable margin of error of $\pm 2.5\%$

(.025 x 5 point Likert-type scale)

s^2 = the estimated variance (1)

t^2 = risk willing to take

(t at .05 for N = 1,739 is about 1.96)

N = population size

n_o = unadjusted sample size

n = adjusted sample size

Instrumentation

A four part instrument, including a consent letter, was utilized to collect data in this study (Appendix A). Part I and Part II contain items found in the Learning Transfer Systems Inventory, version 4 (LTSI), version four. The LTSI introduced by Holton et al., (2000), has undergone several revisions resulting in the current version four. The instrument is designed to measure individual perceptions of transfer of training from work related training. The LTSI contains a section designed to measure specific training factors, and a second section designed to measure general training factors. The LTSI provides for a Likert-type response arrangement with five choices. Strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree were provided as potential responses. Permission to use the LTSI was obtained from Dr. Reid A. Bates (Appendix B).

According to Holton, et al.(2011), exploratory factor analyses indicated the items in the program-specific domain of the LTSI were best summarized by 11 underlying constructs and

items in the training-general domain were best summarized by five underlying constructs. Although the factors were correlated, none of the estimated correlations between the factors were excessively high ($>.85$) (Kline, 2005). These researchers estimated correlations between the factors were low to moderate ranging from .55 to .00 with an average interscale correlation of .24. These data support the discriminant validity and the distinctiveness of the factors measured by the LTSI and was consistent with the previous construct validation research done with the LTSI, according to Holton, et al.(2011).

Section I of the instrument utilized in this study measured specific training factors associated with COSS training. These factors included learner readiness, motivation to transfer, positive personal outcomes, negative personal outcomes, personal capacity for transfer, peer support, supervisor support, supervisor sanctions, perceived content validity, transfer design, and opportunity to use.

Section II of the instrument utilized in this study measured general factors such as transfer effort, performance - outcomes expectations, resistance – openness to change, performance self-efficacy and performance coaching.

Both Sections I and II contained a Likert-type response arrangement with five choices. Strongly disagree, disagree, neither agree nor disagree, agree and strongly agree are provided as potential responses.

Section III of the instrument utilized in this study measured the extent implementation of the COSS training program objectives occurred. This scale was researcher developed since no instrument was available in the literature or in the COSS program materials. The researcher designed an instrument to measure transfer of training associated with the objectives contained in the COSS program's Monday Morning Checklist™ which was provided to each trainee at the

conclusion of the training session. This checklist represented, in behavioral terms, the specific actions each trainee was expected to complete in his or her work environment as a result of the training provided. This section contained a Likert-type response design, with ten items, each providing for the following responses: have not completed and do not plan to, attempted this unsuccessfully, have not completed but plan to, and successfully completed this task. The content validity was established by a panel of four experts consisting of three graduate school faculty members at Louisiana State University and Alliance Safety Council's National Program Director.

Section IV of the instrument utilized in this study contained nine items designed to measure personal and professional demographic characteristics. The content validity was established by a panel of experts consisting of three graduate school faculty members at Louisiana State University.

Data Collection

Data collection methods and instrument were approved by the Institutional Review Board - IRB #E5965 (Appendix C).

Consistent with Dillman's (1978) non-response procedure, and in an effort to obtain the maximum response rate, the following steps were employed.

1. An introductory email (Appendix D) and the consent letter with survey (Appendix A) was sent to 1,739 selected participants via SurveyMonkey™ on December 10, 2012. The consent and directions for completing the survey contained an assurance of, and respect for, confidentiality.

2. If the survey was not returned within approximately two weeks following the initial solicitation, a friendly email reminder was sent to all non-respondents (Appendix E) December 27, 2012.
3. If the survey was not returned within approximately four weeks following the initial friendly reminder, a second friendly reminder (Appendix F) was sent to all remaining non-respondents on January 21, 2013.
4. If the survey was not returned within approximately two weeks following the second friendly reminder, a final friendly reminder (Appendix G) was sent to all remaining non-respondents on February 4, 2013. Access to the survey was terminated on February 7, 2013 (see Table 1).

Table 1 The COSS Survey Completed Response Rates by Waves

Waves	n	%
First Wave	179	55.76 %
Second Wave	93	28.97 %
Third Wave	37	11.53 %
Fourth Wave	12	3.74 %
Final	321	100.0%

Notes: Waves are measured in days.

1,739 selected COSS graduates received surveys

Data Analysis

The alpha level was set at .05 a' priori. The following represented the statistical analysis performed, by objective.

Objective 1 was to describe COSS graduates on selected personal and professional characteristics. These characteristics included gender, age, educational level, ethnicity,

employment status, industry type, earnings, amount of time since completing COSS training, and whether each participant status of COSS designation.

Variables which were measured on a categorical scale of measurement, that is, nominal and ordinal scales of measurement, were summarized using frequencies and percentages. Those variables measured on a nominal scale are gender, ethnicity, current employment status, employer's industry type and whether each participate currently holds a COSS designation. Those variables measured on an ordinal scale are age, highest level of school completed, money earned in 2011 and time since completing COSS training.

Objective 2 was to describe COSS graduates on the following training specific factors: learner readiness, motivation to transfer, positive personal outcomes, negative personal outcomes, personal capacity for transfer, peer support, supervisor support, supervisor sanctions, perceived content validity, transfer design, and opportunity to use. These variables were measured on an interval scale and summarized with means and standard deviations.

Objective 3 was to describe COSS graduates on the following general factors: transfer effort, performance –outcomes expectations, resistance – openness to change, performance self-efficacy and performance coaching. These variables were measured on an interval scale and summarized with means and standard deviations.

Objective 4 was to determine the extent to which COSS graduates were able to successfully conduct training transfer to the work environment. These variables were measured on an interval scale and summarized with means and standard deviations.

Objective 5 was to determine if there was a relationship between selected demographic characteristics and the degree to which successful transfer of training occurred. For the variables ethnicity, current employment status, and employer's industry type which were measured on a

nominal scale and had three or more categories, one way analysis of variance was used. For variables which was measured on a nominal scale and had two categories, the Point Biserial correlation coefficient was used. Those variables were gender and whether each participant currently held a COSS designation. For variables measured on an ordinal scale, the Spearman rank order correlation coefficient was used. These variables were age, highest level of school completed, money earned in 2011 and time since completing COSS training.

Objective 6 was to determine if there was a relationship between training specific factors as measured by the LTSI and the degree to which successful transfer of training occurred. This objective was accomplished utilizing the Pearson Product Moment correlation coefficient.

Objective 7 was to determine if there was a relationship between general factors as measured by the LTSI and the degree to which successful transfer of training occurred. This objective was to be accomplished utilizing the Pearson Product Moment correlation coefficient.

Objective 8 was to determine if a model existed which could explain a significant portion of the variance in transfer of training from the following measures: gender, age, level of education, ethnicity, employment status, industry type, personal income, number of years since the most recent completion of the COSS program, and status of COSS designation.

Objective 8 was accomplished by using stepwise regression analysis with transfer of training as the dependent variable. Other variables were treated as independent variables and entered for stepwise analysis because this was an exploratory study. In this regression equation significant variables were added that resulted in an increased variance by .01 as long as the complete regression equation remains significant.

The interpretation of the correlation coefficients was based on the following set of descriptors by Davis: .7 or higher – very strong relationship; .50 to .69 – substantial relationship;

.30 to .49 – moderate relationship; .10 to .29 – low relationship; and .09 or lower – negligible relationship (Davis, 1971).

CHAPTER 4: ANALYSIS OF RESULTS

This chapter presents the findings of this study. The results are organized by each objective question of the study.

Objective One

Objective one was to describe COSS graduates on selected personal and professional characteristics. These characteristics included gender, age, educational level, ethnicity, employment status, industry type, earnings, amount of time since completing COSS training, and whether each participant still possessed a current COSS designation. The survey was sent to 1,739 COSS graduates resulting in 300 usable responses.

Variables measured on a categorical scale of measurement, that is, nominal and ordinal scales of measurement, were summarized using frequencies and percentages. Those variables measured on a nominal scale are gender, ethnicity, current employment status, employer's industry type and whether each participant currently holds a COSS designation. Those variables measured on an ordinal scale are age, highest level of school completed, money earned in 2011, and time since completing COSS training.

Gender of Respondents. The majority of the respondents indicated their gender as male ($\underline{n} = 233$, 81.8%) while 52 respondents (18.2%) indicated their gender as female. Fifteen respondents failed to indicate their gender.

Age of Respondents. The respondents were asked to indicate their ages by marking one of six categories. The largest number of respondents indicated their age fell between 50 and 59 years ($\underline{n} = 103$ or 36.6%). The second largest group indicated their age fell between 40 and 49 years ($\underline{n} = 85$ or 29.9%). The age distribution for the sample is presented in Table 2.

Table 2 Age Distribution of Participating Certified Occupational Safety Specialists Course Graduates

Age in Years	n	Percent
18-21	0	0.0
22-29	7	2.5
30-39	49	17.3
40-49	85	29.9
50-59	103	36.6
≥60	39	13.7
Total	283	100.0

Note: Seventeen respondents failed to respond to the age item on the questionnaire.

Educational Level of Respondents. Regarding the highest level of education completed, the largest group of the respondents ($\underline{n} = 109$ or 38.2%) indicated that they completed some college but no degree. The second largest group ($\underline{n} = 78$ or 27.4%) had completed a bachelor's degree. Twenty respondents (7.0%) reported a graduate degree as the highest education completed. Table 3 presents data regarding the highest level of education completed by the respondents.

Table 3 Highest Level of Education Completed by Participating Certified Occupational Safety Specialists Course Graduates

Level of Education	n	Percent
Less than High School	0	0.0
High School degree or equivalent	36	13.0
Some College but No Degree	109	38.2
Associate Degree	41	14.4
Bachelor Degree	78	27.4
Graduate Degree	20	7.0
Total	284	100.0

Note: Sixteen respondents failed to respond to the highest level of education item on the questionnaire.

Ethnicity of Respondents. The respondents were further described on the variable ethnicity. The majority of the respondents identified themselves as White ($\underline{n} = 234$ or 82.7%). The second largest group identified themselves as Hispanic ($\underline{n} = 27$ or 9.9%). Table 4 presents data regarding the ethnicity of the respondents.

Table 4 Self-Identified Ethnicity of Participating Certified Occupational Safety Specialists Course Graduates

Ethnicity	n	Percent
White	234	82.7
Hispanic	27	9.9
Black or African-American	13	4.6
From Multiple Races	4	1.4
Asian	2	0.7
American Indian or Alaskan Native	1	0.4
Native Hawaiian or Pacific Islander	1	0.4
Total	282	100.0

Note: Eighteen respondents failed to respond to the ethnicity item on the questionnaire.

Current Employment Status of Respondents. Respondents provided information about their current employment status. The majority of the respondents reported working 40 or more hours per week ($\underline{n} = 265$ or 93.3%). The categories with the lowest number of respondents were “Not Employed, Not Looking For Work” ($\underline{n} = 1$ or 0.4%) and “Disabled, Not Able To Work” with 0 respondents. Table 5 presents information about respondent’s employment status.

Table 5 Current Employment Status as Reported by Participating Certified Occupational Safety Specialists Course Graduates

Employment Status	n	Percent
Employed, Working 40 or More Hours Per Week	265	93.2
Employed, Working 1-39 Hours Per Week	7	2.5
Not Employed, Looking For Work	7	2.5
Retired	4	1.4
Not Employed, Not Looking For Work	1	0.4

(Table 5 Continued)

Employment Status	N	Percent
Disabled, Not Able to Work	0	0.0
Total	284	100.0

Note: Sixteen respondents failed to respond to the employment status item.

Respondents' Employer Industry Type. Respondents also provided information about their employer's industry type. The largest number of the respondents reported their employer's industry type as "construction" ($\underline{n} = 70$, 24.5%). The second largest group reported their employer's industry type as "other" ($\underline{n} = 51$, 17.8%). The least reported industry types were "aerospace" ($n = 2$, 0.7%) and "agriculture" ($\underline{n} = 2$, 0.7%). Table 6 presents the respondents' employer's industry type distribution.

Table 6 Current Employer's Industry Types as Reported by Participating Certified Occupational Safety Specialists Course Graduates

Employer's Industry Type	n	Percent
Construction	70	24.5
Other	51	17.8
Chemical	46	16.1
Energy	45	15.7
Manufacturing	41	14.7
Utilities	18	6.3
Education	10	3.5
Aerospace	2	0.7
Agriculture	2	0.7
Total	285	100.0

Note: Fifteen respondents failed to respond to the employer's industry type on the questionnaire.

2011 Earnings of Respondents. Respondents self-reported their 2011 earnings. The largest number of respondents ($\underline{n} = 72$, 26.2%) reported their earnings as "\$100,000 or more", with the second largest number of respondents ($\underline{n} = 41$, 14.9%) reporting earnings between

“\$70,000 and \$79,999.” The smallest number of respondents reported “\$0 to \$9,999” ($n = 1$, 0.4%), and “\$10,000 to 10,999” ($n = 1$, 0.4%). Table 7 presents data regarding reported 2011 earnings of respondents.

Table 7 2011 Earnings as Reported by Participating Certified Occupational Safety Specialists Course Graduates

2011 Earnings	n	Percent
\$0 - \$9,999	1	0.4
\$10,000 - \$19,999	1	0.4
\$20,000 - \$29,999	5	1.8
\$30,000 - \$39,999	14	5.5
\$40,000 - \$49,999	24	8.7
\$50,000 - \$59,999	19	6.9
\$60,000 - \$69,999	37	13.5
\$70,000 - \$79,999	41	14.9
\$80,000 - \$89,999	27	9.8
\$90,000 - \$99,999	33	12.0
\$100,000 or More	72	26.2
Total	274	100.0

Note: Twenty six respondents failed to respond to the 2011 earnings item on the questionnaire.

Time Since Completing COSS Training. Study participants were asked to indicate how long ago they completed their COSS training course. Respondents provided their responses within the framework of the four timeframes provided. The largest group of respondents ($n = 140$, 49.0%) reported completing their COSS training course between 3 and 4 years ago. Nine respondents (3.1%) reported completing their COSS training course less than a year ago.

Assurances were received by representatives of the Alliance Safety Council that all seven respondents completed training lectures 3-4 years ago. Therefore, these respondents were

included in the study. Table 8 presents information regarding how long ago respondents reported completing their COSS training course.

Table 8 Time Since Respondents Completed Their COSS Training Course as Reported by Participating Certified Occupational Safety Specialists Course Graduates

Time Since Completing COSS Training	n	Percent
Less Than a Year	9	3.1
1 – 2 Years	13	4.5
3 -4 Years	140	49.0
5 Years or Greater	123	43.4
Total	285	100.0

Note: Fifteen respondents failed to respond to the time since completing COSS training item on the questionnaire.

Respondents Currently Holding a COSS Designation. Respondents were asked if they currently hold a Certified Safety Specialist designation. Two hundred forty one respondents (85.2%) indicated they did still hold a COSS designation, while forty two (14.8) respondents indicated they did not still hold the COSS designation. Table 9 presents the distribution of responses.

Table 9 Status of Respondents' COSS Designation as Reported by Participating Certified Occupational Safety Specialists Course Graduates

Currently Hold a COSS Designation	n	Percent
Yes	241	85.2
No	42	14.8
Total	283	100.0

Note: Seventeen respondents failed to respond to the COSS designation status item on the questionnaire.

Objective Two

Objective 2 was to describe COSS graduates on specific training factors. These variables were measured on an interval scale and summarized with means and standard deviations. The survey produced 300 usable responses.

Respondents were presented with a list of thirty three items designed to measure their responses to a specific training program. These items were presented using a five point Likert-like design each providing for the following responses: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. The following scale was created by the researcher to aid in the interpretation of the responses: 1 -1.50 = strongly disagree, 1.51 – 2.50 = disagree, 2.51 – 3.49 = neither agree nor disagree, 3.50 – 4.49 = agree, and 4.50 – 5.00 = strongly agree.

As part of the analysis, the means and standard deviations of the responses to each item in the Specific Training Program Factors part of the survey were calculated. The item that received the highest level of agreement from respondents was “I believed this training would help me do my job better” with a mean 4.43 (SD = .69). The item that received the second highest level of agreement from respondents was “when I left this training, I couldn’t wait to get back to work to try what I learned” with a mean of 4.22 (SD = .75). Using the interpretive scale, these items were in the “agree” range. The item with the lowest level of agreement was “my supervisor will probably criticize this training when I get back to the job” with a mean of 1.74 (SD = .70). The response for this item fell within the “disagree” range. The item with the second lowest level of agreement was “trying to use this training will take too much energy away from my other work” with a mean of 1.76 (SD = .68). The response for this item also fell within the “disagree” range. Overall, the response to most items (19) fell in the “agree” range on the interpretive scale. Table 10 below illustrates the frequency, mean score, standard deviation and interpretive scale for each item representing respondents’ level of agreement with the Specific Training Program factors.

As part of the analysis, the means and standard deviations for each Specific Training Program Subscale were calculated. The subscale that received the highest level of agreement from respondents was “Motivation to Transfer Learning” with a mean of 4.25 (SD = .167).

Table 10 Description of Specific Training Program Factors as Reported by Participating Certified Occupational Safety Specialists Course Graduates

Specific Training Program Items	n	Ma	SD	Interpretive Scale b
STP4. I believed this training would help me do my job better	298	4.43	.69	A
STP3. When I left this training, I couldn't wait to get back to work to try what I learned	299	4.22	.75	A
STP32. The way the trainer(s) taught the material made me feel more confident I could apply it in my job	296	4.21	.67	A
STP33. I will get opportunities to use this training on my job	299	4.20	.71	A
STP31. The trainer(s) used lots of examples that showed me how I could use my learning on the job	299	4.17	.69	A
STP13. I am able to try out this training on my job.	298	4.11	.70	A
STP30. It is clear to me that the people conducting this training understand how I will use what I learn	300	4.10	.72	A
STP2. This training will increase my personal productivity	298	4.10	.69	A
STP17. The resources needed to use what I learned in this training will be available to me	297	3.96	.74	A
STP18. My colleagues will appreciate my using the new skills I learned in this training	297	3.94	.71	A
STP20. At work, my colleagues will expect me to use what I have learned in this training	297	3.87	.80	A
STP27. The instructional aids (equipment, illustrations, etc.) used in this training were very similar to real things I use on the job	299	3.84	.72	A
STP19. My colleagues will encourage me to use the skills I have learned in this training	295	3.80	.78	A
STP28. The methods used in this training are very similar to how we do it on the job	299	3.77	.78	A
STP6. If I use this training I am more likely to be rewarded	295	3.76	.78	A
STP29. I liked the way this training seemed so much like my job	297	3.62	.82	A
STP8. Before COSS training, I had a good understanding of how it would fit my job-related development	300	3.57	.83	A

(Table 10 Continued)

Specific Training Program Items	n	Ma	SD	Interpretive Scale b
STP5. Successfully using this training will help me get a salary increase	300	3.52	.95	A
STP26. My supervisor will help me set realistic goals for job performance based on my training	298	3.50	.92	A
STP1. Prior to this training, I knew how the program was supposed to affect my performance	299	3.47	.85	N
STP7. I am likely to receive some recognition if I use what I learned in COSS training	298	3.45	1.03	N
STP22. My supervisor will meet with me to discuss ways to apply this training on the job	296	3.24	.99	N
STP9. I knew what to expect from this training before it began	298	3.16	.94	N
STP21. My supervisor will meet with me regularly to work on problems I may be having in trying to use this training	299	3.13	.98	N
STP12. Employees in this organization will be penalized for not using what they have learned in training	299	2.38	.94	D
STP16. If I do not utilize this training I will be cautioned about it	298	2.16	.86	D
STP15. If I do not use the new techniques taught in this training, I will be reprimanded	295	2.02	.82	D
STP14. There is too much happening at work right now for me to try to use this training	294	1.91	.69	D
STP23. My supervisor will oppose the use of techniques I have learned in this training	296	1.88	.79	D
STP24. My supervisor will think I am being less effective when I use techniques taught in this training	293	1.79	.70	D
STP10. I don't have time to try to use this training on my job	295	1.77	.68	D
STP11. Trying to use this training will take too much energy away from my other work	296	1.76	.68	D
STP25. My supervisor will probably criticize this training when I get back to the job	298	1.74	.70	D

a Response scale: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neither Agree Nor Disagree (N), 4 = Agree (A), and 5 = Strongly Agree (SA)

b Interpretive scale: 1 – 1.50 = SD, 1.51 – 2.50 = D, 2.51 – 3.49 = N, 3.50 – 4.49 = A, and 4.50 – 5.00 = SA

The subscale that received the second highest level of agreement from respondents was “Transfer Design” with a mean of 4.16 (SD = .054). Using the interpretive scale, these items were in the “agree” range. The subscale with the lowest level of agreement was “Supervisor/Manager Sanctions” with a mean of 1.80 (SD = .063). The response for this subscale fell within the “disagree” range. The subscale with the second lowest level of agreement was “Personal Capacity for Transfer” with a mean of 1.82 (SD = .077). The response for this subscale also fell within the “disagree” range. Overall, most of the subscales (6) fell within the “agree” range on the interpretive scale. Table 11 below illustrates the mean score, standard deviation and interpretive scale given the respondents’ level of agreement with the Specific Training Program subscales.

Table 11 Description of Specific Training Program Subscales as Calculated by Responses Reported by Participating Certified Occupational Safety Specialists Course Graduates

Specific Training Program Subscales	M	SD	Interpretive Scale a
Motivation to Transfer Learning	4.25	.17	A
Transfer Design	4.16	.05	A
Opportunity to Use Learning	4.01	.12	A
Peer Support	3.86	.08	A
Perceived Content Validity	3.74	.11	A
Personal Outcomes – Positive	3.58	.16	A
Learner Readiness	3.40	.21	N
Supervisor/Manager Support	3.28	.18	N
Personal Outcomes – Negative	2.19	.18	D
Personal Capacity for Transfer	1.82	.08	D
Supervisor/Manager Sanctions	1.80	.06	D

a Interpretive scale: 1 – 1.50 = SD, 1.51 – 2.50 = D, 2.51 – 3.49 = N, 3.50 – 4.49 = A, and 4.50 – 5.00 = SA

Objective Three

Objective 3 was to describe COSS graduates on general factors. These variables were measured on an interval scale and summarized with means and standard deviations. The survey produced 300 usable responses.

Respondents were presented with a list of fifteen items designed to measure their responses to the Training in General Program Factors. These items were presented using a five point Likert-like design with each providing for the following responses: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. The following interpretive scale was created by the researcher to aid in the interpretation of the responses: 1 -1.50 = strongly disagree, 1.51 – 2.50 = disagree, 2.51 – 3.49 = neither agree nor disagree, 3.50 – 4.49 = agree, and 4.50 – 5.00 = strongly agree.

As part of the analysis, the means and standard deviations for each General Training Program subscale were calculated. The subscale that received the highest level of agreement from respondents was “the harder I work at learning, the better I can do my job” with a mean of 4.23 (SD = .65). The subscale that received the second highest level of agreement from respondents was “the more training I apply on my job, the better I do my job” with a mean of 4.20 (SD = .60). Using the interpretive scale, these subscales were in the “agree” range. The subscale with the lowest level of agreement was “experienced employees in my group ridicule others when they use techniques they learn in training” with a mean of 2.07 (SD = .81). The response for this subscale fell within the “disagree” range. The subscale with the second lowest level of agreement was “People in my group are not willing to put in the effort to change the way things are done” with a mean of 2.46 (SD = .94). The response for this subscale also fell with the

“disagree” range. Overall, the response to most subscales (8) fell within the “agree” range on the interpretive scale.

Table 12 below illustrates the frequency, mean score, standard deviation and interpretive scale for each subscale representing respondents’ level of agreement with the Training in General Program factors.

Table 12 Description of Training in General Program Factors as Reported by Participating Certified Occupational Safety Specialists Course Graduates

General Training Program Items	n	Ma	SD	Interpretive Scale b
GTP35. The harder I work at learning, the better I can do my job	297	4.23	.65	A
GTP38. The more training I apply on my job, the better I do my job	298	4.20	.60	A
GTP47. At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations	296	4.11	.62	A
GTP34. My job performance improves when I use new things that I have learned	298	4.08	.66	A
GTP46. I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge	294	4.07	.65	A
GTP45. I never doubt my ability to use newly learned skills on the job	298	3.95	.78	A
GTP37. When I do things to improve my performance, good things happen to me	298	3.92	.71	A
GTP36. For the most part, the people who get rewarded around here are the ones that do something to deserve it	296	3.62	.89	A
GTP39. My job is ideal for someone who likes to get rewarded when they do something really good	295	3.26	.90	N
GTP48 People often tell me things to help me improve my job performance	294	3.09	.93	N
GTP43. People often make suggestions about how I can improve my job performance	296	2.81	.95	N
GTP44. I get a lot of advice from others about how to do my job better	294	2.71	.97	N
GTP42. My workgroup is reluctant to try new ways of doing things	292	2.50	.97	D
GTP41. People in my group are not willing to put in the effort to change the way things are done	298	2.46	.94	D

(Table 12 Continued)

General Training Program Items	n	Ma	SD	Interpretive Scale b
GTP40. Experienced employees in my group ridicule others when they use techniques they learn in training	296	2.07	.81	D

a Response scale: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neither Agree Nor Disagree (N), 4 = Agree (A), and 5 = Strongly Agree (SA)

b Interpretive scale: 1 – 1.50 = SD, 1.51 – 2.50 = D, 2.51 – 3.49 = N, 3.50 – 4.49 = A, and 4.50 – 5.00 = SA

As part of the analysis, the means and standard deviations for each General Training Program Subscale were calculated. The subscale that received the highest level of agreement from respondents was “Transfer Effort – Performance Expectations” with a mean of 4.17 (SD = .077). The subscale that received the second highest level of agreement from respondents was “Performance Self-Efficacy” with a mean of 4.04 (SD = .083). Using the interpretive scale, these subscales were in the “agree” range. The subscale with the lowest level of agreement was “Resistance/Openness to Change” with a mean of 2.34 (SD = .238). The response for this subscale fell within the “disagree” range. The subscale with the second lowest level of agreement was “Feedback/Performance Coaching” with a mean of 2.87 (SD = .197). The response for this subscale fell within the “neutral” range. Overall, most of the subscales (3) fell within the “agree” range on the interpretive scale. Table 13 below illustrates the mean score, standard deviation and interpretive scale given the respondents’ level of agreement with the Specific Training Program subscales.

Table 13 Description of General Training Program Subscales as Calculated by Responses Reported by Participating Certified Occupational Safety Specialists Course Graduates

General Training Program Subscales	M	SD	Interpretive Scale a
Transfer Effort – Performance Expectations	4.17	.08	A
Performance Self-Efficacy	4.04	.08	A
Performance – Outcomes Expectations	3.60	.33	A

(Table 13 Continued)

General Training Program Subscales	M	SD	Interpretive Scale a
Feedback/Performance Coaching	2.87	.20	N
Resistance/Openness to Change	2.34	.24	D

a Interpretive scale: 1 – 1.50 = SD, 1.51 – 2.50 = D, 2.51 – 3.49 = N, 3.50 – 4.49 = A, and 4.50 – 5.00 = SA

Objective Four

Objective 4 was to determine the extent to which participating COSS graduates were able to successfully conduct training transfer to the work environment as described by the objectives contained in the COSS program's Monday Morning Checklist™ provided to each trainee at the conclusion of the training session. These variables were measured on an interval scale and summarized with means and standard deviations. The survey produced 300 usable responses.

Respondents were presented with a list of ten items designed to measure the extent implementation of the COSS training program objectives occurred. These items were presented using a four point Likert-like design each providing for the following responses: have not completed and do not plan to, attempted this unsuccessfully, have not completed but plan to, and successfully completed this task. The following scale was created by the researcher to aid in the interpretation of the responses: 1 -1.75 = have not completed and do not plan to, 1.76 – 2.50 = attempted this unsuccessfully, 2.51 – 3.25 = have not completed but plan to, and 3.26 – 4.00 = successfully completed this task.

As part of the analysis, the means and standard deviations of the responses to each item in the Monday Morning Checklist™ part of the survey were calculated. The item that received the highest level of agreement from respondents was "I did identify OSHA required training" with a mean of 3.87 (SD = .513). The item that received the second highest level of agreement from respondents was "I did identify OSHA required written programs" with a mean of 3.84 (SD

= .563). Using the interpretive scale, both items were in the “successfully completed this task” range. The item with the lowest level of agreement was “I did create or purchase a comprehensive safety auditing tool and set up a schedule for performing the audits” with a mean of 3.24 (SD = 1.081). The response for this item fell within the “have not completed but plan to” range. The item with the second lowest level of agreement was “I did put an accident investigation toolkit in place” with a mean of 3.56 (SD = .893). The response for this item fell within the “successfully completed this task” range. Overall, the response to most items (9) fell within the “successfully completed this task” range on the interpretive scale. Table 14 below illustrates the frequency, mean score, standard deviation and interpretive scale for each item representing respondents’ level of agreement with Monday Morning Checklist™ characteristics.

Table 14 Description of the Level of Agreement of Participating Certified Occupational Safety Specialists Course Graduates Reflecting Monday Morning Checklist Characteristics

Monday Morning Checklist Items	n	Ma	SD	Interpretive Scale b
MMC56. I did identify OSHA required training	283	3.87	.51	C
MMC55. I did identify OSHA required written programs	280	3.84	.56	C
MMC50. I have identified our Total Recordable Incidence Rate	283	3.72	.73	C
MMC57. I did perform risk analyses for key jobs and processes	284	3.69	.72	C
MMC53. I did review all inspection forms to make sure they cover all requirements	283	3.68	.75	C
MMC51. I did search my company’s records to assess where the greatest likelihood of an accident may lie	282	3.65	.78	C
MMC49. I have identified our Standard Industrial Classification Code	283	3.64	.76	C
MMC52. I did review the Safety and Health Program Check-up with management	282	3.57	.84	C
MMC58. I did put an accident investigation toolkit in place	281	3.56	.89	C

(Table 14 Continued)

Monday Morning Checklist Items	n	Ma	SD	Interpretive Scale b
MMC54. I did create or purchase a comprehensive safety auditing tool and set up a schedule for performing the audits	282	3.24	1.08	P
a Response scale: 1 = Have not completed and do not plan to (N), 2 = Attempted this unsuccessfully (U), 3 = Have not completed but plan to (P), and 4 = Successfully completed this task (C)				
b Interpretive scale: 1 – 1.75 = N, 1.76 – 2.50 = U, 2.51 – 3.25 = P, and 3.26 – 4.00 = C				

Objective Five

Objective 5 was to determine if there is a relationship between selected demographic characteristics and the degree to which successful transfer of training occurred as described by the objectives contained in the COSS program's Monday Morning Checklist™. The survey produced 300 usable responses. The selected demographic characteristics include:

- a) gender
- b) age
- c) educational level
- d) ethnicity
- e) employment status
- f) industry type
- g) earnings
- h) amount of time since completing COSS training
- i) whether each participant status of COSS designation

Gender. A comparison of the degree to which successful transfer of training occurred between males and females was undertaken through calculation of one way analysis of variance (ANOVA). The mean item score for males was slightly higher than that for females (Table 15).

Table 15 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Gender for Participating Certified Occupational Safety Specialists Course Graduates

Gender	n	M	SD
Male	233	3.66	.50
Female	52	3.58	.62
Total a	285	3.64	.53

Note: Fifteen respondents failed to respond to the gender item.

a. Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the different gender groups ($F_{1,283} = .700, p = .404$). The differences in overall transfer of training between the gender groups were not statistically significant ($F_{1,283} = .911, p = .341$).

Age. Differences in overall transfer of training scores were examined by age ranges. The sample sizes, overall transfer of training score item means and standard deviations reported by age ranges are illustrated in Table 16. The mean item score was highest for the “21-29” category.

Table 16 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Gender for Participating Certified Occupational Safety Specialists Course Graduates

Age in Years	N	M	SD
18-21	0	-	-
21-29	7	3.83	.24
30-39	49	3.72	.42
40-49	85	3.55	.63
50-59	103	3.63	.53
≥60	39	3.75	.38
Total a	283	3.64	.53

Note: Seventeen respondents failed to respond to the age item on the questionnaire.

a. Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed a violation of the assumption of equal variances between the different age groups ($F_{4,278} = 3.210, p = .013$). A

calculation of the Welch Statistic revealed the presence of equal variances between the different age groups ($F_{4, 44.883} = 2.181, p = .86$).

Educational Level. A comparison of the learning transfer score by the respondents' highest level of education completed was undertaken through calculation of one way analysis of variance (ANOVA). The mean item score was highest for the "Associate Degree" category (Table 17).

Table 17 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Level of Education for Participating Certified Occupational Safety Specialists Course Graduates

Level of Education	n	M	SD
Less than High School	0	-	-
High School degree or equivalent	36	3.50	.66
Some College but No Degree	109	3.68	.50
Associate Degree	41	3.73	.47
Bachelor Degree	78	3.61	.60
Graduate Degree	20	3.63	.34
Total a	.284	3.64	.53

Note: Sixteen respondents failed to respond to the age item on the questionnaire.

a Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the education levels ($F_{4,279} = 1.917, p = .108$). The differences in overall transfer of training between the education levels were not statistically significant ($F_{4,279} = 1.146, p = .335$).

Ethnicity. A comparison of the learning transfer score by the respondents' ethnicity was undertaken through calculation of one way analysis of variance (ANOVA). The mean item score was highest for both the "American Indian" and Asian" category (Table 18).

Table 18 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Ethnicity for Participating Certified Occupational Safety Specialists Course Graduates

Ethnicity	n	M	SD
White	234	3.64	.53
Black or African-American	13	3.90	.14
Hispanic	27	3.47	.63
American Indian or Alaskan Native	1	4.00	-
Asian	2	4.00	.00
Native Hawaiian or Pacific Islander	1	3.30	-
From Multiple Races	4	3.73	.31
Total a	282	3.64	.53

Note: Eighteen respondents failed to respond to the age item on the questionnaire.

a Reported as overall item mean and standard deviation

A comparison of the learning transfer score by the respondents' recoded ethnicity was undertaken through calculation of one way analysis of variance (ANOVA) due to the small number of responses in several categories. The mean item scores for "white" and "non-white" were equivalent, falling into the "successfully completed this task" category in the interpretive scale (Table 19).

Table 19 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Recoded Ethnicity for Participating Certified Occupational Safety Specialists Course Graduates

Ethnicity	n	M	SD
White	234	3.64	.53
Non-White	48	3.64	.53
Total a	282	3.64	.53

Note: Eighteen respondents failed to respond to the age item on the questionnaire.

a Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded ethnicity categories ($F_{1,280} = .087, p = .769$).

The differences in overall transfer of training between the recoded ethnicity categories were not statistically significant ($F_{1,280} = .001$, $p = .974$)

Current Employment Status. A comparison of the learning transfer score by the respondents' current employment status was undertaken through the calculation of a one way analysis of variance (ANOVA). The mean item score was highest for the "Employed, working 40 or more hours per week" category (Table 20).

Table 20 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Current Employment Status for Participating Certified Occupational Safety Specialists Course Graduates

Current Employment Status	n	M	SD
Employed, Working 1-39 Hours Per Week	7	3.21	.36
Employed, Working 40 or More Hours Per Week	265	3.66	.52
Not Employed, Looking For Work	7	3.49	.63
Not Employed, Not Looking For Work	1	2.10	-
Retired	4	3.53	.50
Disabled, Not Able to Work	0	-	-
Total a	284	3.64	.53

Note: Sixteen respondents failed to respond to the employment status item.

a Reported as overall item mean and standard deviation

A comparison of the learning transfer score by the respondents' recoded current employment status was undertaken through the calculation of a one way analysis of variance (ANOVA). The mean item score was highest for the "Employed, working 40 or more hours per week" category (Table 21).

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded current employment status categories ($F_{3,280} = .911$, $p = .436$).

Table 21 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Current Employment Status for Participating Certified Occupational Safety Specialists Course Graduates

Current Employment Status	n	M	SD
Employed, Working 1-39 Hours Per Week	7	3.21	.36
Employed, Working 40 or More Hours Per Week	265	3.66	.52
Not Employed, Looking For Work	7	3.49	.63
Retired	5	3.2	.77
Total a	284	3.64	.53

Note: Sixteen respondents failed to respond to the employment status item.

a Reported as overall item mean and standard deviation

The differences in overall transfer of training between the recoded current employment status categories were statistically significant ($F_{3,280} = 2.963$, $p = .033$). Table 22 represents the ANOVA results for differences in overall transfer of training for participating Certified Occupational Safety Specialists Course graduates by current employment status.

Table 22 One Way Analysis of Variance Illustrating Differences in Overall Transfer of Training by Current Employment Status For Participating Certified Occupational Safety Specialists Course Graduates

	df	SS	MS	Fa	Pb
Between Groups	3	2.434	.811	2.963	.033
Within Groups	280	76.674	.274		
Total	283	79.108			

a One Way Analysis of Variance

b .05 Alpha Level for the Two-Tailed Test of Significance

The Tukey's post hoc analyst was used to locate the significant differences between means and revealed significant differences in the overall transfer of training score between those reporting "Employed, Working 1-39 Hours Per Week" category and those reporting "Employed, Working 40 or More Hours Per Week" category (mean difference = -.46), with the latter representing the greater mean.

Industry Type. Differences in overall transfer of training scores were examined by the respondents' employer's industry type. The sample sizes, overall transfer of training score item means and standard deviations reported by industry types are illustrated in Table 26.

The mean item score was highest for the "Agriculture" category, a score that fell in the "successfully completed this task" category in the interpretive scale (Table 23).

Table 23 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Employer's Industry Type for Participating Certified Occupational Safety Specialists Course Graduates

Industry Type	n	M	SD
Aerospace	2	3.65	.49
Agriculture	2	4.00	.00
Chemical	46	3.60	.63
Construction	70	3.73	.37
Education	10	2.99	.91
Energy	45	3.62	.55
Manufacturing	41	3.64	.52
Utilities	18	3.67	.36
Other	51	3.69	.50
Total a	285	3.64	.53

Note: Fifteen respondents failed to respond to the employer's industry type on the questionnaire.
a Reported as overall item mean and standard deviation

A comparison of the learning transfer score by the respondents' recoded employer's industry type was undertaken through calculation of one way analysis of variance (ANOVA) due to the small number of responses in the aerospace , agriculture, education and utilities categories. These categories were included in the category other. The mean item score was highest for the "Construction" category (Table 24).

Table 24 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Employer's Industry Type for Participating Certified Occupational Safety Specialists Course Graduates

Industry Type	n	M	SD
Chemical	46	3.60	.63
Construction	70	3.72	.37
Energy	45	3.62	.55
Manufacturing	41	3.64	.52
Other	83	3.61	.57
Total a	285	3.64	.53

Note: Fifteen respondents failed to respond to the employer's industry type on the questionnaire.
a Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded employer's industry type categories ($F_{4,280} = .911$, $p = .185$). The differences in overall transfer of training between the recoded employer's industry type categories were not statistically significant ($F_{4,280} = .625$, $p = .645$).

Earnings. Differences in overall transfer of training were examined by earnings category. The mean item score was highest for the "\$80,000 - \$89,999" category, a score that fell in the "successfully completed this task" category in the interpretive scale (Table 25).

A comparison of the learning transfer score by the respondents' recoded 2011 earnings was undertaken through calculation of one way analysis of variance (ANOVA) due to the low number of responses in several categories. The mean item score was highest for the "\$80,000 or more" category (Table 26).

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded earnings categories ($F_{2,271} = 2.837$, $p = .060$). The differences in overall transfer of training between the recoded earnings categories were statistically significant ($F_{2,271} = 1.171$, $p = .011$).

Table 25 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by 2011 Earnings for Participating Certified Occupational Safety Specialists Course Graduates

2011 Earnings	n	M	SD
\$0 - \$9,999	1	3.50	-
\$10,000 - \$19,999	1	3.56	-
\$20,000 - \$29,999	5	3.04	.32
\$30,000 - \$39,999	14	3.41	.78
\$40,000 - \$49,999	24	3.59	.52
\$50,000 - \$59,999	19	3.71	.35
\$60,000 - \$69,999	37	3.57	.67
\$70,000 - \$79,999	41	3.74	.41
\$80,000 - \$89,999	27	3.81	.26
\$90,000 - \$99,999	33	3.56	.57
\$100,000 or More	72	3.71	.47
Total a	274	3.65	.51

Note: Twenty six respondents failed to respond to the 2011 earnings item on the questionnaire.

a Reported as overall item mean and standard deviation

Table 26 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by 2011 Earnings for Participating Certified Occupational Safety Specialists Course Graduates

2011 Earnings	n	M	SD
\$0 - \$39,999	21	3.34	.67
\$40,000 - \$79,999	121	3.65	.52
\$80,000 - or More	132	3.70	.47
Total a	274	3.65	.51

Note: Twenty six respondents failed to respond to the Y2011 earnings item on the questionnaire.

a Reported as overall item mean and standard deviation

Table 27 illustrates the ANOVA results for differences in overall transfer of training for participating Certified Occupational Safety Specialists Course graduates by recoded earnings categories.

Table 27 One Way Analysis of Variance Illustrating Differences in Overall Transfer of Training by Y2011 Recoded Earnings Categories For Participating Certified Occupational Safety Specialists Course Graduates

	df	SS	MS	Fa	Pb
Between Groups	2	2.342	1.171	4.580	.011
Within Group	271	69.281	.256		
Total	273	71.623			

a One Way Analysis of Variance

b .05 Alpha Level for the Two-Tailed Test of Significance

The Tukey's post hoc analysis used to locate the significant differences between means revealed significant differences in the overall transfer of training score between the "\$0 - \$39,999" earnings category and "\$40,000 - \$79,999" earnings category (mean difference = -.32), and between the "\$0 - \$39,999" earnings category and "\$80,000 - or more" category (mean difference = -.36).

Time Since Completing COSS Training. A comparison of the learning transfer score by the time since respondents' completion of the COSS training was undertaken through calculation of one way analysis of variance (ANOVA). The mean item score was highest for the "Less than a year" category (Table 28).

Table 28 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Time Since Completing the COSS Training for Participating Certified Occupational Safety Specialists Course Graduates

Time Since Completing COSS Training	n	M	SD
Less Than a Year	9	3.76	.30
1 – 2 Years	13	3.55	.50
3 -4 Years	140	3.61	.60
5 Years or Greater	123	3.68	.45
Total a	285	3.64	.53

Note: Fifteen respondents failed to respond to the time since completing COSS training item on the questionnaire.

a Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the time since completing the COSS training categories ($F_{3,281} = 1.239$, $p = .296$). The differences in overall transfer of training between the time since completing the COSS training categories were not statistically significant ($F_{3,281} = .673$, $p = .569$).

Respondents Currently Holding a COSS Designation. A comparison of the learning transfer score by whether respondents were currently holding a COSS designation was undertaken through calculation of one way analysis of variance (ANOVA). The mean item score was highest for the “Yes” category (Table 29).

Table 29 Group Sizes, Overall Transfer of Training Mean Scores, and Standard Deviation by Currently Hold a COSS Designation for Participating Certified Occupational Safety Specialists Course Graduates

Currently Hold a COSS Designation	n	M	SD
Yes	241	3.66	.52
No	42	3.55	.55
Total a	283	3.64	.53

Note: Seventeen respondents failed to respond to the COSS designation status item on the questionnaire.

a Reported as overall item mean and standard deviation

The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the currently hold a COSS designation categories ($F_{1,281} = 1.649$, $p = .200$). The differences in overall transfer of training between currently hold a COSS designation categories were not statistically significant ($F_{1,281} = 1.603$, $p = .207$).

Objective Six

Objective six was to determine if there is a relationship between training specific factors as measured by the LTSI and the degree to which successful transfer of training occurred as

measured by the Monday Morning Checklist™. The survey produced 300 usable responses.

Pearson Product Moment correlation coefficient was used.

The Pearson Product Moment correlation procedure indicated a significant correlation between training specific factors and the overall transfer of training scores of respondents ($r = .31, p < .001$). Using Davis' descriptors (1971) this correlation would be classified as a moderate positive relationship indicating respondents with higher training specific factor scores tended to have higher transfer of training scores.

The interpretation of the correlation coefficients was based on the following set of descriptors by Davis: .7 or higher -- very strong relationship; .50 to .69 – substantial relationship; .30 to .49 – moderate relationship; .10 to .29 – low relationship; and .09 or lower – negligible relationship (Davis, 1971).

Objective Seven

Objective seven was to determine if there is a relationship between training general factors as measured by the LTSI and the degree to which successful transfer of training occurred as measured by the Monday Morning Checklist™. The survey produced 300 usable responses. The Pearson Product Moment correlation coefficient was used.

The Pearson Product Moment correlation procedure indicated a significant correlation between training general factors and the overall transfer of training scores of respondents ($r = .26, p < .001$).

Using Davis' descriptors (1971) this correlation would be classified as a low positive relationship indicating respondents with higher training general factor scores tended to have higher transfer of training scores.

Objective Eight

Objective eight was to determine if a model exists which explains a significant portion of the variance in transfer of training from the following measures: gender, age, level of education, ethnicity, employment status, industry type, personal income, number of years since the most recent completion of the COSS program and status of COSS designation. The survey produced 300 usable responses. This objective was accomplished using a multiple regression analysis with successful transfer of training as the dependent variable. The other variables were treated as independent variables and stepwise entry of the variables was used because of the exploratory nature of the study. Data was dummy coded as discussed below.

The variables “gender” and “current COSS designation status” were entered into the regression as nominal variables. The variable “ethnicity” which originally had 7 levels was combined into two levels namely “white” and “non-white” which was then entered into the regression analysis. For the remaining categorical independent variables dummy coding was undertaken for regression analysis. In some cases the levels of the independent categorical variables were combined to form new categories. The variable “ethnicity” which originally had 7 levels was combined into two levels namely “white” and “non-white” which was then dummy coded. The variable “current employment status” which originally had 6 levels was combined into four levels namely “employed, working 1-39 hours per week”, “employed, working 40 or more hours per week”, “not employed, looking for work”, “disabled, not able to work” and “retired” which were then dummy coded. The variable “employer’s industry type” which originally had 9 levels was combined into five levels namely “chemical”, “construction”, “energy”, “manufacturing” and “other” which were then dummy coded. The variable “earnings” which originally had 11 levels was combined into three levels namely “\$0 - \$39,999”,

“\$40,000 - \$79,999” and “\$80,000 - or more” which were then dummy coded. The independent variables “age”, “level of education” and “time since completing COSS training” was dummy coded including all of their original categories.

A graphic histogram illustration of the plotted standardized residuals for the dependent variable Success of Transfer of Training shows an approximation of a normal curve, and thus normality is assumed as presented by Figure 1. Five cases were eliminated due to their high standardized residuals found during Casewise Diagnostics.

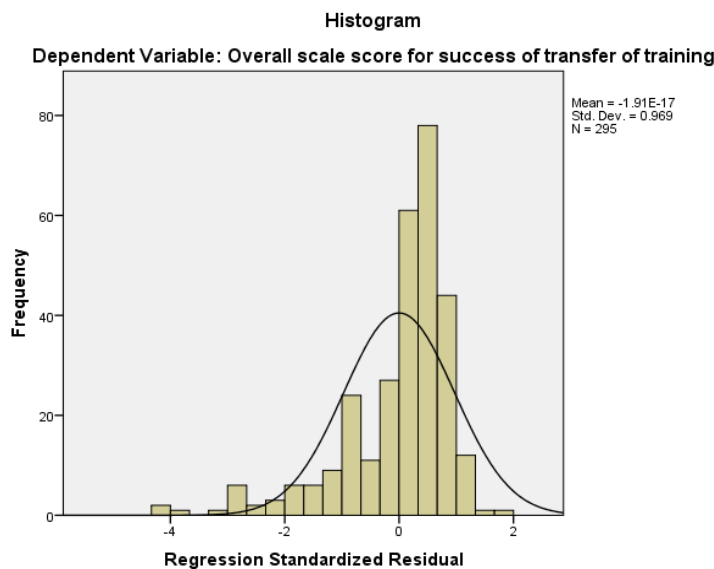


Figure 1: Histogram depicting standardized residuals for the dependent variable success of transfer of training

The independent variables were entered stepwise into the regression analysis with the overall success of transfer of training item mean score entered as the dependent variable. Several diagnostic checks for collinearity suggested by Hair, Anderson, Tatham, and Black (1998) were undertaken. An examination of the correlation matrix for independent variables did not reveal any high correlations. A look at the variance inflation factor (VIF) and the tolerance values did not indicate the presence of a collinearity problem.

Four variables were retained in the equation and determined to explain approximately 11% ($R^2 = .112$) of the variance in the overall success of transfer of training score. The regression equation with the four independent variables was found to be significant in predicting the overall success of transfer of training score ($F_{4,276} = 8.746$, $p = <.001$). All four variables significantly contributed to the model: “Employed, Working 40 or More Hours Per Week” employment status ($t = 2.836$, $p = .005$), “\$0 - \$39,999” earnings ($t = -2.953$, $p = .003$), “yes” currently hold a COSS designation ($t = -2.226$, $p = .027$), and “40 – 49” age ($t = -2.049$, $p = .041$). Table 30 illustrates the ANOVA and model summary results for the regression equation employing four independent variables in predicting the overall success of transfer of training score.

Table 30 Significance of the Regression Equation and Model Summary Employing Four Independent Variables in Predicting Overall Success of Transfer of Training by Currently Hold a COSS Designation Category For Participating Certified Occupational Safety Specialists Course Graduates

	df	SS	MS	F^a	P^b
Regression	4	5.618	1.404	8.746	<.001
Residual	276	44.319	.161		
Total	280	49.936			

----- Model Summary -----

Model	R	Cumulative R²	Change R²	Change F	df 1	df 2	Change Sign. F
1	.234	.055	.055	16.092	1	279	.000
2	.288	.083	.029	8.679	1	278	.003
3	.315	.099	.016	4.869	1	277	.028
4	.335	.112	.014	4.199	1	276	.041

^a One Way Analysis of Variance

^b .05 Alpha Level for the Two-Tailed Test of Significance

The coefficient values, t values and corresponding significance levels for the independent variables retained in the regression equation predicting overall success of transfer of training scores are presented in Table 31.

Table 31 Coefficient Values, Standard Errors, Standardized Coefficient Values, T Values, and Significance Levels for Independent Variables Retained in the Regression Equation Predicting Overall Success of Transfer of Training Score

Variable	β	SE	Beta	t	p ^a
Constant	3.646	.127		28.718	<.001
Employment Status					
“Employed, Working 40 or More Hours Per Week”	.284	.100	.169	2.836	.005
Earnings					
“\$0 - \$39,999”	-.276	.094	-.176	-2.953	.003
Hold a COSS designation	-.150	.067	-.126	-2.226	.027
Age					
“40 – 49”	-.108	.053	-.117	-2.049	.041

^a.05 Alpha Level for the Two-Tailed Test of Significance

The variables excluded from the regression equation and their corresponding t values and significance levels are illustrated in Table 32.

Table 32 Excluded Variables, Standardized Coefficients, T Values, Significance Levels, and Partial Correlations for the Regression Equation Predicting Overall Success of Transfer of Training Score

Variable	Beta In	t	p	Partial Correlation
Gender	-.027	-.469	.639	-.028
Ethnicity	.045	.796	.427	.048
Earnings				
“40,000 - \$79,999”	-.058	-.985	.325	-.059
“\$80,000 or More”	.059	.985	.325	.059
Employment Status				
“Employed, Working 1 – 39 Hours Per Week”	-.027	-.373	.709	-.023
“Not Employed, Looking For Work”	.089	1.262	.208	.076
“Retired”	-.065	-.984	.326	-.059

(Table 32 Continued)

Variable	Beta In	t	p	Partial Correlation
Industry Type				
“Chemical”	.006	.109	.913	.007
“Construction”	.076	1.334	.183	.080
“Energy”	.005	.088	.930	.005
“Manufacturing”	-.001	-.024	.981	-.001
“Other”	-.079	1.394	.164	-.084
Time Since Completing COSS Training				
“Less Than a Year”	.035	.610	.543	.037
“1 – 2 Years”	.046	-.800	.424	-.048
“3 – 4 Years”	.006	-.101	.920	-.006
“5 Years or Greater”	.013	.224	.823	.013
Age				
“21 – 29”	.058	1.009	.314	.061
“30 – 39”	.044	.729	.466	.044
“50 – 59”	-.114	1.728	.085	-.104
“60 or More”	-.114	1.728	.085	-.104
Education				
“High School Degree or Equivalent”	-.043	.760	.448	-.046
“Some College but No Degree”	.036	.626	.532	.038
“Associate Degree”	.054	.941	.348	.057
“Bachelor Degree”	-.031	-.552	.581	-.033
“Graduate Degree”	-.031	-.545	.586	-.033

^a.05 Alpha Level for the Two-Tailed Test of Significance

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Purpose of the Study

The overall purpose of this study was to explore and determine the degree to which selected graduates of the COSS program engaged in transfer of training activities in their workplaces. Specifically, the study addressed the following objectives:

1. Describe COSS graduates on the following selected personal and professional characteristics.
 - a) gender
 - b) age
 - c) level of education
 - d) ethnicity
 - e) employment status
 - f) industry type
 - g) personal income
 - h) number of years since the most recent completion of the COSS program
 - i) status of the individual's COSS designation
2. Describe COSS graduates on the following training specific factors as measured by components of the Learning Transfer System Inventory (LTSI version 4).
 - a) learner readiness
 - b) motivation to transfer
 - c) positive personal outcomes
 - d) negative personal outcomes
 - e) personal capacity for transfer

- f) peer support
 - g) supervisor support
 - h) supervisor sanctions
 - i) perceived content validity
 - j) transfer design
 - k) opportunity to use
3. Describe COSS graduates on the following general factors as measured by components of the LTSI.
 - a) transfer effort
 - b) performance –outcomes expectations
 - c) resistance – openness to change
 - d) performance self-efficacy
 - e) performance coaching
 4. Determine the extent to which COSS graduates were able to successfully conduct training transfer to the work environment.
 5. Determine if there is a relationship between selected demographic characteristics and the degree to which successful transfer of training occurred.
 6. Determine if there is a relationship between training specific factors as measured by the LTSI and the degree to which successful transfer of training occurred.
 7. Determine if there is a relationship between general factors as measured by the LTSI and the degree to which successful transfer of training occurred.
 8. Determine if a model exists which explains a significant portion of the variance in transfer of training from the following measures: gender, age, level of education,

ethnicity, employment status, industry type, personal income, number of years since the most recent completion of the COSS program, and status of COSS designation.

Procedures

This study targeted individuals who successfully completed the COSS training provided by the Alliance Safety Council. However, the accessible population were those COSS graduates who completed their training in the May 29, 2005 thru May 29, 2009 timeframe.

A four part instrument including an established instrument with psychometric properties, along with a consent letter, was utilized to collect data in this study.

Section I of the instrument utilized in this study measured specific training factors associated with COSS training. These factors included learner readiness, motivation to transfer, positive personal outcomes, negative personal outcomes, personal capacity for transfer, peer support, supervisor support, supervisor sanctions, perceived content validity, transfer design, and opportunity to use.

Section II of the instrument utilized in this study measured general factors such as transfer effort, performance - outcomes expectations, resistance – openness to change, performance self-efficacy and performance coaching.

Both Sections I and II contained a Likert- like response arrangement with five choices. Strongly disagree, disagree, neither agree nor disagree, agree and strongly agree were provided as potential responses.

Section III of the instrument utilized in this study measured the extent implementation of the COSS training program objectives occurred. This scale was researcher developed since no instrument was available in the literature or in the COSS program materials. The researcher

designed an instrument to measure transfer of training associated with the objectives contained in the COSS program's Monday Morning Checklist™ which was provided to each trainee at the conclusion of the training session. This checklist represented, in behavioral terms, the specific actions each trainee was expected to complete in his or her work environment as a result of the training provided. This section contained a Likert-like design, with ten items, each providing for the following responses: have not completed and do not plan to, attempted this unsuccessfully, have not completed but plan to, and successfully completed this task. The content validity was established by a panel of four experts consisting of three graduate school faculty members at Louisiana State University and Alliance Safety Council's National Program Director.

Section IV of the instrument utilized in this study contained nine items designed to measure personal and professional demographic characteristics. The content validity was established by a panel of experts consisting of three graduate school faculty members at Louisiana State University.

The survey was administered via an online survey system (SurveyMonkey™). The frame established from the Alliance Safety Council's records included 1,739 graduates. The final response count was 321, yielding 300 usable responses representing a 17.3% usable response rate.

Summary of Major Findings

Objective One

- Gender – The results indicated the majority of the respondents were male ($n = 233$, 81.8%) while 52 respondents (18.2%) indicated their gender as female.

- Age – The largest number respondents indicated their age fell between 50 and 59 years ($\underline{n} = 103$ or 36.6%). The second largest group indicated their age fell between 40 and 49 years ($\underline{n} = 85$ or 29.9%).
- Highest level of education completed - The largest group of respondents ($\underline{n} = 109$ or 38.2%) completed some college but no degree. The second largest group ($\underline{n} = 78$ or 27.4%) had completed a bachelor's degree. Twenty respondents (7.0%) reported a graduate degree as the highest education completed.
- Ethnicity - The majority of the respondents identified themselves as White ($\underline{n} = 234$ or 82.7%). The second largest group identified themselves as Hispanic ($\underline{n} = 27$ or 9.9%).
- Employment Status - The majority of the respondents reported working 40 or more hours per week ($\underline{n} = 265$ or 93.2%). The categories with the lowest number of respondents were "Not Employed, Not Looking For Work" ($\underline{n} = 1$ or 0.4%) and "Disabled, Not Able To Work" with 0 respondents.
- Employer's Industry Type - The largest number of the respondents reported their employer's industry type as "construction" ($\underline{n} = 70$, 24.5%). The second largest group reported their employer's industry type as "other" ($\underline{n} = 51$, 17.8%). The least reported industry types were "aerospace" ($\underline{n} = 2$, 0.7%) and "agriculture" ($\underline{n} = 2$, 0.7%).
- Earnings - Respondents self-reported their Y2011 earnings. The largest number of respondents ($\underline{n} = 72$, 26.2%) reported their earnings "\$100,000 or more", with the second largest number of respondents ($\underline{n} = 41$, 14.9%) reported earnings between

“\$70,000 and \$79,999.” The smallest number of respondents reported “\$0 to \$9,999” ($\underline{n} = 1$, 0.4%), and “\$10,000 to 10,999” ($\underline{n} = 1$, 0.4%).

- Amount of time since completing the COSS training - The largest group of respondents ($\underline{n} = 140$, 49.0%) reported completing their COSS training between 3 and 4 years ago. Twenty two respondents (7.6%) reported completing their training less than 3 years ago.
- Status of COSS designation - Two hundred forty one respondents (85.2%) indicated they did still hold a COSS designation, while forty two (14.8) respondents indicated they did not still hold the COSS designation.

Objective Two

Respondents were presented with a list of thirty three items designed to measure their responses to a specific training program. The item that received the highest level of agreement from respondents was “I believed this training would help me do my job better” with a mean of 4.43 (SD = .689). The item that received the second highest level of agreement from respondents was “when I left this training, I couldn’t wait to get back to work to try what I learned” with a mean of 4.22 (SD = .750). Using the interpretive scale, these items were in the “agree” range. The item with the lowest level of agreement was “my supervisor will probably criticize this training when I get back to the job” with a mean of 1.74 (SD = .700). The response for this item fell within the “disagree” range. The item with the second lowest level of agreement was “trying to use this training will take too much energy away from my other work” with a mean of 1.76 (SD = .680). The response for this item also fell within the “disagree” range. Overall, the response to most items (19) fell within the “agree” range on the interpretive scale.

As part of the analysis, the means and standard deviations for each Specific Training Program Subscale were calculated. The subscale that received the highest level of agreement from respondents was “Motivation to Transfer Learning” with a mean of 4.25 (SD = .167). The subscale that received the second highest level of agreement from respondents was “Transfer Design” with a mean of 4.16 (SD = .054). Using the interpretive scale, these subscales were in the “agree” range. The subscale with the lowest level of agreement was “Supervisor/ Manager Sanctions” with a mean of 1.80 (SD = .063). The response for this subscale fell within the “disagree” range. The subscale with the second lowest level of agreement was “Personal Capacity for Transfer” with a mean of 1.82 (SD = .077). The response for this subscale also fell within the “disagree” range. Overall, most of the subscales (6) fell within the “agree” range on the interpretive scale.

Objective Three

Respondents were presented with a list of fifteen items designed to measure their responses to the Training in General Program Factors. The item that received the highest level of agreement from respondents was “the harder I work at learning, the better I can do my job” with a mean of 4.23 (SD = .645). The item that received the second highest level of agreement from respondents was “the more training I apply on my job, the better I do my job” with a mean of 4.20 (SD = .595). Using the interpretive scale, these items were in the “agree” range. The item with the lowest level of agreement was “experienced employees in my group ridicule others when they use techniques they learn in training” with a mean of 2.07 (SD = .812). The response for this item fell within the “disagree” range. The item with the second lowest level of agreement was “People in my group are not willing to put in the effort to change the way things are done”

with a mean of 2.46 (SD = .943). The response for this item also fell with the “disagree” range.

Overall, the response to most items (8) fell with the “agree” range on the interpretive scale.

As part of the analysis, the means and standard deviations for each General Training Program Subscale were calculated. The subscale that received the highest level of agreement from respondents was “Transfer Effort – Performance Expectations” with a mean 4.17 (SD = .077). The subscale that received the second highest level of agreement from respondents was “Performance Self-Efficacy” with a mean of 4.04 (SD = .083). Using the interpretive scale, these subscales were in the “agree” range. The subscale with the lowest level of agreement was “Resistance/ Openness to Change” with a mean of 2.340 (SD = .238). The response for this subscale fell within the “disagree” range. The subscale with the second lowest level of agreement was “Feedback/ Performance Coaching” with a mean of 2.87 (SD = .197). The response for this subscale fell with the “neutral” range. Overall, most of the subscales (3) fell within the “agree” range on the interpretive scale.

Objective Four

Objective 4 was to determine the extent to which participating COSS graduates were able to successfully conduct training transfer to the work environment as described by the objectives contained in the COSS program’s Monday Morning Checklist™ provided to each trainee at the conclusion of the training session. These variables were measured on an interval scale and summarized with means and standard deviations.

Respondents were presented with a list of ten items designed to measure the extent implementation of the COSS training program objectives occurred. These items were presented using a four-point Likert-like design each providing for the following responses: have not completed and do not plan to, attempted this unsuccessfully, have not completed but plan to, and

successfully completed this task. The following scale was created by the researcher to aid in the interpretation of the responses: 1 -1.75 = have not completed and do not plan to, 1.76 – 2.50 = attempted this unsuccessfully, 2.51 – 3.25 = have not completed but plan to, and 3.26 – 4.00 = successfully completed this task.

As part of the analysis, the means and standard deviations of the responses to each item in the Monday Morning Checklist™ part of the survey were calculated. The item that received the highest level of agreement from respondents was “I did identify OSHA required training” with a mean of 3.87 (SD = .513). The item that received the second highest level of agreement from respondents was “I did identify OSHA required written programs” with a mean of 3.84 (SD = .563). Using the interpretive scale, both items were in the “successfully completed this task” range. The item with the lowest level of agreement was “I did create or purchase a comprehensive safety auditing tool and set up a schedule for performing the audits” with a mean of 3.24 (SD = 1.081). The response for this item fell within the “have not completed but plan to” range. The item with the second lowest level of agreement was “I did put an accident investigation toolkit in place” with a mean of 3.56 (SD = .893). The response for this item fell within the “successfully completed this task” range. Overall, the response to most items (9) fell within the “successfully completed this task” range on the interpretive scale.

Objective Five

Objective 5 was to determine if there is a relationship between selected demographic characteristics and the degree to which successful transfer of training occurred as described by the objectives contained in the COSS program’s Monday Morning Checklist™. The selected demographic characteristics include:

- Gender - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the different gender groups ($F_{1,283} = .700$, $p = .404$). The differences in overall transfer of training between the gender groups were not statistically significant ($F_{1,283} = .911$, $p = .341$).
- Age - The results from Levenes Test of Homogeneity of Variance revealed a violation of the assumption of equal variances between the different age groups ($F_{4,278} = 3.210$, $p = .013$). A calculation of the Welch Statistic revealed the presence of equal variances between the different age groups ($F_{4, 44.883} = 2.181$, $p = .86$).
- Highest educational level completed - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the education levels ($F_{4,279} = 1.917$, $p = .108$). The differences in overall transfer of training between the education levels were not statistically significant ($F_{4,279} = 1.146$, $p = .335$).
- Ethnicity - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded ethnicity categories ($F_{1,280} = .087$, $p = .769$). The differences in overall transfer of training between the recoded ethnicity categories were not statistically significant ($F_{1,280} = .001$, $p = .974$).
- Employment status - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded current employment status categories ($F_{3,280} = .911$, $p = .436$). The differences in overall transfer of training between the recoded current employment status categories were

statistically significant ($F_{3,280} = 2.963$, $p = .033$). The Tukey's post hoc analyst used to locate the significant differences between means revealed significant differences in the overall transfer of training score between those reporting "Employed, Working 1-39 Hours Per Week" category and those reporting "Employed, Working 40 or More Hours Per Week" category (mean difference = -.46).

- Employer's industry type - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded employer's industry type categories ($F_{4,280} = .911$, $p = .185$). The differences in overall transfer of training between the recoded employer's industry type categories were not statistically significant ($F_{4,280} = .625$, $p = .645$).
- Earnings - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the recoded earnings categories ($F_{2,271} = 2.837$, $p = .060$). The difference in overall transfer of training between the recoded earnings categories was statistically significant ($F_{2,271} = 1.171$, $p = .011$). The Tukey's post hoc analysis used to locate the significant differences between means revealed significant differences in the overall transfer of training score between the "\$0 - \$39,999" earnings category and "\$40,000 - \$79,999" earnings category (mean difference = -.32), and between the "\$0 - \$39,999" earnings category and "\$80,000 - or more" category (mean difference = -.36).
- Amount of time since completing COSS training - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the time since completing the COSS training categories ($F_{3,281} = 1.239$, $p = .296$).

The differences in overall transfer of training between the time since completing the COSS training categories were not statistically significant ($F_{3,281} = .673$, $p = .569$).

- Status of COSS designation - The results from Levenes Test of Homogeneity of Variance revealed the presence of equal variances between the currently hold a COSS designation categories ($F_{1,281} = 1.649$, $p = .200$). The differences in overall transfer of training between currently hold a COSS designation categories were not statistically significant ($F_{1,281} = 1.603$, $p = .207$).

Objective Six

Objective six was to determine if there is a relationship between training specific factors as measured by the LTSI and the degree to which successful transfer of training occurred. The Pearson Product Moment correlation procedure indicated a significant correlation between training specific factors and the overall transfer of training scores of respondents ($r = .31$, $p < .001$). Using Davis' descriptors (1971) this correlation would be classified as a moderate positive relationship indicating respondents with higher training specific factor scores tended to have higher transfer of training scores.

Objective Seven

Objective seven was to determine if there is a relationship between training general factors as measured by the LTSI and the degree to which successful transfer of training occurred. The Pearson Product Moment correlation procedure indicated a significant correlation between training general factors and the overall transfer of training scores of respondents ($r = .26$, $p < .001$). Using Davis' descriptors (1971) this correlation would be classified as a low positive

relationship indicating respondents with higher training general factor scores tended to have higher transfer of training scores.

Objective Eight

An exploratory stepwise model was found to exist that explained a significant portion of the variance in overall success of transfer of training mean score ($R^2 = .112$) from selected demographic variables ($F_{4,276} = 8.746$, $p = <.001$). Four independent demographic variables retained in the regression equation were found to significantly contribute to the model. The variables included “Employed, Working 40 or More Hours Per Week” employment status, “\$0 - \$39,999” earnings, “yes” currently hold a COSS designation, and “40 – 49” age.

Conclusions, Implications and Recommendations

Conclusion One

The majority of the respondents to this study identified themselves as white (78.0%), male (81.8%), between the ages of 40 and 59 years (63.0%), and having completed some college but no degree (36.3%). In some respects, this may be typical demographics for the participants’ industry types. However, the demographics of future OSH professionals may or may not be representative of their respective industry types. A Study of the Impact of Occupational Safety and Health Training and Education Programs on the Supply and Demand for Occupational Safety and Health Professionals by Cox & Johnston (1985) found that existing sources of national industry statistics are not likely to contribute greatly to the monitoring of supply and demand for OSH professionals. The study’s authors concluded the supply and demand, including demographics, for OSH professionals are greatly influenced by factors other than industry growth rates (e.g. enforcement climate).

Whereas this study provides information about the success of transfer of training related to participating COSS graduates, generalizing the results presents a challenge. The results of this study thus apply to a slice of the COSS graduate population, as well as a subset of all OSH professionals. It is recommended a study be conducted targeting COSS graduates in an effort to identify drivers behind demographic trends that do not represent industry statistics.

Conclusion Two

The results of this study indicated the largest group of respondents (49.0%) reported completing their COSS training between 3 and 4 years ago, while 85.2% indicated they did still hold a COSS designation. Given that the COSS designation has a three year life, the participant would need to repeat the training to obtain an additional three year certification. While the vast majority of respondents reportedly hold a current COSS designation implying their involvement in a recertification process, it is unclear whether the participant or their supervisor was the driver behind the decision to maintain an active certification. A study involving the effects of trainee choice of training on motivation and learning was conducted by Baldwin, et al. (1991). After controlling for cognitive ability, the researchers reported those trainees having a choice of training and providing the trainee with that choice, exhibited greater motivation to learn. Conversely, trainees given a choice of training but not provided that choice exhibited less motivation and subsequently learned less compared to trainees not provided a choice.

It is recommended that a study be conducted to determine whether the decision to maintain involvement in the COSS certification process was at the participant or employer's direction. Given this decision-making process, to what extent does this choice influence the motivation to learn and training transfer in the workplace, as well as what are the drivers behind such decisions to sponsor continued participation in the COSS training course? Such results may

provide insights leading to COSS course enhancements designed to increase the overall effectiveness of the program and favorably impact future COSS training enrollment levels.

Conclusion Three

Rouiller and Goldstein (1993) found that a setting's attributes and organizational transfer climate did influence the transfer of learning behavior onto the job. Moreover, "both the degree of learning in training and the positive transfer climate appear to directly affect the degree of transfer behavior to the job situation" (p. 388). According to Michalak (1981) perceived interest by the supervisor has a positive effect; management commitment to the concepts and practices is a critical factor and continuing a maintenance-of-behavior program when there is a change in management is difficult.

The recommendation is to conduct a study to determine whether a relationship exists between organizational transfer climate as perceived by COSS graduates, and the organizational transfer climate as perceived by the supervisory personnel of COSS graduates. Does this relationship affect the overall success of transfer of training in an organization?

Conclusion Four

The third section of the survey used in this study asked the participants to describe the extent they were able to successfully conduct training transfer to the work environment defined by the objectives contained in the COSS program's Monday Morning Checklist™ provided to each trainee at the conclusion of the training session. While the response to most items (9) fell within the "successfully completed this task" range on the interpretive scale, the item with the lowest level of agreement was "I did create or purchase a comprehensive safety auditing tool and set up a schedule for performing the audits". The response for this item fell within the "have not completed but plan to" range.

Due to the exploratory nature of this study, and the fact that training transfer was measured with a researcher designed instrument, there is little opportunity to compare these results with existing literature. It is recommended that a study be conducted focusing on the identification of possible barriers to perceived success of transfer of training by participants. For example, do such potential barriers to success of transfer of training exist without regard to industry type? Are certain barriers unique to a particular industry sector or organizational design? An understanding of such relationships may provide COSS curriculum developers insights into how to provide more effective change management skills to participants, and the opportunity to develop more tailored change management strategies for organizations that sponsor COSS participation.

Conclusion Five

There were significant differences in the overall success of transfer of training mean score based on employment status and earnings. The respondents who reported being “Employed, Working 1-39 Hours Per Week” had a significantly lower mean than those who reported being “Employed, Working 40 or More Hours Per Week”. Those who reported their annual income “\$0 - \$39,999” also had a significantly lower mean than those reporting “\$40,000 - \$79,999” or “\$80,000 - or more”. The implication is that the less time one is employed, the less income is experienced and thus less opportunity to engage in transfer of training activities. Further, perhaps there is a relationship between a participant’s level of income and such variables as job satisfaction, peer support, etc. that may influence the success of transfer of training.

While there is sparse literature focusing on COSS graduates specifically, the literature does contain many examples of studies that indicate job satisfaction, workplace climate, peer

support, etc. can have an impact on the success of transfer of training. Jodlbauer, et al. (2011) found that dissatisfaction does indeed have a negative effect on the transfer of training process, while Martin (2010) studied the effects of workplace climate and peer support and found a more favorable climate and greater peer support led to a greater degree of transfer. Given the limited amount of research associated with COSS participants, there is a need for further research focusing on the potential relationships that may exist between these various factors.

The recommendation is that a study be designed to determine whether there is a relationship between annual income and such factors as satisfaction, workplace climate and peer support in the context of success of COSS transfer of training. Additionally, the study should attempt to determine if a participant's job status and income level indicate the relative commitment to transfer of training by the sponsoring organization. Such study results have the potential of providing organizations with insights into which employee characteristics represent both potential positive and negative indicators of future transfer success, thus enhancing the effectiveness of the organization's participant selection process.

Conclusion Six

This study focused on the degree to which graduates of the COSS training course engaged in transfer of training activities in their workplaces. Additionally, this study described the graduates of the COSS program on selected personal and professional demographic characteristics, and determined what factors influenced a graduate's ability to transfer training within the workplace. However, according to the Alliance Safety Council, the COSS program is designed for those individuals who work in the safety and health field that coordinate corporate safety and health plans for their companies. As such, the transfers of training activities are

designed to directly address OSHA policy compliance issues intending to lead to more favorable organizational safety performance.

It is recommended that a study be conducted to determine whether a relationship exists between organizational safety performance and an organization's participation in the COSS training course. More specifically, does success of training transfer favorably impact an organization's safety performance over time? These results may provide organizations with additional insights into their overall safety programs and the potential role the COSS program may provide to the safety management programs of both sponsoring organizations and their contractor workforce.

Conclusion Seven

A regression model was found that explained a significant portion of the variance in the overall success of transfer of training score with four independent demographic variables significantly contributing to it. The variables included "Employed, Working 40 or More Hours Per Week" employment status, "\$0 - \$39,999" earnings, "yes" currently hold a COSS designation, and "40 – 49" age. Employed and working 40 or more hours per week increased the overall success of transfer of training, while earning \$0 - \$ 39,999 annually, holding a current COSS designation, and chronologically falling into the 40 – 49 age range reduced the overall success of transfer of training. Since there is no literature addressing the contributions of the above demographic variables to success of transfer of training for COSS graduates, they should be investigated further to reveal why this is the case.

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APPENDIX A: LSU'S COSS SURVEY

LSU's COSS SURVEY (v2) Consent
<ul style="list-style-type: none">• Study Title: Evaluation of Learning Transfer Outcomes of a Certified Occupational Safety Specialist (COSS) Course.• Purpose of the Study: The focus of this research is on the degree to which graduates of this course engage in "transfer of training" activities in their workplaces.• Benefits: The information you provide will help improve COSS training.• Risks: No known risks.• Confidentiality: Any information that is obtained in connection with this study and that can be identified with you will remain confidential. Results of the study may be published, but no names or identifying information will be included in the publication.• Right to Refuse: Your participation in the study is voluntary and you may change your mind and withdraw from the study at any time without penalty or loss of any benefit to which you may otherwise be entitled.• Rights of Research Subjects: This study was approved by the LSU Internal Review Board and if you have any questions or other concerns, you may contact Dr. Robert Mathews, Chair 131 David Boyd Hall Baton Rouge, LA 70803 Phone: 225-578-8892.• Contact Information: It should take about ten minutes of your time. This study is being conducted by Dr. Krisanna Machtmes and John Hebert. Please contact Dr. Machtmes at 225-578-5748 if you have any questions about the survey.• Thank you for participating in this survey. Your feedback is important. Completion of this survey will serve as voluntary consent to participate in this study.

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM.

1. Prior to this training, I knew how the program was supposed to affect my performance.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

2. This training will increase my personal productivity.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

3. When I left this training, I couldn't wait to get back to work to try what I learned.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

4. I believed this training would help me do my job better.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

5. Successfully using this training will help me get a salary increase.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

6. If I use this training I am more likely to be rewarded.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

7. I am likely to receive some recognition if I use what I learned in COSS training.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

8. Before COSS training, I had a good understanding of how it would fit my job-related development.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

9. I knew what to expect from this training before it began.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

10. I don't have time to try to use this training on my job.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

LSU's COSS SURVEY (v2)

10. I don't have time to try to use this training on my job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

11. Trying to use this training will take too much energy away from my other work.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

12. Employees in this organization will be penalized for not using what they have learned in training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

13. I am able to try out this training on my job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

14. There is too much happening at work right now for me to try to use this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

15. If I do not use the new techniques taught in this training I will be reprimanded.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

16. If I do not utilize this training I will be cautioned about it.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

17. The resources needed to use what I learned in this training will be available to me.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

18. My colleagues will appreciate my using the new skills I learned in this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

19. My colleagues will encourage me to use the skills I have learned in this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

LSU's COSS SURVEY (v2)

20. At work, my colleagues will expect me to use what I have learned in this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

21. My supervisor will meet with me regularly to work on problems I may be having in trying to use this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

22. My supervisor will meet with me to discuss ways to apply this training on the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

23. My supervisor will oppose the use of techniques I have learned in this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

24. My supervisor will think I am being less effective when I use techniques taught in this training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

25. My supervisor will probably criticize this training when I got back to the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

26. My supervisor will help me set realistic goals for job performance based on my training.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

27. The instructional aids (equipment, illustrations, etc.) used in this training were very similar to real things I use on the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

28. The methods used in this training are very similar to how we do it on the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

LSU's COSS SURVEY (v2)

29. I liked the way this training seemed so much like my job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

30. It is clear to me that the people conducting this training understand how I will use what I learn.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

31. The trainer(s) used lots of examples that showed me how I could use my learning on the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

32. The way the trainer(s) taught the material made me feel more confident I could apply it in my job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

33. I will get opportunities to use this training on my job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

For the following items, please THINK ABOUT TRAINING IN GENERAL in your organization.

34. My job performance improves when I use new things that I have learned.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

35. The harder I work at learning, the better I can do my job.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

36. For the most part, the people who get rewarded around here are the ones that do something to deserve it.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

37. When I do things to improve my performance, good things happen to me.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

38. The more training I apply on my job, the better I do my job.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

39. My job is ideal for someone who likes to get rewarded when they do something really good.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

40. Experienced employees in my group ridicule others when they use techniques they learn in training.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

41. People in my group are not willing to put in the effort to change the way things are done.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

42. My workgroup is reluctant to try new ways of doing things.

☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

LSU's COSS SURVEY (v2)

42. My workgroup is reluctant to try new ways of doing things.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

43. People often make suggestions about how I can improve my job performance.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

44. I get a lot of advice from others about how to do my job better.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

45. I never doubt my ability to use newly learned skills on the job.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

46. I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

47. At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

48. People often tell me things to help me improve my job performance.

- ☐ Strongly Disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly Agree

LSU's COSS SURVEY (v2)

THINK ABOUT THE MONDAY MORNING CHECKLIST PROVIDED DURING COSS TRAINING WHEN YOU ANSWER THE QUESTIONS BELOW.

49. I have identified our Standard Industrial Classification (SIC) Code.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

50. I have identified our Total Recordable Incidence Rate (TRIR).

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

51. I did search my company's records to assess where the greatest likelihood of an accident may lie.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

52. I did review the Safety and Health Program Check-up with management.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

53. I did review all inspection forms to make sure they cover all requirements.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

54. I did create or purchase a comprehensive safety auditing tool and set up a schedule for performing the audits.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

55. I did identify Occupational Safety and Health Administration (OSHA) required written programs.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

56. I did identify OSHA required training.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

LSU's COSS SURVEY (v2)

57. I did perform risk analyses for key jobs and processes.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

58. I did put an accident investigation toolkit in place.

- ☐ Have not completed and do not plan to ☐ Attempted this unsuccessfully ☐ Have not completed but plan to ☐ Successfully completed this task

DEMOGRAPHICS

59. Please indicate your gender.

- ☐ Male
- ☐ Female

60. Which category below includes your current age?

- ☐ 18-20
- ☐ 21-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60 or older

61. What is the highest level of school you have completed?

- ☐ Less than high school degree
- ☐ High school degree or equivalent (e.g. GED)
- ☐ Some college but no degree
- ☐ Associate degree
- ☐ Bachelor degree
- ☐ Graduate degree

62. What is your ethnicity?

- ☐ White
- ☐ Black or African-American
- ☐ Hispanic
- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Native Hawaiian or other Pacific Islander
- ☐ From multiple races

Other (please specify)

LSU's COSS SURVEY (v2)

63. Which of the following categories best describes your current employment status?

- ☐ Employed, working 1-39 hours per week
- ☐ Employed, working 40 or more hours per week
- ☐ Not employed, looking for work
- ☐ Not employed, NOT looking for work
- ☐ Retired
- ☐ Disabled, not able to work

64. Which of the following categories best describes your employer's industry type?

- ☐ Aerospace
- ☐ Agriculture
- ☐ Chemical
- ☐ Construction
- ☐ Education
- ☐ Energy
- ☐ Manufacturing
- ☐ Utilities
- ☐ Other

65. How much money did YOU personally earn in 2011?

- ☐ \$0 - \$9,999
- ☐ \$10,000 - \$19,999
- ☐ \$20,000 - \$29,999
- ☐ \$30,000 - \$39,999
- ☐ \$40,000 - \$49,999
- ☐ \$50,000 - \$59,999
- ☐ \$60,000 - \$69,999
- ☐ \$70,000 - \$79,999
- ☐ \$80,000 - \$89,999
- ☐ \$90,000 - \$99,999
- ☐ \$100,000 or More

LSU's COSS SURVEY (v2)

66. How long ago did you complete COSS training?

- ☐ Less than a year
- ☐ 1-2 years
- ☐ 3-4 years
- ☐ 5 years or greater

67. Do you currently hold a Certified Occupational Safety Specialist (COSS) designation?

- ☐ Yes
- ☐ No

LSU's COSS SURVEY (v2)

68. To the extent you are interested in being added to the \$200 drawing, please provide your name, email address and phone number so that we may contact the winner. If you are not interested, just press DONE.

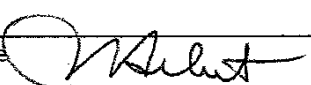

NAME	<input type="text"/>
EMAIL ADDRESS	<input type="text"/>
PHONE NUMBER	<input type="text"/>

APPENDIX B: LTSI EXECUTED USER AGREEMENT

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4. Discussion and presentation of the LTSI will accurately reflect the composition of the instrument and will use only original scale names and scale definitions.
5. Users of the LTSI may not publish or otherwise disseminate into the public domain the survey items or item groupings.
6. If the LTSI is to be translated into a new language as part of this project, the authors of the LTSI must be included in the translation process as per their supplemental instructions.
7. A copy of all data collected with the instrument must be given to the authors free of charge and in a timely manner. This data will only be used for research purposes and will not be reported in such a manner that would identify individual organizations, without written permission of the organization.
8. Unless otherwise acceded, the authors will share in the authorship of any publications that result from the use of the instrument or the data collected with the LTSI.
9. The authors reserve the right to withdraw the LTSI from use at any time if any terms or conditions of this agreement are violated.
10. Any reports published or presented resulting from data collected using the LTSI shall clearly indicate that instrument authors did not participate in preparing the reports.
11. By signing this agreement, LTSI users acknowledge that the scoring algorithms will be retained by the authors and that the data collected with the LTSI must be submitted to the authors for scoring.

A copy of this Permission Agreement should be signed and returned to indicate your agreement with the above restrictions and conditions. A fully executed copy will be returned to you for your records. Upon receipt of the signed agreement and payment of any applicable royalty/license fee you will be sent a copy of the LTSI that you may reproduce.

LTSI user (print name) John L. Hebert, Jr.	
Title Doctoral Student	
LTSI user signature 	Date February 28, 2012
Elwood F. Holton III or Reid A. Bates, LTSI authors 	Date 29 Feb 2012

APPENDIX C: INSTITUTIONAL REVIEW BOARD EXEMPTION

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/ projects using living humans as subjects, or samples, or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

– Applicant, Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at <http://research.lsu.edu/CompliancePoliciesProcedures/InstitutionalReviewBoard%28IRB%29/item24737.html>

– A Complete Application Includes All of the Following:

(A) Two copies of this completed form and two copies of part B thru E.

(B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)

(C) Copies of all instruments to be used.

*If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.

(D) The consent form that you will use in the study (see part 3 for more information.)

(E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: (<http://phrp.nihtraining.com/users/login.php>)

(F) IRB Security of Data Agreement: (<http://research.lsu.edu/files/item26774.pdf>)



Institutional Review Board
Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.6792
irb@lsu.edu
lsu.edu/irb

1) Principal Investigator: John L. Hebert, Jr.

Rank: Student

Dept: SHREWD

Ph: 985-674-2055

E-mail: JLH604@bellsouth.net

2) Co Investigator(s): please include department, rank, phone and e-mail for each

*If student, please identify and name supervising professor in this space

Dr. Krisanna Machtmes, Supervising Professor
School of Human Resource Education & Workforce Development (HRE)

IRB# E5965 LSU Proposal #

☒ Complete Application

☒ Human Subjects Training

3) Project Title:

Evaluation of Learning Transfer Outcomes of a Certified Occupational Safety Specialist (COSS) Training Program

Study Exempted By:

Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb

Exemption Expires: 4/23/2015

4) Proposal? (yes or no) ☒ NO

If Yes, LSU Proposal Number

Also, if YES, either

☐ This application completely matches the scope of work in the grant

OR

☐ More IRB Applications will be filed later

5) Subject pool (e.g. Psychology students)

Adult graduates of the COSS program training

*Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI Signature

John L. Hebert

Date

4-17-12

(no per signatures)

** I certify my responses are accurate and complete. If the project scope or design is later changes, I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

Screening Committee Action: Exempted ☒ Not Exempted ☐ Category/Paragraph 2

Reviewer Mathews

Signature

Robert Mathews

Date 4/24/12

APPENDIX D: INTRODUCTORY EMAIL TO NON-RESPONDENTS

Subject: Calling all COSS Graduates!

A Few Minutes of Your Time Will Help Improve COSS Training

Dear COSS Graduate:

With the assistance of Louisiana State University, the COSS program is conducting a survey to measure the effectiveness of COSS training in the workplace.

This survey will only take approximately 10 minutes to complete, but each question is important. The time you invest in completing this survey will aid in identifying improvement opportunities related to COSS training.

Respondents will have the opportunity to win a \$200 VISA gift card.

The drawing will take place February 8 and the winner will be notified shortly thereafter.

Complete the Survey<<https://www.surveymk.com/s/COSSLSUsurvey>>

Please submit your survey within the next two weeks...

Your responses will remain confidential. Please take this opportunity to provide us your feedback.

Sincerely,

Dianna Braud

Director of National Programs

APPENDIX E: FIRST REMINDER EMAIL TO NON-RESPONDENTS

Subject: Calling all COSS Graduates!

**Reminding You That A Few Minutes of Your Time Will Help Improve
COSS**

Dear COSS Graduate:

About two weeks ago, you received an email requesting your participation in a very important survey designed to measure the effectiveness of COSS training in the workplace. If you have submitted your responses already, thank you for your participation. If you have not yet had a chance to complete the questionnaire, please do so by clicking on this link:

Complete the Survey <https://www.surveymk.com/s/COSSLSUsurvey>

This survey will only take approximately 10 minutes to complete, but each question is important. The time you invest in completing this survey will aid in identifying improvement opportunities related to COSS training.

**Respondents will have the opportunity to win a \$200 VISA gift
card.**

The drawing will take place February 8 and the winner will be notified shortly thereafter.

Your responses will remain confidential. Please take this opportunity to provide us your feedback.

Sincerely,

Dianna Braud

Director of National Programs

APPENDIX F: SECOND REMINDER EMAIL TO NON-RESPONDENTS

Subject: A Friendly Reminder to all COSS Graduates!

You Still Can Help Improve COSS But Time Is Running Out!!!

Dear COSS Graduate:

Your participation in a survey designed to measure the effectiveness of COSS training in the workplace is very important. If you have submitted your responses already, thank you for your participation. If you have not yet had a chance to complete the questionnaire, please do so by clicking on this link:

Complete the Survey <https://www.surveymk.com/s/COSSLSUsurvey>

This survey will only take approximately 10 minutes to complete, but each question is important. The time you invest in completing this survey will aid in identifying improvement opportunities related to COSS training.

Respondents will have the opportunity to win a \$200 VISA gift card.

The drawing will take place February 8 and the winner will be notified shortly thereafter.

Your responses will remain confidential. Please take this opportunity to provide us your feedback.

Sincerely,

Dianna Braud

Director of National Programs

APPENDIX G: FINAL REMINDER EMAIL TO NON-RESPONDENTS

Subject: Just a Few Days Left ... Time is Running Out!

Survey Closes on Thursday, February 7

Dear COSS Graduate:

If you have submitted your responses already, thank you for your participation. If you have not yet had a chance to complete the questionnaire, please do so by clicking on this link:

Complete the Survey <https://www.surveymk.com/s/COSLSUsurvey>

This survey will only take approximately 10 minutes to complete, but each question is important. The time you invest in completing this survey will aid in identifying improvement opportunities related to COSS training.

Respondents will have the opportunity to win a \$200

VISA gift card; drawing will take place on February 8.

Sincerely,

Dianna Braud

Director of National Programs

VITA

John Louis Hebert, Jr. was born in New Orleans, Louisiana, in 1954 to John Louis and Camille Barrosse Hebert. He graduated from Holy Cross High School in 1972 and received a Bachelor of Arts degree, majoring in Elementary Education in 1977, from the University of New Orleans. While working for the St. Bernard Parish School Board as a special education teacher at Chalmette High School, Mr. Hebert returned to his alma mater and received his Master of Education in 1980. He subsequently worked for both the St. Bernard Parish and Orleans Parish School Boards as an Assessment Teacher. Mr. Hebert earned a Master of Business Administration from the University of New Orleans in 1987.

From 1987 – 1993 he served in various treasury and business analyst positions in New Orleans, Louisiana. In 1987 he accepted a treasury analyst position with then Louisiana Power & Light, Inc. His primary responsibility was to identify and implement various improvements related to the company's overall cash management practices. In 1991, he accepted a Lead Business Planning Analyst position with Entergy Services, Inc., responsible for various aspects of Entergy's transmission and fossil operations business planning functions.

In 1993, as the result of a merger between Entergy Corporation and Gulf States Utilities, Mr. Hebert served as Manager, Business Services for the integrated company and relocated to Beaumont, Texas. In 1996, Mr. Hebert accepted the position of Director, Business Development with Fluor Daniel, Inc. which resulted in relocating to Nashville, Tennessee. His primary responsibility was to develop and implement business development initiatives between Fluor Daniel and selected clients within the electric utilities sector with a nationwide focus. Following three years in this position, Mr. Hebert returned to New Orleans, Louisiana. While his title did not change, his primary responsibility evolved to developing and implementing new business

development initiatives between Fluor Daniel and selected clients within the petrochemical sector located in the gulf coast region of the United States.

In 1999, Mr. Hebert was offered and accepted a position with Entergy Services, Inc. as Manager of Supply Chain in New Orleans, Louisiana focusing on the development and implementation of a strategic sourcing process within Entergy's regulated utility footprint which included Louisiana, Arkansas, Mississippi and Texas resulting in a more competitive supplier base from which to satisfy the company's contractor services requirements of Entergy's transmission and distribution business functions.

His goal of earning his doctoral degree from LSU began as the result of learning of a similar goal of one of his employees. This employee introduced Mr. Hebert to Dr. Michael F. Burnett, resulting in Mr. Hebert's enrollment in the School of Human Resource Education and Workforce Development.

Mr. Hebert and his wife, Susan Durr Hebert, have two children, Sarah Elizabeth Hebert and Scott Christopher Hebert. Mr. Hebert, his wife and son live in Mandeville, Louisiana, while his daughter lives in Houston, Texas.