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Evaluating Individualism as a Predictor of Workplace E-Learning Training Transfer

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EVALUATING INDIVIDUALISM AS A PREDICTOR OF

WORKPLACE E-LEARNING TRAINING TRANSFER

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A dissertation submitted to the College of Education and Human Services in partial fulfillment

of the requirements for the degree of Doctor of Education in Educational Leadership

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In anything I accomplish, I owe it all to my heavenly Father. He is the author of life who gives purpose and gifts and has been my source of strength to see this work through to completion.

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Abstract

Organizations have long invested in employee training as a means for development. Returns on these investments are limited, however, when, as commonly observed by practioners and researchers, knowledge or skills acquired from training fails to be implemented. This is referred to as the training transfer phenomenon. Workplace training has historically been designed by and for individuals accustomed to Western learning culture, yet increased globalization has reshaped the workforce of the 21st century. Further, there has been a recent shift in workplace training methods from instructor-led/classroom training to online/e-learning. The purpose of this study is to evaluate individualism (a dimension of culture) as a predictor of workplace e-learning training transfer. This quantitative, nonexperimental study, which utilized online surveys and assessments to collect data, was conducted at a single, U.S.-based site of a global medical device manufacturing company. Descriptive statistics and linear regression were used to analyze the data. Results indicated notable group differences for individualism and learning variables, however, the sample did not present sufficient evidence to conclude, at a level of statistical significance, that individualism was predictive of training transfer. Findings are interpreted based on existing literature and the study's theoretical framework. Social network analysis and Universal Design for Learning (UDL) are among the topics included in the discussion of implications for practice and recommendations for future research.

Chapter 1: Introduction

Learning is a lifelong process. It extends beyond school systems and continues in the workplace. Workplace learning is "the process used by individuals when engaged in training programs, education and development courses, or some type of experiential learning activity for the purpose of acquiring the competence necessary to meet current and future work requirements" (Jacobs & Park, 2009, p. 134). Amid recent technological advancements and transformations in the workplace, it is estimated that more than 75 percent of organizations lack a workforce that is well prepared for the future of work (ATD, 2019). Moreover, the 2020 Workplace Learning Report warns, "if critical skills gaps aren't closed in the next three to five years, organizations will be negatively impacted in a variety of ways - from future growth to product or service quality" (LinkedIn, 2020). To this end, the American Educational Research Association has characterized workplace learning as an area of scholarship rapidly growing in importance (AERA, 2019).

Organizations have long recognized the value of investing in employee learning, as demonstrated by the allocation of resources to this end. More recently, however, faced with rapid advancements in technology and the rising competition of an increasing, global market, organizations have greater need to leverage strategic development of human capital. In 2017, organizations (of various sizes and industries) reported spending an average of $1,296 per employee on workplace learning, up 1.7 percent from the previous year (ATD Research, 2018). Despite extensive resources dedicated to employee development, there exists a disconnect between learning acquired from training and the transfer of that learning to the workplace (Burke & Hutchins, 2007). Weber (2014) reports that "80-90 percent of all training programs and

initiatives are never implemented into the daily activity of the business" (p. 1), thus emphasizing

the magnitude of the existing deficit of training transfer.

Baldwin and Ford (1988) refer to this disconnect as the training transfer phenomenon. In

other words, "companies often observe that the knowledge and skills acquired during training are

insufficiently transferred to the workplace" (Beinecke & Bipp, 2018, p. 502). In a study on

training effectiveness, Baldwin and Ford (1988) identify three inputs that affect training transfer:

trainee characteristics, work environment characteristics, and training design. Changes in society

and advancements in technology have transformed the nature of these inputs, as evidenced in the

following paragraphs.

Trainee and work environment characteristics have become increasingly complex. The

cultural, ethnic, and racial composition of the United States population has continued to diversify

at a rapid pace (Horowitz, 2019). Technological advancements have resulted in increased

globalization characterized by international mobility and the development of multinational

corporations. In 2018, the U.S. Department of Labor Bureau of Labor Statistics reported that

17.4% of U.S. workers were born in another country.

Consequently, a growing number of organizations are implementing diversity, equity,

and inclusion (DEI) programs (Sherman, 2019). Despite this increasing support for diversity,

much of workplace training is designed by and for individuals accustomed to Western learning

culture (Li, 2012). This is cause for concern given that, according to McLoughlin & Oliver

(2000), training is not "culturally neutral," rather, it is "based on the particular epistemologies,

learning theories and goal orientations of the designers themselves" (p. 58).

In terms of training design, the ubiquity of computers and the internet has contributed to

the rapid, increasing adoption of e-learning training (Ellis & Kuznia, 2014). E-learning, which

stands for electronic learning, is a term that encompasses "a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration" (Association for Talent Development, 2020). The benefits of e-learning include convenience, flexibility, standardization, and cost savings (Soccio, 2012). At the turn of the century, 86% of surveyed training directors reported prioritizing the conversion of instructor-led training to e-learning (Strother, 2002). Training design is impacted in that "the advent of new technologies will radically transform what people learn, how they learn, and where they learn" (Warschauer, 2007, p. 41). During the time the present study was conducted, the COVID-19 pandemic resulted an unprecedented number of employees working remotely, thus accelerating the shift from traditional, classroom-based training to online/e-learning training (Baker, 2020).

As organizations seek to leverage the benefits of e-learning to equip an increasingly diverse workforce for successful job performance, a greater understanding of the relationship between cultural orientations and e-learning training transfer is needed. This understanding could inform training practitioners in the development of more equitable, transferrable training, thus improving employee and organizational performance.

Statement of the Problem

Organizations dedicating significant resources to training efforts have consistently reported not having received desired results (Strother, 2002). According to Beinicke and Bipp (2018), "companies often observe that the knowledge and skills acquired during training are insufficiently transferred to the workplace" (p. 502). Researchers refer to this problem as the training transfer phenomenon (Baldwin & Ford, 1988; Tracey, Tannenbaum, & Kavanagh, 1995).

Due to the increasingly diverse workforce, culture has become a topic of research interest within the field of training (Rogers, Graham, & Mayes, 2007). Culture can be defined as "the pattern of values and beliefs that may affect the behaviors of the peoples in a given region" (Shipper, Hoffman, & Rotondo, 2007, p. 36). Historically, training has been designed by and for a Western society (Chayakonvikom, Fuangvut, & Cannell, 2016). This is problematic because, according to Kinuthia (2012), "instructional approaches are embedded in a cultural context of beliefs, expectations, and values and may be the reason that the techniques are successful, and taking the techniques without their roots may be less useful" (p. 89). Thus, in an era of globalization and a culturally heterogeneous workforce, all trainees may not be afforded equitable opportunities to recognize their full potential. In other words, cultural variations in trainees' values or motivation, or the relevance of content based on trainees' life experiences may result in varying degrees of effectiveness of training designed from and for a single cultural perspective.

Some researchers have attempted to address the impact of organizational culture on training transfer (e.g., Bates & Khasawneh, 2005; Tracey, Tannenbaum, and Kavanagh, 1995). This study, however, examines learner culture, specifically Hofstede's (2001) cultural dimension individualism (individualism-collectivism). Up to this point, most studies attempting to evaluate the role of culture in training effectiveness have utilized rigid categorization of cultural traits attributing common characteristics to entire nations of people (i.e., national culture). This is problematic because assigning cultural generalizations fails to capture the reality of the complex nature of culture within a nation and the unique, individual differences found within today's society (Lee, Becker, & Nobre, 2012).

For the previously mentioned reasons (e.g., convenience, cost-savings, etc.), e-learning has become a widely adopted method of workplace training. While e-learning has the potential to be as equally effective as classroom-based training, special design considerations are required for this method (e.g., embedding opportunities for social interaction) (Iglesias & Salgado, 2012). Much of the existing e-learning literature is based in the context of higher education institutions (Aparicio, Bacao, Oliveira, 2016). However, these studies' findings are not generalizable to the workplace (Cheng et al., 2011). Opportunities exist to replicate e-learning research from higher education contexts, for instance, evaluating of the effectiveness of e-learning designed in accordance with Universal Design for Learning (UDL) guidelines (CAST, 2018) in the context of the workplace.

According to Santos and Stuart (2003), investments in workplace training and development are important antecedents to organizational performance and growth. However, practitioners and researchers have observed insufficient transfer of the knowledge acquired during training to post-training behavior applied on the job. Organizations and employees invest and participate in training to improve their ability and performance. When training fails to transfer, investments are wasted, and tasks may not be completed according to an adequate level of efficiency or quality.

Workplace training challenges, including changing technologies and designing for increasingly diverse audiences, present ripe opportunities for educational leaders. While it may not be considered a formal educational organization, the workplace is a societal institution that provides adult education. In the context of the workplace, educational leaders have opportunities to identify inequity in adult education and drive change towards more effective, equitable workplace training.

Purpose of the Study

The purpose of this study is to evaluate individualism as a predictor of workplace e-learning training transfer. This aim can be viewed as an initial step towards the larger goal of leading instructional designers and other training practitioners in the development of equitable, transferable e-learning training. This study models an approach for evaluating training transfer.

Theoretical and Conceptual Frameworks

Social constructivism is central to the theoretical framework for this study. Vygotsky (1978) explains learning as a social process. According to social constructivism, learning is more effectively internalized when there is a social interaction. Furthermore, culture plays a role in cognitive development serving as a framework for how individuals experience and understand reality. Social constructivism informs the present study, which evaluates individualism, a dimension of culture, as a predictor of learning outcomes in workplace training.

In addition, the theory of situated learning is pertinent to the present study. Brown, Collins, and Duguid (1989) explain that "knowledge is situated, being in part a product of the activity, context, and culture in which it is developed and used" (p. 32). Thus, knowledge acquired in one context (e.g., online) may only transfer to similar contexts. Situated learning addresses the concept of transfer, that is, transferring knowledge or skills acquired in training back to the context of the job.

Connectivism, referred to by Siemens (2005) as a learning theory for the digital age, makes up the remainder of the theoretical foundation for this study. Connectivism posits that competence is derived from forming connections. In other words, learning is a process that involves making decisions about, integrating, and organizing new information from a variety of sources. Technology and the Internet present new opportunities for learning through the creation

of peer networks, for instance, through participation in online discussion forums. The theory of connectivism provides a lens through which to interpret the results of the present study, which evaluates e-learning training outcomes. Collectively, these three theories serve to frame and interpret the present study.

Training transfer, learning translated into behavioral application, is conceptualized in one of the most well-known training evaluation models, the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2006). This model depicts a hierarchy consisting of four levels.

The Kirkpatrick Model

Level 4: Results
The benefit the organization experiences as a result of the training.

Level 3: Behavior
Applying what was learned during the training when back on the job.

Level 2: Learning
Knowledge or skills acquired from the training.

Level 1: Reaction
The degree to which participants found the training to be favorable, engaging, and relevant.
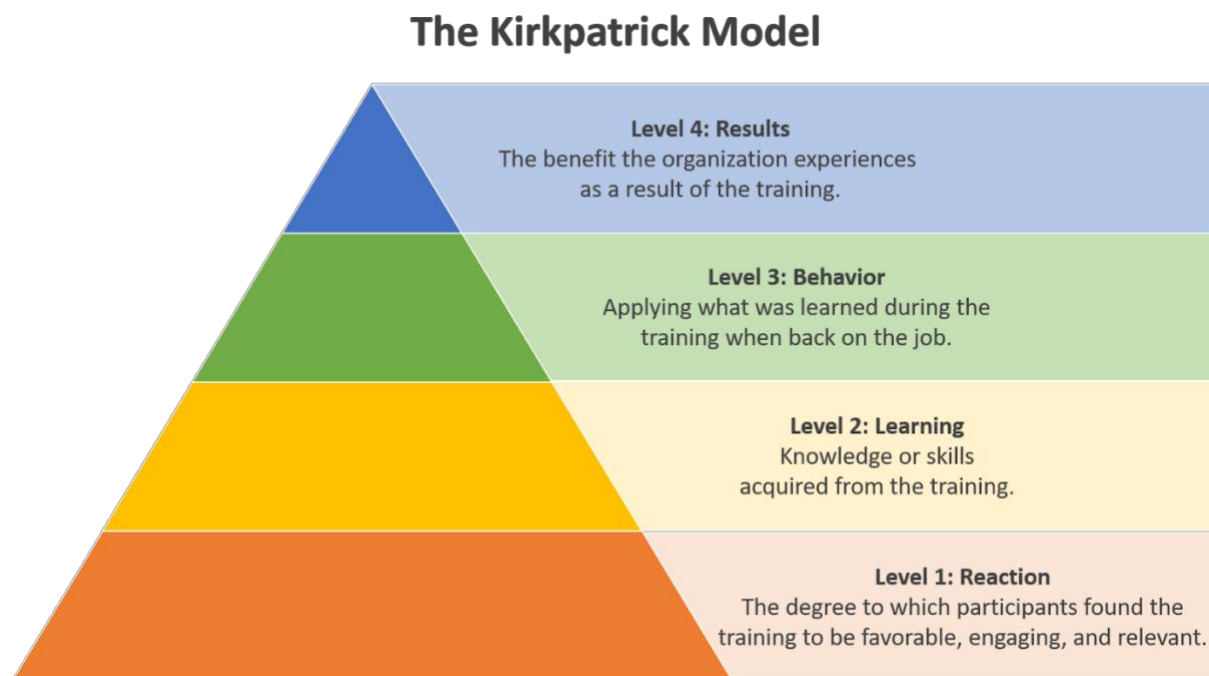
Figure 1. The Kirkpatrick Model. This figure depicts the four levels of training evaluation.

Training transfer is demonstrated at Level 3 of the Kirkpatrick Model. Therefore, evaluation would need to take place up to this level for an organization to determine whether the resources they have dedicated to training are producing the desired results (i.e., transfer of learning to application on the job).

According to the widely adopted ADDIE model (Branson et al., 1975), developing effective training is a process consisting of five phases - analyze, design, develop, implement, and evaluate. Unfortunately, high-level evaluation of training, for instance, evaluation at Levels 3 and 4 of the Kirkpatrick Model, is largely absent in practice and research (Van Buren & Erskine, 2002). Strother (2002) reported that while 97% of corporate training programs measure learners' reaction to training (Level 1 of the Kirkpatrick Model), only 3% measure organizational results attributed to the training (Level 4 of the Kirkpatrick Model). Furthermore, attempts to evaluate training transfer have often employed limited methods, for instance, self-reported behavior (e.g., Vizeshfar, Momen Nasab, Yekta Talab, & Iman, 2018).

Culture serves as the construct for studying the training transfer phenomenon. Hofstede (2001) classified five dimensions of culture based on a study of 100,000 employees from 66 countries. Since then, Hofstede's cultural dimensions have become a widely adopted metric of culture. The five dimensions are power distance, uncertainty avoidance, individualism, masculinity, and time orientation. Based on the literature reviewed, this study focuses on the dimension of individualism, measured at the individual level rather than the national level (Yoo, Donthu, & Lenartowicz, 2011).

An individual with a more individualistic orientation may expect or prefer "a loosely-knit social framework in which individuals are expected to take care of only themselves" (Hofstede, 2019). On the contrary, an individual with a more collectivistic orientation may expect or prefer "a tightly-knit framework in society" in which members work collectively to meet group needs and view self-image as "we" rather than "I".

Definition of Terms

The present study uses the following operational definitions.

culture - The pattern of values and beliefs that may affect the behaviors of the peoples in a given region (Shipper et. al, 2007).

cultural orientation - How an individual perceives themselves in their relationships with others and the world (Dimitrov, 2006).

e-learning - A wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration (Association for Talent Development, 2020).

Hofstede's cultural dimensions - Five dimensions, power distance, uncertainty avoidance, individualism, long-term orientation, and masculinity, which serve as a metric of culture.

    Individualism (individualism-collectivism) - The degree to which an individual prioritizes their own individual needs over the wellbeing of the group (Hofstede, 2001).

Hofstede's cultural values - Countries' cultural dimensions scores (Hofstede, 2001).

Kirkpatrick Model - Model for training evaluation consisting of four levels - reaction, learning, behavior, and results.

    Level 1: Reaction - The degree to which participants found the training to be favorable, engaging, and relevant.

    Level 2: Learning - Knowledge or skills acquired from the training.

    Level 3: Behavior - Applying what was learned during the training when back on the job.

    Level 4: Results - The benefit the organization experiences as a result of the training (Kirkpatrick & Kirkpatrick, 2006).

return on investment (ROI) - Phillips' (2003) addition of a fifth level to the Kirkpatrick Model; quantifiable value or payoff of training investments.

training inputs - One component of Baldwin and Ford's (1988) framework for examining training transfer (the two additional components are training outputs and conditions of transfer). Training inputs are classified according to three categories - trainee characteristics (e.g., ability, personality, motivation), training design (e.g., principles of learning, sequencing, content), or work environment (e.g., peer or supervisor support).

training transfer - The degree to which trainees apply the knowledge, skills, behaviors, and attitudes gained in the training to their jobs (Tracey et al., 1995).

Universal Design for Learning (UDL) - A framework to optimize instruction for all people that suggests providing multiple means, or options, for participation in learning (CAST, 2018).

workplace learning - The process used by individuals when engaged in training programs, education and development courses, or some type of experiential learning activity for the purpose of acquiring the competence necessary to meet current and future work requirements (Jacobs & Park, 2009).

Research Questions

This research aims to address the following questions:

1. Does individualism predict participants' reaction to e-learning training?

2. Does individualism predict participants' learning as a result of e-learning training?

3. Does individualism predict participants' behavior attributed to e-learning training?

Overview of Methods

This study is approached from a postpositivist worldview. According to Creswell (2018), postpositivists seek to identify the causes of specific outcomes. This study seeks to examine the cultural dimension of individualism as a contributor to e-learning training transfer outcomes. In addition, developing numeric measures for studying individuals is a characteristic of the

postpositivist worldview. In this study, participants' propensity to prioritize the needs of the individual as opposed to the group is indexed numerically. This study employs a quantitative, nonexperimental methodological design. Data is collected using online surveys and pre- and post-training assessments. Linear regression is employed to analyze individualism (the independent variable) as a predictor of reaction, learning, and behavior (the dependent variables).

Chapter Summary

This study aims to address outstanding shortcomings in the literature on workplace learning, specifically regarding training transfer, which has been defined and problematized. Current approaches to training evaluation often incorporate participants' reaction to training (i.e., the degree to which participants found the training to be favorable, engaging, or relevant). Opportunities exist to evaluate training at a level that captures the transfer of learned knowledge or skills into behaviors enacted when performing work.

In addition to a need for evaluation that adequately gauges transfer, changes in society and advancements in technology necessitate new approaches to training research. The increasing diversity of the workforce demands culture be a prominent consideration in training design and evaluation. Additionally, the widespread adoption of e-learning justifies narrowing study to the scope of this format. Taken together, the components frame the present study, which analyzes the impact of the cultural dimension of individualism on workplace e-learning training transfer. Study findings may have valuable implications for training practitioners, employees, and organizations in terms of the development of equitable, transferable training.

Chapter 2: Literature Review

The present study seeks to evaluate learners' cultural orientations in terms of individualism-collectivism as a predictor of workplace e-learning training transfer. Training transfer can be characterized as the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in the training context to the job (Baldwin & Ford, 1988). The topic of training transfer has long warranted research attention. In 1988, Baldwin and Ford published a literature review to address growing concern over the training transfer problem despite existing research efforts. Decades later, society has developed through technological advancement and increased globalization. These developments have resulted in changes to the format of workplace training and the makeup of the workforce demanding the continued study of training transfer.

This review examines research questions, models, methods, findings, and limitations from 22 empirical studies published between 1995 and 2019. The purpose of this review is to synthesize the existing literature, exposing gaps that necessitate the present study. It is organized into sections based on three themes emerging from the literature - training evaluation, e-learning, and culture.

The first section, training evaluation, presents various methods that have been used to assess the effectiveness of training. The Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2006), which defines four hierarchical levels of evaluation, is the most frequently cited model among the studies included in this review. Another subset of studies approach training evaluation through the examination of variables that can be classified according to Baldwin and Ford's (1988) three categories of training inputs - trainee characteristics, training content, and work environment.

The second section of this review explores e-learning research. In this section, the Universal Design for Learning (UDL) framework and guidelines (CAST, 2018) are introduced.

With the advancement of technology, corporations are increasingly using the e-learning format for training delivery. The first subset of e-learning literature is analyzed according to context (e.g. academic, corporate, etc.). The second subset of studies seek to compare the outcomes of in-person versus e-learning education/training. The final subset of e-learning literature reviews research specific to e-learning design.

Culture is addressed in the final section of this review. International mobility and globalization have changed the makeup of the workforce making evident the importance of culture in training transfer research. The first subset of studies demonstrates various approaches to measuring culture, including Hofstede's (2001) cultural dimensions. The second subset of studies evaluate the impact of language barriers and translation on training outcomes.

Again, this review of literature brings together research in the areas of training evaluation, e-learning, and culture. As demonstrated in Figure 2, many of the studies pertain to more than one area. Taken together, the gaps identified in this body of existing research yield a unique lens through which to examine the training transfer problem.

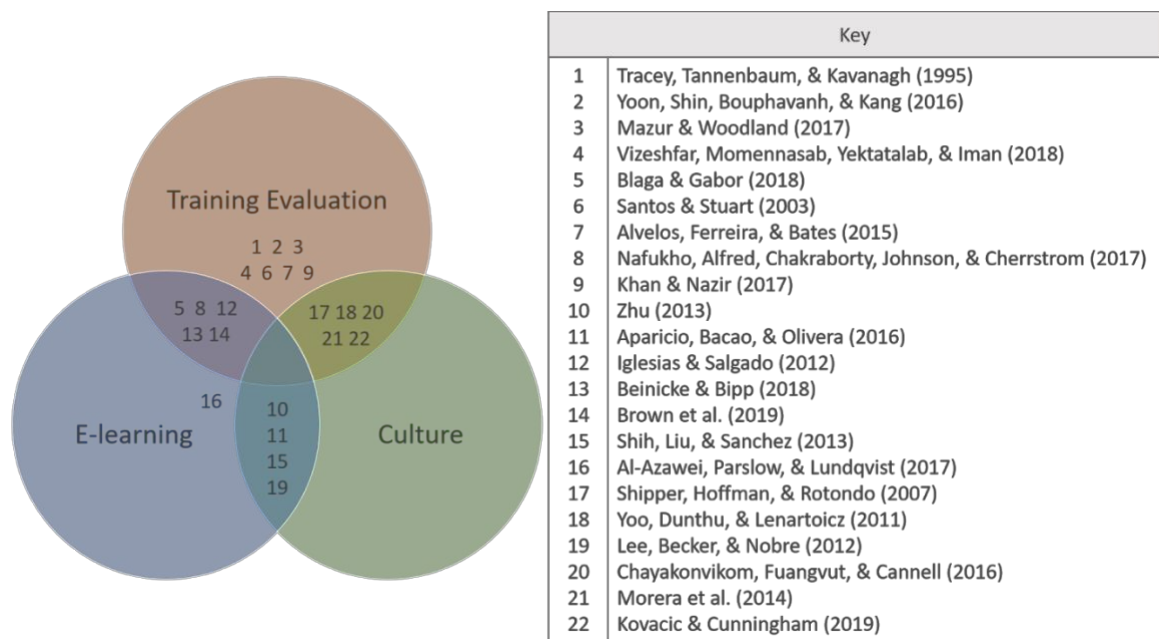|	Key
1	Tracey, Tannenbaum, & Kavanagh (1995)
2	Yoon, Shin, Bouphavanh, & Kang (2016)
3	Mazur & Woodland (2017)
4	Vizeshfar, Momennasab, Yektatalab, & Iman (2018)
5	Blaga & Gabor (2018)
6	Santos & Stuart (2003)
7	Alvelos, Ferreira, & Bates (2015)
8	Nafukho, Alfred, Chakraborty, Johnson, & Cherrstrom (2017)
9	Khan & Nazir (2017)
10	Zhu (2013)
11	Aparicio, Bacao, & Olivera (2016)
12	Iglesias & Salgado (2012)
13	Beinicke & Bipp (2018)
14	Brown et al. (2019)
15	Shih, Liu, & Sanchez (2013)
16	Al-Azawei, Parslow, & Lundqvist (2017)
17	Shipper, Hoffman, & Rotondo (2007)
18	Yoo, Dunthu, & Lenartoicz (2011)
19	Lee, Becker, & Nobre (2012)
20	Chayakonvikom, Fuangvut, & Cannell (2016)
21	Morera et al. (2014)
22	Kovacic & Cunningham (2019)

Figure 2. Venn Diagram of Empirical Studies Reviewed. This figure classifies the empirical studies in this review according to three categories - training evaluation, e-learning, and/or culture.

Training Evaluation

Of the studies included in this review, those within the training evaluation theme can be grouped into two subsets. All the studies within the first subset reference the Kirkpatrick Model. The second subset evaluates the effects of various training inputs (Baldwin & Ford, 1988) on training transfer.

The Kirkpatrick Model. Several studies on training evaluation employ the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2006). The Kirkpatrick Model depicts a hierarchy consisting of four levels. Level 1 represents participants' reaction to the training. Level 2 represents participants' learning (knowledge or skills) acquired from the training. Level 3 represents participants' behavior of applying what was learned during the training when back on the job. Level 4 represents the benefit the organization experiences because of the training. Not every study referencing the Kirkpatrick Model evaluates at all four levels. Additionally, these studies vary in the methods and timing used to evaluate the various levels. Studies referencing the Kirkpatrick Model are described below in chronological order of date published.

In a study published in 1995, Tracey, Tannenbaum, and Kavanagh noted that very little research evaluated the transfer of trained skills to the job. Operationalizing work environment in terms of transfer of training climate and continuous learning environment, researchers evaluated an in-person training program at the learning and behavior levels of the Kirkpatrick Model. Participants (n=505 supermarket managers) completed pre-training and post-training supervisory knowledge tests to measure learning attributed to participation in the training program.

Researchers utilized pre-training and post-training behavior questionnaires to evaluate the application of trained skills to the job. The pre-training and post-training behavior questionnaires were completed by training participants and their supervisors. The post-training behavior questionnaires were administered six to eight weeks after the completion of the training program.

Yoon, Shin, Bouphavanh, and Kang (2016) also conducted training evaluation according to the Kirkpatrick Model. In their study, an in-person continuing professional development training program for primary care physicians and physician assistants (n=48) was evaluated at all four levels - reaction, learning, behavior, and the benefit the organization experiences. Reaction was evaluated using a questionnaire consisting of items with Likert-scale response options and a space in which participants could write their opinions about the training program. Learning, assessed by the trainers, measured participants' knowledge and skills at the beginning and end of each section of the training program. Behavior was evaluated using a combination of methods - review of medical records and 360-degree evaluation. Medical records written before and three months after the training program were evaluated according to a checklist. More than three months after the training program, participants and their colleagues were surveyed for the 360-degree evaluation. The benefit the organization experiences was assessed through group interviews with the hospitals' health professionals and by looking at key indicators of health service delivery outcomes (i.e. number of patient visits and number of admissions).

Mazur and Woodland (2017) also used the Kirkpatrick Model as a framework for their study, which evaluated the effectiveness of an in-person professional development training for Pakistani educators (n=20). Evaluation was conducted at two levels of the model - learning and behavior. In addition to evaluating learning and behavior, this study examined educators' social capital gain attributed to participation in the training. Like other studies, learning was evaluated

using pre-training and post-training tests. In addition to the tests, however, researchers also incorporated rubric-based scores of a Unit of Study to measure learning. Behavior, the extent to which participants were able to apply their learning to deliver instruction, was evaluated using a *Classroom Teaching Self-Assessment*. Participants were instructed to design and deliver a one-hour lesson and complete the self-assessment immediately after. The self-assessment, which featured Likert-scale response options, asked participants to rate the extent to which they were able to enact principles from the training and to consider how their instruction might have differed had they not participated in the training. Researchers noted the use of a self-report evaluation method as a limitation to the study.

Vizeshfar, Momennasab, Yektatalab, and Iman (2018) conducted a study to evaluate the effectiveness of an in-person first aid training program at all four levels of the Kirkpatrick Model. Participants' (n=25 health volunteers) reactions were assessed using a survey consisting of questions about the content, trainers, and facilities. Learning was measured using pre-training and post-training tests. Behavior was evaluated, before and after training, through observation. A performance checklist was used to assess participants' demonstration of skills including vital sign measurement and the bandage and immobilization of fractures. Participants' demonstrations of skills were simulated on each other. This study characterized the fourth level of evaluation a bit differently, perhaps because training participants were volunteers not associated with a single organization. In one section of the article researchers characterize the fourth level of evaluation as "the achievement of the objectives of the training course." In another section of the article the fourth level of evaluation is characterized as "the overall results of the program." To assess this level, participants completed a survey featuring Likert-scale response options indicating their

achievement of the training course objectives. Like Mazur and Woodland (2017), researchers included this self-report method of evaluation as a study limitation.

Phillips (2003) contributes a fifth level of evaluation to the Kirkpatrick Model - return on investment (ROI). ROI methodology attempts to quantify the value or payoff of [training] investments. Organizations may use ROI calculations to inform decisions regarding training resources.

Blaga and Gabor (2018) incorporate Phillip's fifth level, in addition to Kirkpatrick's four levels, in their evaluation of the effectiveness of a training program. A training program was administered to participants (n=50 pharmaceutical industry employees) in one of two formats, in-person, or e-learning. Learning was measured by tests and a final exam. Participants completed a questionnaire with items intended to evaluate reaction, behavior, and the benefit the organization experiences. The questionnaire items featured Likert-scale response options. Researchers performed an ROI calculation from the questionnaire responses. Researchers list the use of the questionnaire as a study limitation, given that not all participants may have interpreted the questions in the same way.

Taken together, these five studies can inform future approaches to training evaluation guided by the Kirkpatrick Model. Researchers have established the use of questionnaires to evaluate participants' reaction to training. These questionnaires may include items on training content, trainer(s), or environment, and may feature Likert-scale response options and items with a free response option. Pre-training and post-training tests are commonly used to assess participants' learning. Post-training tests immediately follow completion of the training. Pre-training and post-training measures may also be a valid method for assessing behavior. Assessment of behavior, completed by trainers or participants' colleagues or supervisors, may be

conducted using a checklist or rubric to promote consistency and objectivity. Post-training behavior assessments administered at least six weeks after completion of the training may demonstrate participants' sustained application of learning (knowledge or skills) acquired during training to the job. Although questionnaires have been used to evaluate behavior and the benefit the organization experiences, the use of self-report data is consistently cited as a limitation. Other methods of evaluating the benefit the organization experiences include interviews and/or analysis of key indicators. Training evaluation studies incorporating Phillips' fifth level, ROI, are less common. Furthermore, existing ROI calculations employing self-report data are limited.

Training inputs. Baldwin and Ford (1988) present a framework for examining training transfer which consists of training inputs, training outputs, and conditions of transfer. They further delineate training inputs into three categories - trainee characteristics (e.g. ability, personality, and motivation), training design (e.g. principles of learning, sequencing, and training content), and work environment (e.g. peer or supervisor support). The following studies, listed in chronological order of date published, evaluate the effects of various training inputs on training transfer.

Santos and Stuart (2003) conducted a study to determine the influence of employee perceptions of the work environment on training effectiveness. Researchers employed a mixed methods approach (interviews and a questionnaire) to assess participants' (n=167 financial services employees) perceived importance of the training, outcomes of the training, and support for the training. Questionnaire items, for instance, "My manager regularly discusses my training and development needs with me," featured Likert-scale response options. The study found that employees' perceptions about work environment factors including supervisor support and

opportunities for rewards (e.g. promotion or increased pay) mediated the effective transfer of training.

According to Alvelos, Ferreira, and Bates (2015), little research has been conducted on the transfer of training. These researchers formulated a study of the influence of factors within each of the three classifications of training inputs (trainee characteristics, training content, and work environment) on training effectiveness. More specifically, these factors included trainee motivation, transfer design, and social support. Researchers proposed a conceptual model for evaluating the effectiveness of training based on their hypotheses on the influence of the various training inputs. Participants (n=202 employees of a multinational insurance company) completed a questionnaire consisting of items featuring Likert-scale response options. An example questionnaire item used to measure transfer design was "The activities and exercises the trainers used helped me understand how to apply what I learned at my job." Results indicated a positive and significant relationship between transfer design and motivation, motivation promoted training effectiveness and, consequently, increased training transfer, and social support partially mediated the relationship between transfer design and motivation proving to be a significant variable in training transfer. Thus, training designed for transfer and implemented in a work environment where trainees are supported by peers and supervisors increases trainees' motivation and transfer of training.

In another study employing Baldwin and Ford's training inputs, Nafukho et al. (2017) examine the predictive capacity of trainee characteristics, training design, and work environment on training transfer. The study evaluates a continuing professional education training program offered through in-person, e-learning, and blended learning (a combination of in-person and e-learning) formats. Participants (n=251) completed a questionnaire featuring items with Likert-

scale response options, including items from the researchers' *Learning Dimension Inventory* and items adapted from the *Transfer of Learning Instrument* (Renta-Davids, Jiménez-González, Fandos-Garrido, & González-Soto, 2014). For instance, the item "I have changed the way we do some things in my work as a result of participating in the training" was one of five questionnaire items used to evaluate training transfer. Regression analysis was performed to determine the predictive validity of the predictor variables (trainee characteristics, training design, and work environment) for the outcome variable of training transfer. Trainee motivation was assessed based on the constructs of learning-oriented motivation and job-oriented motivation. Both constructs of motivation were found to be significantly associated with training transfer. Training design was assessed in terms of training efficiency and relevance constructs, both of which were found to be critical to training transfer. Work environment, assessed according to work complexity, work variability, and work empowerment and autonomy constructs, had a positive influence on training transfer. Study limitations include the use of self-report data for the evaluation of training transfer. An example of a practical recommendation, based on the findings related to work environment, is the development of learning teams and shared goals to foster peer support.

Khan and Nazir (2017) examined the effects of two training inputs - trainee characteristics (referred to in this study as dispositional factors) and work environment (referred to in this study as situational factors) on training transfer. Trainee characteristics, or dispositional factors, included the personality traits of conscientiousness, openness to experience, and locus of control. Work environment, or transfer climate factors, included feedback and autonomy. Participants (n=517 teacher trainees) completed a questionnaire which included items adapted from existing measures such as the *Big Five Inventory* (John, Naumann, & Soto, 2008) and the

Learning Transfer Systems Inventory (Holton, Bates, Ruona, 2001). Results indicated that trainee

characteristics/dispositional factors did not influence training transfer directly or indirectly, while

work environment/transfer climate factors affected training transfer both directly as well as

indirectly via motivation. Researchers note that the findings pertaining to trainee characteristics

contradict previous research. However, this contradiction is explained by differing beliefs about

motivation. Previous studies, as well as Baldwin and Ford (1988), classify motivation as a

trainee characteristic. These researchers, however, consider motivation to be not an inherent

personality trait of a trainee, rather a factor resulting from the workplace climate (or work

environment). In this study, the onus of motivation is attributed to the workplace. While training

practitioners may not have influence over trainees' personality traits, this study asserts that

motivation can be developed by providing feedback and/or affording autonomy.

The studies within this subset model methods for evaluating the relationship between

training inputs and training transfer and provide a springboard for future research. Opportunities

exist to dig deeper and clarify findings that could be considered contradictory. For instance,

some studies found supervisor support to be an influential factor in training transfer while

another study found autonomy to be an influential factor in training transfer. Training

practitioners may benefit from a better understanding of how to implement both supervisor

support and employee autonomy. Furthermore, the effectiveness of support or autonomy could

vary according to trainee characteristics or job responsibilities.

Overall, the training evaluation literature included in this review employs either the

Kirkpatrick Model or Baldwin and Ford's training inputs to the study of training transfer. A

limitation listed within both subsets of the training evaluation literature is the use of self-report

data to measure behavior, the benefit the organization experiences, or training transfer. Future

training evaluation research might bolster the findings reported in these studies by validating and implementing alternative measures.

E-learning

The ubiquity of computers and the internet has contributed to the rapid, increasing adoption of e-learning. E-learning can be defined as "the use of computer network technology, primarily via the Internet, to deliver information and instructions to individuals" (p. 167, Wang, Ran, Liao, & Yang, 2010). Some of the benefits of e-learning include convenience, flexibility, standardization, and cost savings (Soccio, 2012). As e-learning becomes a more common format for the delivery of workplace training, training transfer must be analyzed within the scope of this modality. The e-learning studies included in this review are examined according to context (e.g. academic, corporate, etc.), categorized as modality comparison studies, or considered for their contributions to e-learning design.

Academic contexts. Much of the existing e-learning research is based in the context of academic institutions (Wang et al., 2010). According to Cheng, Wang, Yeng, Kinshuk and Peng (2011), "conceptualizations of e-learning development in the institutional context are not transferable to workplace learning" (p. 1331). Although the findings based in academic institutions are not generalizable to the workplace, examples of different e-learning research approaches are presented, keeping in mind the difference in context. The following studies appear in chronological order of date published.

Zhu (2013) examined the effect of cultural characteristics and school organizational culture on the implementation of a style of e-learning referred to as computer-supported collaborative learning (CSCL). Cultural characteristics were selected as a factor based on the previous finding that people from different cultures respond differently to the use of online

learning technologies (Hannon and D'Netto, 2007). To assess cultural characteristics, this study

incorporated two of Hofstede's (2001) five cultural dimensions - power distance and

individualism. Power distance is the degree to which inequality or distance between those in

charge and the less powerful is accepted. Individualism (individualism-collectivism) refers to the

degree to which action is taken to the benefit of the individual or the group. In addition to

cultural characteristics, this study considered the effect of school organizational culture on the

implementation of CSCL. Participants (n=832) consisted of students and teachers from

secondary schools in China and Belgium. Questionnaires included items measuring cultural

characteristics, school organizational culture, and implementation of CSCL. Results indicated

that two dimensions of cultural characteristics, openness to change and collaboration, were

strong, positive predictors of CSCL, and two dimensions of school organizational culture,

innovation orientation and leadership, were significantly related to the implementation of CSCL.

Aparicio, Bacao, and Olivera (2016) examined the impact of cultural characteristics on e-

learning systems' success within the context of higher education. The authors, who describe

learning as a social process, expressed the need for a deeper understanding of how cultural

characteristics impact e-learning outcomes. Their study evaluated students' cultural

characteristics in terms of Hofstede's (2001) cultural dimension of individualism (individualism-

collectivism). The researchers theorize that learning distinctions exist between more

individualistic students, who are focused on the attainment of individual goals, and more

collectivistic students, for whom social relationships supersede learning tasks. Participants

(n=323 students) completed a questionnaire consisting of an individualism-collectivism construct

and four constructs representing e-learning system success (use, satisfaction, individual-level

success, and organizational-level success). An example questionnaire item from the

individualism-collectivism construct was "Group success is more important than individual success." Results showed cultural characteristics (i.e., individualism-collectivism) to be a contributing factor in explaining e-learning systems' success. Moreover, this study found that more individualistic students perceived greater e-learning success than more collectivistic students. The researchers suggest that the study findings are important for organizations using e-learning for training delivery. They propose that a similar study be conducted in the workplace context to better understand the similarities and dissimilarities between higher education students and trainees within an organization.

Although conducted within the context of academic institutions, this subset of e-learning research has implications for the study of e-learning training in the workplace. Moreover, these studies demonstrate approaches to e-learning training evaluation that consider culture.

Comparison studies. The second subset of e-learning research presented in this review consists of studies comparing outcomes of different training formats (e.g. in-person training and e-learning training). This selection of studies, presented in chronological order of date published, features representation from both higher education and workplace contexts.

Iglesias and Salgado (2012) compared the effectiveness of in-person training to training conducted via videoconferencing (a form e-learning). Participants (n=561) were enrolled in one of the two training formats, both of which covered the same content on entrepreneurship. While the researchers acknowledge some of the benefits of e-learning (e.g. cost savings, flexibility, and convenience), they cite lack of interaction between the instructor and audience or between participants as one disadvantage. Moreover, the researchers list benefits of in-person training to include opportunities for interaction between the instructor and participants, which can promote a positive learning environment leading to increased participant motivation. The researchers

evaluated the training formats according to the first level of the Kirkpatrick Model - reaction. Questionnaires included items grouped into three constructs - course, course organization, and instructor. Ultimately, the study results found no significant difference in effectiveness of one modality over the other. However, participants of the in-person training modality conveyed a more satisfied reaction on items pertaining to the instructor. This finding is attributed to the opportunities in the in-person training for informal interaction with the instructor, for example during breaks or after class. Based on this finding, future research might aim to find ways to incorporate opportunities for interaction in e-learning training.

Beinicke and Bipp (2018) also conducted a study comparing the effectiveness of in-person and e-learning training, however their study evaluated training at the third and fourth levels of the Kirkpatrick Model - behavior and the benefit the organization experiences. The researchers express the need for more empirical research on the effectiveness of e-learning to be conducted in real workplace settings. Participants (n=86 employees of a global medical device manufacturing company) were randomly assigned to the in-person training group or the e-learning training group. Researchers distinguished between subjective training success and objective training success. Subjective training success was assessed using a questionnaire which consisted of items for each of the four levels of the Kirkpatrick Model. An example of an item measuring learning was "After the training, I know much more about the training contents than before." A performance test was used to evaluate objective training success. The test featured multiple choice questions measuring declarative and procedural knowledge. Declarative knowledge (knowing that) was described as trainees' memory of facts and principles taught in training. Procedural knowledge (knowing how to do something) was described as information about how to perform a task or action. This study also emphasized time as an important

consideration explaining that it is insufficient to evaluate training outcomes only immediately

after training. Participants completed the questionnaire and performance tests immediately after

training and again between six and eight weeks after training completion. The results of the study

revealed higher scores of subjective training success for the in-person training, when assessed

immediately after training. However, when assessed again six to eight weeks following the

completion of the training, the difference in subjective training success for in-person and e-

learning training disappeared. Regarding objective training success, when assessed immediately

following the training, declarative knowledge scores did not differ, but procedural knowledge

scores were higher for the in-person training group. However, when assessed six to eight weeks

after completion of the training, declarative knowledge scores were higher for e-learning trainees

and there was no longer a difference in procedural knowledge. The researchers discuss various

explanations for these findings ultimately concluding that it is not the format of training (i.e. in-

person or e-learning) that leads to training success, rather, in order for any training format to be

effective, it should be designed with consideration for the type of learning content (i.e.

declarative or procedural knowledge). One limitation of the study was the absence of a pre-

training performance test to consider trainees' prior knowledge.

Brown et al. (2019) conducted a study comparing the effectiveness of two methods for e-

learning training - video instruction only and game-based instruction in addition to video

instruction. Participants (n=60 students of a higher education institution) were assigned either the

control group, administered video instruction only, or the treatment group, administered video

and game-based instruction. The objective of the training was to foster cross-cultural

competence. The game-based instruction featured avatars simulating interaction with dialogue,

hints, and immediate feedback based on participants' choices. The method for evaluating the

effectiveness of the training combined guidance from the Kirkpatrick Model and a similar study (Mackenzie, Fogarty, & Khachadoorian, 2013), and included situational judgement tasks, a post-training test, and an exit questionnaire. The assessment of simulated behavior, in place of behavior in a real-life situation, was listed as a study limitation. Results demonstrated that the participants administered the game-based instruction in addition to the video instruction realized a greater appreciation for, and understanding of, culture than did the video-instruction only group.

This subset of literature establishes that e-learning training can be as effective, if not more effective, when compared to in-person training. In addition, the Kirkpatrick Model can be used to guide the evaluation of different e-learning methods (e.g. videoconferencing, videos, and games). Practical implications include creating opportunities for interaction within e-learning training and considering the type of learning content (i.e. declarative or procedural knowledge) in training design.

E-learning design. The third subset e-learning research reviews studies contributing to e-learning design. The transition from in-person training to e-learning training presents opportunities to explore new approaches to teaching and learning. Blewitt (2016) puts it this way, "If online learning [e-learning] is to be effective, and not simply efficient, it will be necessary to move beyond copy/paste approaches that simply seek to replicate offline [in-person] approaches within online spaces" (p. 266). The following studies, reviewed in chronological order of date published, present findings pertinent to the design of e-learning training that promotes transfer.

In one regard, the flexibility afforded by the e-learning training format can be viewed as a benefit; e-learning training can be accessed regardless of physical location. Alternatively, this

lack of physical proximity poses unique challenges that require specific design considerations.

Shih, Liu, and Sanchez (2013) explain:

> without the direct contact and interaction that traditional classroom instruction offers,
> online instructors may find it difficult to identify online learners' learning
> preferences...which poses a problem: If learners' learning styles are not known, it would
> not be possible for teachers to tailor the course design and delivery in order to meet
> learners' individual learning style preferences. (p. 142)

Although described in the context of academic institutions, instructors, and learners in the

context of the workplace are similarly impacted by lack of contact.

Shih et al. (2013) conducted a study to assess higher education students' online learning

preferences and to understand how culture affects these preferences. Participants (n=368

Taiwanese students and n=371 U.S. students) completed a questionnaire consisting of items on

personal information and items from researchers' *Inventory of Online Learning Style*

Preferences. Online learning style preferences were categorized as perceptual, cognitive

processing, social learning, and problem-based learning. This study used Hofstede's (2001)

classifications of national culture, specifically the cultural dimension of individualism, for

Taiwan and the United States. Results indicated that participants from Taiwan, which is low

scoring in the cultural dimension of individualism, preferred group learning, while participants

from the U.S., which is higher scoring in the cultural dimension of individualism, preferred

studying alone. Implications of the study support an e-learning design that is flexible/adaptable.

Proposed by the Center for Applied Technology (CAST), the Universal Design for

Learning (UDL) framework suggests providing multiple means, or options, for participation in

learning (CAST, 2018). For instance, an e-learning training may convey one concept in three

ways - described with text, pictured as a diagram, and explained in a video. The UDL Guidelines feature concrete methods for designing training that meets the unique, individual needs of all types of learners.

Al-Azawei, Parslow, and Lundqvist (2017) examined how the application of UDL principles to e-learning design impacted students' perceptions of e-learning. Participants (n=92 Iraqi students at a higher education institution) completed a questionnaire based on their experience in either the control group (e-learning design did not apply UDL principles) or the experimental group (e-learning design applied UDL principles). The questionnaire consisted of items featuring Likert-scale response options and assessed constructs including perceived satisfaction, perceived ease of use, and perceived usefulness. An open-ended question was also included in the questionnaire to collect qualitative data. Results of the study revealed higher perceptions of e-learning for the experimental group. Researchers concluded that curricula design has a direct, significant effect on learner perceptions.

The studies in this section establish the importance of employing e-learning design that accommodates a variety of learning preferences and cultural backgrounds. While findings from studies conducted in the context of academic institutions are not necessarily generalizable to the workplace, it is possible to consider how applying the UDL framework to the design of workplace e-learning training might increase opportunities for training transfer.

Culture

Increased globalization characterized by international mobility and the development of multinational corporations has resulted in changes adding to the complexity of the workplace. Consequently, training researchers and practitioners are challenged with developing training that is effective for an increasingly culturally heterogeneous workforce. More than ever before, there

is reason to consider the impact of cultural orientation on training transfer. Within the literature

relating culture and training, two themes emerge - developing and validating measures of culture

and the impact of language on training outcomes.

Measures of culture. Many of the studies presented in previous sections of this review

reference Hofstede's (2001) cultural dimensions. These dimensions, developed from a study

conducted in the 1970s, intended to characterize culture at the societal level, not the individual

level. The following studies, presented in chronological order of date published, provide various

rationales and methods for measuring culture, either at the societal level or the individual level.

Shipper, Hoffman, and Rotondo (2007) conducted a study evaluating the effectiveness of

a development initiative, the 360-degree feedback process, for creating "actionable knowledge"

across cultures. Researchers evaluated the development initiative according to the first three

levels of the Kirkpatrick Model - reaction, learning, and behavior. The sample consisted of

participants (managerial employees of large multinational corporations) from five countries:

Ireland (n=117), Israel (n=171), Malaysia (n=285), the Philippines (n=172), and the United

States (n=2287). Participants completed a questionnaire, *The Survey of Management Practices*,

consisting of items assessing employee attitudes, managerial skills, and managerial effectiveness.

Questionnaires were completed before participation in the development initiative and again 18

months after participation in the development initiative. The study used the values Hofstede

(2001) assigned to the countries of the participants for four of the five cultural dimensions -

power distance, uncertainty avoidance, individualism, and masculinity. The results of the study

revealed significant differences in development initiative effectiveness based on culture.

Specifically, countries with low values for power distance and high values for individualism (i.e.

the United States and Ireland) demonstrated more positive reactions to the 360 degree feedback

development initiative, greater improvements in self-awareness (knowledge), and significant

improvements in use of interactive skills (behavior). While the study is limited to a specific

development initiative, the 360-degree feedback process, it demonstrates a need to examine how

cultural differences influence the effectiveness of other types of training.

Yoo, Dunthu, and Lenartoicz (2011) conducted a study to develop and validate a

psychometrically sound measurement tool to assess Hofstede's (2001) five culture dimensions at

the individual level. They establish a need for an individual-level measure of culture. Studies

have misapplied Hofstede's national-level values as representative of individuals' cultural

orientations. Moreover, many countries' populations are becoming increasingly heterogeneous.

Researchers selected and adapted items from those used by Hofstede (2001) (e.g. HERMES

value questions, the power distance index, the uncertainty avoidance index, the individualism

index, and the masculinity index) as well as items from non-Hofstede works (e.g. Chinese

Culture Connections long-term orientation items) to develop a questionnaire. The resulting

questionnaire consisted of 125 cultural orientation items featuring 5-point Likert-scale response

options. After undergoing item-selection procedures, the final scale, called the CVSCALE

(Individual Cultural Values Scale), consisted of 26 items. The CVSCALE was administered to

American and Korean higher education students. Exploratory factor analysis demonstrated

independent constructs and confirmatory factor analysis established satisfactory reliability. The

CVSCALE was validated using additional samples of American and Korean students, and then

validated using a sample of Brazilian higher education students and a sample of Polish adults.

Additional studies have confirmed the scale's reliability in a variety of countries (e.g. the United

Kingdom, Portugal, Australia, Thailand, and Egypt) and contexts (e.g. academic institution and

workplace).

Lee, Becker, and Nobre (2012) studied the impact of culture on the acceptance of online learning. This study considers culture in terms of one of Hofstede's (2001) five cultural dimensions - individualism, drawing on his assignments of national-level cultural values. The study involved participants from a U.S. higher education institution (n=290) and a South Korean higher education institution (n=582). Participants completed a questionnaire featuring items with five-point Likert scale response options. Four constructs were obtained through factor analysis: perceived personal innovativeness, perceived online interaction readiness, perceived usefulness, and acceptance of management education and training online. According to Hofstede's (2001) nation-level cultural values, the U.S. scores high in individualism whereas South Korea scores low in individualism. Results indicated statistically significant group differences between U.S. and Korean participants. U.S. participants indicated higher perceived personal innovativeness, higher perceived online interaction, and higher perceived usefulness. Results also portrayed perceived personal innovativeness, perceived online interaction, and perceived usefulness as antecedents to the acceptance of online learning. These findings demonstrate that Korean learners have significantly different learning style preferences than U.S. learners. Researchers' concluding remarks consider how societal change might challenge former generalizations about traditions and cultures, suggesting that "youth in Tokyo or Peking may have more in common with the youth of Paris and New York than they do with some of their family elders" (p. 415).

Chayakonvikom, Fuangvut, and Cannell (2016) evaluated the relationship between learning culture and training satisfaction. More specifically, researchers sought to explain Thai employees' dissatisfaction with a Western-designed training by identifying differences in cultural learning behaviors. Hofstede's (2001) cultural dimensions served as the theoretical framework to explain the cultural learning behaviors identified by the researchers. Participants

consisted of Thai employees (n=72) who had completed a Western-designed Enterprise Resource Planning (ERP) system in-person training (classroom or on-the-job training). In-depth interviews were conducted, and content analysis was performed to identify themes. Interviews revealed four cultural learning behaviors that explained Thai employees' dissatisfaction with the Western-designed training - lack of reading behavior, do not dare to ask questions, lack of self-preparation, and lack the ability to practice themselves outside the training class. The researchers' discussion of the results explained that Thai employees do not develop as independent learners through self-motivation. According to Hofstede's national-level cultural values (2001), Thailand is low in the cultural dimension of individualism. Furthermore, Thai trainees had never been taught to learn by themselves because Thai education aligns with social constructivist learning theory. This study demonstrates an alternative approach (i.e. interviews resulting in qualitative data) for measuring culture.

Several studies evaluating the role of culture in training outcomes consider culture at the national/societal level according to Hofstede's (2001) cultural values. Specifically, Hofstede's (2001) cultural dimension of individualism (individualism-collectivism) is commonly referenced in studies of e-learning, a format that requires self-motivation and often lacks opportunities for interaction or collaboration. Implications for e-learning based on nationally defined cultural differences are demonstrated by the studies reviewed in this section. Although Lee et al. employ Hofstede's national-level cultural values in their study, they conclude with a strong argument for measuring culture at the individual level. Effects of societal changes, including advancements in technology, international mobility, and global connectivity afforded through social media networks, may begin to challenge traditional cultural generalizations. The CVSCALE presents

one valid measure of culture, based on Hofstede's cultural dimensions (2001) at the individual-level.

Language. The following studies, presented in chronological order by date published, explore training approaches and outcomes based on demographic and cultural differences. Researchers consider the effects of language barriers and translation.

Morera et al. (2014) conducted a study to compare outcomes of two in-person training programs for farm labor supervisors, one delivered in English and the other delivered in Spanish. The training evaluation approach measured participants' reception to the training, in terms of quality of experience, and participants' knowledge gains. Participants (n=157) were administered a post-training questionnaire consisting of items to assess quality of experience by intensity of learning, satisfaction with location, satisfaction with experience, satisfaction with organization, and likelihood of implementation. Overall, participants of both English and Spanish training groups rated the quality of their experiences as either high or very high. Participants also completed pre-training and post-training tests to measure knowledge gains. Results of dependent-means *t* tests indicated that for participants of both the English training group and the Spanish training group, post-training test scores were significantly higher, on average, than pre-training test scores. Participants of both English and Spanish training groups Results of independent-means *t* tests showed no significant difference in the pre-training test scores of participants of the English and Spanish training groups, however, the post-training test scores of the participants of the English training group we higher, on average, than the post-training test scores of the participants of the Spanish training group. Researchers suggest part of this difference may have been a result of differences in trainers' delivery of the material between the two groups (e.g. Spanish training group trainers did not consistently present all the information

on the PowerPoint slides). The researchers also suggest that demographic factors such as diverse

learning styles and needs may have also partly contributed to the difference in the groups' post-

training test scores. The lack of questionnaire items regarding education levels was listed as a

study limitation.

Kovacic and Cunningham (2019) studied the effectiveness of electrical safety training

approaches for multilingual and multicultural environments. The study took place at two large,

industrial sites, one in the U.S. and one in Saudi Arabia, with a high number of foreign-born

workers of varied ethnicity and background. The researchers' goal was to identify methods

resulting in employee understanding and implementation of safe electrical work practices (i.e.,

training transfer). The researchers provide background information on each site including

demographic information and descriptions of some of the issues they identified during early site

visits and training efforts (e.g. 60% foreign-born, lack of appropriate personal protective

equipment (PPE) for electrical work, language barriers). The researchers exemplified how

cultural and experiential differences, beyond language, seemed to hinder trainees' ability to

assimilate or transfer the training material in the intended manner. For example, trainees at one

site resisted spending money (i.e. their employers' money) on the proper tools and equipment

required to work safely. Generally, the trainees were more apt to accept the risks associated with

non-rated, lower-cost equipment. Researchers tested various training approaches based on their

understanding of trainees' cultural values (e.g., use of incentives, sharing personal stories,

demonstrating safety failures, relating consequences of safety failures to implications for

trainee's family, use of competition, and incorporating managers in training). This study

demonstrates a less positivist approach to the analysis of cultural differences and training transfer

when compared to the other studies included in this review, which typically employ quantitative methods.

Existing research demonstrates differences in training outcomes (e.g. perceptions, satisfaction, learning, implementation, etc.) based on cultural differences. Based on the findings and limitations described within the studies in this section, future research on cultural implications for training might consider collecting demographic information (e.g. level of education), measuring culture at the individual level (rather than national level), including training on e-learning skills/strategies (e.g. technical skills, self-directed learning) in addition to training content, and/or applying the UDL framework for e-learning training design (i.e. options that appeal to different learning style preferences and cultural orientations such as opportunities for collaboration, incentives, options for content to be displayed in another translation, options for text or audio content, etc.).

Chapter Summary

Technological advancements and social transformation warrant new approaches to the evaluation of training transfer. The ubiquity of the internet has contributed to increasing adoption of e-learning training, while globalization and international mobility have promoted a more culturally diverse workforce. This chapter presents some of the existing training transfer literature surrounding training evaluation, e-learning, and culture.

Several studies have evaluated training according to the Kirkpatrick Model. Training transfer is captured at the third level of the model - behavior. Many studies' assessments of this level are limited by the use of self-reported data. Examples of alternative methods for measuring behavior include observation (using a performance checklist) and/or analysis of key performance indicators.

The existing literature on e-learning offers valuable insight to training transfer, although much of the research is limited to the context of academic institutions. Opportunity exists to validate these findings in the context of the workplace. E-learning may be equally effective as in-person instruction, if designed with special consideration for the difference in format (e.g. e-learning featuring built-in opportunities for interaction, which are inherent when meeting in person). Additionally, the effectiveness of instruction is improved, better serving learners with differing learning style preferences, when featuring multiple options for learning (e.g., one concept conveyed in three ways - described with text, pictured as a diagram, and explained in a video).

In addition to differences in learning style preferences, researchers have also examined the effect of cultural differences on training transfer. Many studies reference Hofstede's five cultural dimensions (1994) and designations of nation-level cultural values (2001). In this review, studies share a focus on the dimension of individualism (individualism-collectivism). One study contributes a valid scale for measuring culture at the individual level.

This literature review presents approaches, findings, and opportunities to inform the present study. Since Baldwin and Ford published their review of literature on training transfer in 1988, the nature of workplace training has changed considerably. The present study evaluates training, specifically e-learning training, considering trainees' individual-level measures of the individualism (one of Hofstede's (1994) five cultural dimensions), up to Kirkpatrick's (2006) third level of training evaluation, behavior, which captures training transfer.

Chapter 3: Methodology

The purpose of this study is to evaluate individualism as a predictor of workplace e-learning training transfer. When training fails to transfer, employees and organizations lose out on investments of time and resources. Although widely researched, the training transfer problem remains. Moreover, technological advancements and social change have influenced the nature of training necessitating research that takes these changes into consideration. The review of literature in Chapter 2 presents evidence for a study of e-learning training transfer considering cultural dimensions.

A single dimension of culture is considered in this study. Individualism (individualism-collectivism), one of Hofstede's (1996) five cultural dimensions, characterizes the degree to which people prefer to act as individuals rather than members of groups. Studies reviewed in Chapter 2 consider the relationship between the cultural dimension of individualism and differences in training and/or e-learning outcomes (Aparicio et al., 2016; Chayakonvikom et al., 2016; Lee et al., 2012; Shih et al., 2013; Zhu, 2013). In this study, individualism is measured at the individual level (rather than using Hofstede's (2001) cultural values, assigned at the national level). Yoo et al. (2011) developed and validated a scale to measure Hofstede's (2001) cultural dimensions at the individual level for the following reason:

> ...equating the stereotypical culture of a country directly with all citizens of the country would be misleading. While culture is defined at the national level (e.g. collectivism), whether an individual shows such a cultural orientation consistent with the national culture needs to be measured (e.g. Does this person show a collectivistic orientation?). This concern is truer when a country consists of a heterogeneous population of different cultural backgrounds. (p. 194)

The items adapted from the CVSCALE (Yoo et al., 2011) feature slider scale response options, ranging from 0 to 20 (rather than five-point Likert scale response options) to measure individuals' degree of individualism at a more granular, continuous level. Individualism is evaluated as a predictor of e-learning training transfer, which is measured at the first three levels of the Kirkpatrick Model (2006) - reaction, learning, and behavior.

Research Design

The present study is approached from a post-positivist worldview. According to Creswell (2018), post-positivists seek to identify the causes of specific outcomes. This study seeks to examine the cultural dimension of individualism as a contributor to e-learning training transfer. Developing numeric measures for studying individuals is a characteristic of the post-positivist worldview. In this study, participants' prioritization of individual needs over group wellbeing (i.e., individualism) is indexed numerically.

This study employs a quantitative methodological design. Quantitative data is collected from online surveys consisting of socio demographic and instrument-based questionnaire items and from online pre- and post-training assessments. The continuous-level independent variable, degree of individualism, is based on six questionnaire items. Reaction and behavior, two of the three continuous-level dependent variables, are also based on multiple questionnaire items. The remaining continuous-level dependent variable, learning, is based on pre-training and post-training assessment scores. Because the independent variable, degree of individualism, cannot be manipulated, rather it is measured, this study qualifies as nonexperimental research.

Nonexperimental research designs are suitable for examining naturally occurring attributes or behaviors, which cannot be experimentally controlled by the researcher (O'Dwyer & Bernauer, 2014). This study can be classified as correlational research, a type of

nonexperimental research in which data is collected and used to determine whether, and to what degree, a relationship exists between two quantifiable variables, without having to randomly assign participants to conditions, to make predictions (Gay & Airasian, 2000).

Research Questions

The present study aims to address the following questions:

1. Does individualism predict participants' reaction to e-learning training?

2. Does individualism predict participants' learning as a result of e-learning training?

3. Does individualism predict participants' behavior attributed to e-learning training?

Data Collection

This study takes place in the context of the workplace, thus contributing to the need for empirical research on the effectiveness of e-learning in workplace settings (Beinicke & Bipp, 2018). The study was conducted at a single U.S.-based site of a global medical device manufacturing company. The population is defined as all site manufacturing employees. Historically, training at this site has been developed at the corporate level or site level, formatted as in-person training (i.e., classroom training and on-the-job training) or e-learning training. This study evaluates a selected e-learning training, that was developed at the site level, on procedures for entering and exiting the site's environmentally controlled area (ECA).

Sample.

Convenience sampling was used to obtain participants for the study. Employment with the company as a manufacturing operator was the single inclusion criterion. Permission to contact employees defined within the population was requested from the employees' managers. Employees of managers who approved were contacted for participation in the study. Participation was voluntary and responses were confidential. Any results of the study shared with

the employer will be provided in an aggregate form. The consent form (included in Appendix A) provided to prospective participants expressed that the decision to participate (or not participate) had no implications for the employee's job standing. Participation was incentivized with points distributed through the company web portal. Points may be used to purchase items from an online catalog, including debit gift cards. A letter of permission, submitted to the Institutional Review Board (IRB), confirmed the employer's support of the study.

Instrumentation.

A link to an online questionnaire hosted in Qualtrics was distributed to prospective participants via email. Submissions will remain confidential. The questionnaire began with items to collect socio demographic information (e.g., age, ethnicity, highest level of education, disability). These items are included in Appendix B. The next section of the questionnaire consisted of six items measuring Hofstede's (2001) cultural dimension individualism (individualism-collectivism) at the individual level. These items are borrowed from the CVSCALE (Yoo et al., 2011) and are included in Appendix B. Response options for these items featured slider scales (ranging from 0 to 20), resulting in continuous-level data.

After moving through the first two sections of the survey, participants completed an online pre-training multiple choice assessment. Assessment scores had the potential to range from 0 to 25. After completing the pre-training multiple choice assessment, participants proceeded to an e-learning training. The estimated time to complete the e-learning training was 15 minutes. The training content covered procedures for entering and exiting the environmentally controlled area (ECA) of the manufacturing facility. At the end of the e-learning, participants completed a post-training assessment (identical to the pre-training assessment). Again, scores had the potential to range from 0 to 25. The difference between the

pre-training and post-training assessment score was used for the evaluation of Kirkpatrick's level

2, learning (research question 2).

After completing the post-training assessment, participants completed seven

questionnaire items evaluating their reactions to the training, Kirkpatrick's level 1. These items,

adapted from Vizeshfar, Momennasab, Yektatalab, and Iman (2018), are included in Appendix

B. Responses to these items were recorded using slider scales (ranging from 0 to 20).

Then, participants completed five questionnaire items, adapted from the Questionnaire of

Transfer of Training (Cheng, 2013), evaluating their behavior as a result of the training,

Kirkpatrick's level 3. These items are included in Appendix B. Responses to these items were

recorded using slider scales (ranging from 0 to 20).

Data Analysis

Linear regression was performed for each research question evaluating the degree of

individualism as a predictor of reaction (research question 1), the degree of individualism as a

predictor of learning (research question 2), and the degree of individualism as a predictor of

behavior (research question 3). Linear regression can be used to determine how much of the

variation in the dependent variable is explained by the independent variable (Muijs, 2011). The

independent variable (degree of individualism) and dependent variables (reaction, learning, and

behavior) are continuous, fulfilling the first two assumptions for using linear regression. Tests of

normality were performed on the independent variable (degree of individualism) to check that

the assumption for a normal distribution was met. To satisfy the linearity assumption (i.e., there

exists a linear relationship between the independent and dependent variable), a scatterplot of the

dependent variable was plotted against the independent variable. In addition, the assumption

homoscedasticity (i.e., the size of error is the same across all values of the independent variable) was confirmed by examining a scatterplot of residuals.

Data analysis procedures also included descriptive statistics for socio demographic variables. These variables, consisting of categorical data, included race, highest level of education, and disability, to name a few.

Validity and Reliability

The normality of the distribution of participant degree of individualism scores were assessed based on a visual inspection of a histogram and the Shapiro-Wilk test of normality (using a .05 significance level). Yoo et. al (2011) demonstrated the validity of their degree of individualism construct, which was employed in this study. Cronbach's alpha values were calculated to assess the reliability of each multi-item variable (i.e., degree of individualism, reaction, and behavior).

Limitations

Findings are limited by the nonexperimental research design of the study. The data collection and analysis cannot be used to make causal inferences. In addition, random sampling was not a feasible method for employing a large enough number of participants. The use of the convenience sampling method somewhat limits the generalizability of the findings to the population. Results could be bias depending on the reason(s) for participating or not participating in the study. Finally, the data collected from surveys is self-reported, thus limited by participants' degree of honesty and ability to respond accurately.

Chapter Summary

This chapter reiterates the purpose of the present study and explains the methods that were used to conduct the study. Quantitative, nonexperimental, regression analysis was

performed on data collected from manufacturing employees at a single site of a global medical

device manufacturing company. Items from the CVSCALE were adapted and incorporated in an

online survey to collect data to be used as the independent variable, degree of individualism.

Evaluation of the transfer of the site-level e-learning training was conducted at the first three

levels of the Kirkpatrick Model (2006) - reaction, learning, and behavior. Online surveys were

used to collect data for reaction and behavior variables and online pre- and post-training

assessments were used to collect data for the learning variable. Socio demographic data was also

collected via online survey. Linear regression was performed with the independent variable and

each dependent variable to address the three research questions. Data analysis procedures include

preliminary tests to ensure satisfaction of the assumptions for linear regression. The CVSCALE

has been validated and Cronbach's alpha was assessed to interpret reliability of multi-item

variables. The study findings do not claim causal inferences, due to the nonexperimental research

design, and generalizability of the findings are limited due to the use of convenience sampling.

Chapter 4: Results

As stated in the first chapter, the purpose of this study is to evaluate individualism as a predictor of workplace e-learning training transfer. A single cultural dimension, individualism, is considered in this study. Individualism (individualism - collectivism) can be defined as the degree to which an individual prioritizes their own individual needs over the well-being of the group needs (Hofstede, 2001). The study evaluates training transfer according to the first three levels of the Kirkpatrick Model - reaction, learning, and behavior. Reaction is the degree to which a participant finds the training to be favorable, engaging, and relevant, learning is the knowledge or skills acquired from the training, and behavior is application of what is learned in the training (Kirkpatrick & Kirkpatrick, 2006). The following research questions are addressed in this study:

1. Does individualism predict participants' reaction to e-learning training?

2. Does individualism predict participants' learning as a result of e-learning training?

3. Does individualism predict participants' behavior attributed to e-learning training?

In order to answer the research questions, data collected from online surveys and assessments were analyzed. In this chapter, results of the data analyses are presented and answers to the research questions are provided. The chapter is organized into three parts. First, measures taken to clean and code the data are described in the data preparation section. Second, descriptive statistics are reported for socio demographic data and the independent and dependent variables. Differences in the independent and dependent variables based on socio demographic groupings are considered. Finally, results of linear regression analyses using composite scores and factor scores, as well as answers to the research questions, are presented in the linear regression section.

Data Preparation

This section describes the measures taken prior to data analysis. First, data from the Qualtrics-hosted online questionnaires and pre-training and post-training assessments were sorted based on participant identification number and combined into a single spreadsheet. Data was then imported into SPSS® (Statistical Package for the Social Sciences). Variable properties were adjusted to accurately characterize the data (e.g., name, type, and decimal categories). Automatic re-coding was performed to define numerical values for categorical data (e.g., race and ethnicity).

After coding the categorical data, item-reliability statistics were performed for the latent (multi-item) variables (i.e., degree of individualism, reaction, and behavior). Six items, borrowed from the CVSCALE (Yoo et al., 2011), were used to measure Hofstede's (2001) cultural dimension of individualism (individualism-collectivism). Seven items, adapted from a training satisfaction survey (Vizeshfar et al., 2018), were used to evaluate participants' reactions to the training (Kirkpatrick's level 1). Five items, adapted from the Questionnaire of Transfer of Training (Cheng, 2013), were used to evaluate participants' planned behavior (Kirkpatrick's level 3). Responses to individualism, reaction, and behavior questionnaire items were recorded using slider scales. Slider scale response options for each item ranged from 0 to 20, resulting in continuous-level data.

Cronbach's alpha values for all three variables exceeded 0.7, the commonly recommended threshold. This confirmed the internal consistency of grouped items (Cortina, 1993). Table 1 displays the variables, items, and Cronbach's alpha values.

Table 1

Variables, items, and Cronbach's alpha values

Variable	Items	Cronbach's alpha
Degree of individualism		.946
	Individuals should sacrifice self-interest for the group.	
	Individuals should stick with the group even through difficulties.	
	Group welfare is more important than individual rewards.	
	Group success is more important than individual success.	
	Individuals should only pursue their goals after considering the welfare of the group.	
	Group loyalty should be encouraged even if individual goals suffer.	
Reaction		.929
	Overall, I was satisfied with the training.	
	The training enhanced my knowledge and/or skills related to the subject matter.	
	The training was relevant to my job.	
	The training supports attainment of organizational objectives.	
	The training was an effective use of my time.	
	I was satisfied with the style of training.	
	I would recommend this training to others.	
Behavior	If I wanted to, I could easily apply knowledge and/or skills acquired from the training on the job.	.929
	I feel that applying the knowledge and/or skills I have acquired from the training on the job would be useful.	
	I intend to apply knowledge and/or skills acquired from the training on the job.	
	My practices/behaviors on-the-job will change as a result of the training.	
	I anticipate being able to sustain any changes in my practices/behaviors on-the-job as a result of the training over an extended period of time.	
	If the opportunity presents itself, I will share the new knowledge and/or skills I have acquired from the training with others on the job.	

Composite scores were created for degree of individualism, reaction, and behavior by summing the scores of the items for each variable. Mean imputation was applied in the creation

of the composite scores. Mean imputation replaces missing item values with the mean of completed item values for grouped items. Factor scores were also computed for degree of individualism, reaction, and behavior. Factor scores, like composite scores, yield a single variable from multiple items. The use of composite scores and factor scores in linear regression analysis is described in a later section of this chapter. Scores for the learning variable were created as the difference between pre-training and post-training assessment scores.

Sample

The study was conducted at a single site of a global medical device manufacturing company. The population was defined as all site manufacturing employees. The study sample consisted of 37 employees.

Socio demographic information was collected through an online survey in order to better understand the characteristics of study participants. All socio demographic information collected for the study was self-reported. Frequencies for the socio demographic variables are displayed in Table 2. Taking the most frequent response for each of the socio demographic items, a hypothetical participant might be between 45 and 54 years in age, Asian, not of Hispanic, Latino, or Spanish origin, report English as their most proficient language, select high school graduate (or equivalent) as their highest level of education, identify as not having a disability, and have worked for the company for between one and five years. Data analysis procedures for examining differences in the independent and dependent variables based on socio demographic characteristics (e.g., race and level of education) are presented in a later section of this chapter.

Table 2

Socio demographic variables and frequencies

Variable	Frequency	%
Age		
Under 18	0	0
25-34	5	13.9
35-44	6	16.7
45-54	13	36.1
55-64	12	33.3
65 or over	0	0
Race		
American Indian or Alaska Native	0	0
Asian	30	85.7
Black or African American	0	0
Native Hawaiian or Other Pacific Islander	0	0
White	5	14.3
Ethnicity		
Hispanic, Latino, or Spanish origin	5	17.2
Not Hispanic, Latino, or Spanish origin	24	82.8
English most proficient language?		
Yes	34	91.9
No	3	8.1
Highest level of education		
Less than high school	0	0
Some high school	2	5.4
High school graduate (or equivalent)	12	32.4
Some college, no degree	8	21.6
Associate degree	5	13.5
Bachelor's degree	10	27
Postgraduate degree	0	0
Disability		
Visual	2	6.1
Cognitive, learning, or neurological	0	0
Auditory	1	3
Physical	1	3
Speech	0	0
Other	1	3
None	28	84.8
Length of employment		
Less than 1 year	0	0
1-5 years	15	40.5
6-10 years	5	13.5
11-15 years	6	16.2
16-20 years	3	8.1
Greater than 20 years	8	21.6

Variables

Descriptive statistics were calculated for all variables. Degree of individualism scores had

the potential to range from 0 to 120. Lower scores characterized a stronger degree of

individualism and higher scores characterized a stronger degree of collectivism. Reaction scores

had the potential to range from 0 to 140. Lower scores represented a negative reaction to the

training and higher scores represented a positive reaction to the training. Learning scores had the

potential to range from -100 to 100. Negative scores indicated better performance on the pre-

training assessment than the post-training assessment. Positive scores indicated improvement in

performance from the pre-training assessment to the post-training assessment. Behavior scores

had the potential to range from 0 to 100. Lower scores indicated weaker intentions to apply

knowledge or skills acquired from the training. Higher scores indicated stronger intentions to

apply knowledge or skills acquired from the training. Table 3 presents descriptive statistics for

each variable.

Table 3

Descriptive statistics for variables

Variable	N	Min.	Max.	Mean	Median	Mode	SD
Degree of Individualism	33	38	120	87	90	120	27
Reaction	25	70	140	120	128	140	23
Learning	34	-15	10	-1	-2.5	-5	5
Behavior	25	50	100	85	88	100	15

Graphical and numerical methods were used to assess the normality of the distribution of

each variable. Graphical methods included visual inspection of histograms and Q-Q plots.

Numerical methods included comparing measures of central tendency (i.e., mean, median, and

mode) and evaluating skewness and kurtosis statistics and corresponding standard error values.

Table 4 provides skewness and kurtosis values for each variable.

Table 4

Skewness and kurtosis values

Variable	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Degree of Individualism	-0.366	0.409	-1.113	0.798
Reaction	-1.154	0.464	0.294	0.902
Learning	0.429	0.403	0.264	0.788
Behavior	-0.801	0.464	-0.259	0.902

Degree of individualism. Values for the skewness and kurtosis statistics fall within acceptable limits (between -2 and +2) and the Q-Q plot appears to be relatively linear. Visual inspection of the histogram, however, indicates scores that appear to be negatively skewed. Furthermore, the median is slightly higher than the mean, and the mode is the highest of the three values. Negative skewness (a left-skewed curve) is indicative of a greater number of collectivist-scoring participants.

Reaction. Visual inspection of the histogram shows a lower number of responses, which challenges the normality of the distribution. Values for the skewness and kurtosis statistics are within acceptable limits (between -2 and +2) but a comparison of the mean, median, and mode indicate negative skewness. This means that a greater number of participants reported a positive reaction to the training.

Learning. The values for mean, median, and mode are characteristic of positive skewness. The median is less than the mean and the mode is the lowest of the three values. Positive skewness is also evident from visual inspection of the histogram. The standard deviation is low, however, and values for the skewness and kurtosis statistics are within acceptable limits (between -2 and +2). The Q-Q plot appears to be relatively linear, with points falling along the reference line.

Behavior. Values for the skewness and kurtosis statistics are within acceptable limits (between -2 and +2). Visual inspection of the histogram, however, shows a negative skew, including an elongated tail at the left. The median is greater than the mean, and the mode is the greatest of the three values, further evidencing a negative skew. This means that a greater number of participants reported strong intentions to apply knowledge or skills acquired from the training.

Group Differences

The present study does not evaluate socio demographic characteristics as predictors of training transfer; however, analyses of socio demographic data are performed to describe the sample and interpret the results of the study. Boxplots were generated to examine differences in study variables (i.e., degree of individualism, reaction, learning, and behavior) based on socio demographic characteristics. One-way ANOVA tests were used to determine the statistical significance of group differences identified by visual inspection of the boxplots. A statistically significant difference in group means, using alpha = .05, was not detected for any of the variables. However, notable differences are presented below. Figure 3 shows differences in degree of individualism composite scores according to race.
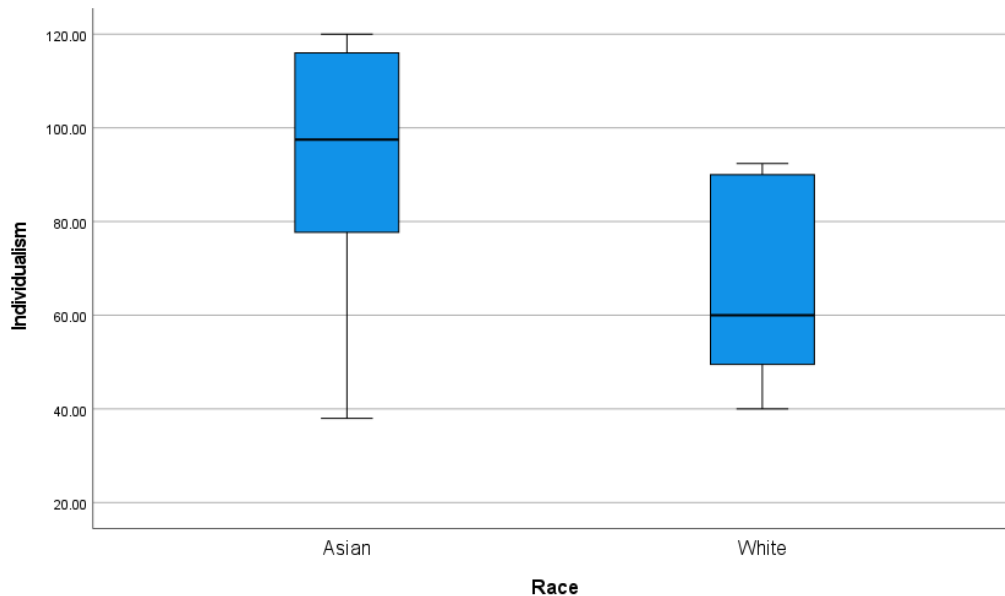
Figure 3. Degree of Individualism Composite Scores by Race. This figure shows boxplots of scores.

Visual inspection of the boxplots reveals that Asian participants tended to score higher than White participants, a higher score being indicative of a stronger collectivistic value. However, a one-way ANOVA test reported a significance level of .055, demonstrating that the difference in means for each group were not statistically significant at an alpha level of .05.

One other notable difference was identified by a one-way ANOVA test - a difference in learning scores based on level of education. While a p-value *less than* 0.05 would indicate a statistically significant difference in means, a significance level of 0.05 was reported establishing that the difference in mean learning scores for groups according to level of education were not statistically significant.

Regression

Linear regression was used to determine how much of the variation in training transfer (i.e., reaction, learning, and behavior) could be explained by participants' degree of

individualism. This section reports the results of the linear regression analyses as well as answers

to the research questions.

Linear regression using composite scores. The independent variable, degree of

individualism, is a composite score, that is, the sum of the six degree of individualism item

scores. For cases where a participant completed at least one item but not all six items, mean

imputation was applied to yield a composite score. Mean imputation is a method by which the

missing data for a certain item is replaced by the mean of the available items (Allison, 2001).

The dependent variable reaction is also a composite score (i.e., sum of seven reaction

item scores), as is the dependent variable behavior (i.e., sum of five behavior item scores). Mean

imputation was not applied in the computation of composite scores for these variables because

there were no cases in which a participant completed at least one item but not all items. The

dependent variable learning was calculated by subtracting the pre-training assessment score from

the post-training assessment score.

The independent and dependent variables are continuous, fulfilling the first two

assumptions required for linear regression. Scatterplots were produced to evaluate the linearity of

the relationship of each independent and dependent variable. Linear regression was performed

for each dependent variable (DV) with the independent variable (IV). Table 5 displays selected

model statistics including significance (Sig.).

Table 5

Linear regression model statistics using composite scores

IV	DV	N	R	R^2	DW	F	Sig.
Individualism	Reaction	23	.133	.018	2.101	.376	.546
Individualism	Learning	29	.285	.081	2.212	2.469	.127
Individualism	Behavior	22	.178	.032	2.329	.685	.417

There was independence of residuals, as assessed by the Durbin-Watson (DW) test (i.e., approximate value of 2). There was homoscedasticity, as assessed by visual inspection of a plot of standardized residuals versus standardized predicted values. Residuals were normally distributed as assessed by visual inspection of a normal probability plot.

For each model, the R^2 value represents the proportion of variation in the dependent variable (i.e., reaction, learning, or behavior) explained by degree of individualism score. The Sig. value represents the statistical significance of the model. For instance, consider the model portraying the degree of individualism score as the independent variable and learning as the dependent variable. According to the model, 28.5% of variation in learning is explained by degree of individualism, however, the model is not statistically significant (at the significance level of .05). Of the three models using composite scores, none yielded statistically significant findings.

Linear regression using factor scores. Factor scores were created as an alternative to the composite scores. Like composite scores, factor scores generate a single value for a latent variable composed of multiple items. Factor scores may involve dimension reduction and/or item weighting. Computed using the regression method, factor scores are standardized to a mean of 0. Factor scores were created for all multi-item variables (i.e., degree of individualism, reaction, and behavior). Linear regression using factor scores was performed for each dependent variable with the independent variable. Table 6 displays selected model statistics including significance (Sig.).

Table 6

Linear regression model statistics using factor scores

IV	DV	N	R	R^2	DW	F	Sig.
Individualism	Reaction	13	.237	.056	2.743	.656	.435
Individualism	Learning	17	.422	.178	1.804	3.253	0.091
Individualism	Behavior	13	.220	.048	2.329	.558	.471

There was independence of residuals, as assessed by the Durbin-Watson (DW) test. Homoscedasticity was evidenced according to visual inspection of a plot of standardized residuals versus standardized predicted values. Residuals were normally distributed as assessed by visual inspection of a normal probability plot.

For each model, the R^2 value represents the proportion of variation in the dependent variable (i.e., reaction, learning, or behavior) explained by degree of individualism score. However, of the three models using factor scores, none yielded statistically significant findings at the .05 significance level.

Results from linear regression analysis using composite scores were consistent with results of linear regression analysis using factors scores in terms of yielding an answer to each research question. Answers to the research questions are as follows:

1. Does individualism predict participants' reaction to e-learning training? The sample does not provide sufficient evidence to conclude, at a significance level of .05, that individualism predicts participants' reaction to e-learning training.

2. Does individualism predict participants' learning as a result of e-learning training? The sample does not provide sufficient evidence to conclude, at a significance level of .05, that individualism predicts participants' learning as a result of e-learning training.

3. Does individualism predict participants' behavior attributed to e-learning training?

The sample does not provide sufficient evidence to conclude, at a significance level of .05, that

individualism predicts participants' behavior attributed to e-learning training.

Chapter Summary

This chapter presents results of the study. The chapter began by providing an overview of

measures taken to prepare the data for analysis. Then, descriptive statistics were reported for

socio demographic data and the independent and dependent variables. Differences in the

independent and dependent variables based on socio demographic groupings were also

considered. Finally, results of linear regression analyses using composite scores and factor

scores, as well as answers to the research questions, were presented. A discussion of the results

including assumptions, limitations, and delimitations, interpretation of the findings, implications

for practice, and recommendations for future study will take place in the final chapter.

Chapter 5: Discussion

Drastic changes to society and the workplace resulting from the COVID-19 pandemic have increased the relevancy of the present study from the time at which it was initially proposed. The rationale for this research stemmed from concerns about the effectiveness of workplace training for all employees. Known as the training transfer phenomenon, "companies often observe that the knowledge and skills acquired during training are insufficiently transferred to the workplace" (Beinecke & Bipp, 2018, p. 502). A review of existing literature revealed an opportunity for the study of online training through the lens of culture. Now, given the unexpected acceleration of remote work and the sudden transfer of face-to-face training to the online platform, research related to e-learning training effectiveness and inclusivity is critical to the success of both employees and organizations.

The purpose of this quantitative, nonexperimental study was to evaluate individualism as a predictor of workplace e-learning training transfer. Guiding frameworks included the Kirkpatrick Model (Kirkpatrick & Kirkpatrick, 2006) for training evaluation and Hofstede's (2001) cultural dimensions (specifically the dimension of individualism). The following research questions guided this study:

1. Does individualism predict participants' reaction to e-learning training?

2. Does individualism predict participants' learning as a result of e-learning training?

3. Does individualism predict participants' behavior attributed to e-learning training?

This chapter is organized into four parts. First, a summary of the findings is presented. Assumptions, limitations, and delimitations follow. Then, the study findings are discussed including implications for practice. Finally, the chapter concludes with recommendations for future study.

Summary of Findings

The present study was conducted at a single site of a global medical device manufacturing company. The population was defined as all site manufacturing employees. The study sample consisted of 37 employees. Quantitative data was collected from online surveys consisting of socio demographic and instrument-based questionnaire items and online assessments.

The independent variable, degree of individualism, was based on six questionnaire items. Reaction and behavior, two of the three dependent variables, were also based on multiple questionnaire items. Cronbach's alpha values for each of the multi-item variables confirmed the internal consistency of the item groupings. The dependent variable learning was based on pre-training and post-training assessments.

Descriptive statistics showed participants' races as Asian and White, the majority identifying as Asian. Assessment of the normality of the distribution of each variable revealed negatively skewed degree of individualism scores. Differences in degree of individualism scores based on race were identified, however not at a statistically significant level. Asian participants tended to score as less individualistic (i.e., more collectivistic) than White participants. Also, differences in learning scores based on highest level of education groupings were notable but not statistically significant.

Linear regression was performed for each dependent variable and the independent variable. The first set of linear regression models used composite scores to represent multi-item variables (degree of individualism, reaction, and behavior). The second set of linear regression models used factor scores to represent the multi-item variables. Results of the linear regression analyses informed the following answers to the research questions:

1. The sample does not provide sufficient evidence to conclude, at a significance level of
   .05, that individualism predicts participants' reaction to e-learning training.

2. The sample does not provide sufficient evidence to conclude, at a significance level of
   .05, that individualism predicts participants' learning as a result of e-learning training.

3. The sample does not provide sufficient evidence to conclude, at a significance level of
   .05, that individualism predicts participants' behavior attributed to e-learning training.

Interpretation of these results and subsequent implications for practice will be discussed
in a later section of this chapter.

Assumptions, Limitations, and Delimitations

The following assumptions, limitations, and delimitations should be considered when
interpreting the results of the study.

Assumptions. The present study assumes participants have accurately reported socio
demographic information. The study also assumes that the online survey and assessments
measure degree of individualism, reaction, learning, and behavior variables as intended.
Furthermore, it is assumed that study participants fully read and understood survey items and
assessment questions, responded to the best of their ability, and had the knowledge and/or skills
to submit responses as intended. For instance, a participant who strongly disagreed with the item
"Group loyalty should be encouraged even if individual goals suffer" was able to drag and drop
the slider to the lowest value on the scale (0).

Limitations. Limitations of the present study include the sampling method and sample
size. Convenience sampling was used to acquire participants. Permission to contact employees
defined within the population was requested from the employees' managers. Employees of
managers who approved were contacted for voluntary participation in the study. Thus, the

sample may not be representative of the population. The proposed study design called for

stratified random sampling from the pool of consenting, potential participants in order to achieve

normally distributed degree of individualism scores. The response rate of the initial survey,

however, was too low to eliminate any potential participants from the sample. Even still, the

sample size was less than desirable. The proposed study design called for 50 participants.

However, the size of the population (i.e., number of potential participants) was reduced from the

time at which the study was proposed due to site restrictions resulting from the COVID-19

pandemic. At the time of data collection, due to limitations to the number of employees allowed

on site, all temporary manufacturing operator positions had been eliminated and many full-time

manufacturing operators were required to take leave.

Moreover, site restrictions forced remote work for all non-essential employees

(employees for whom it was not essential to be on site). This resulted in increased web-based

communication (e.g., email messages, videoconferences, etc.) and training. It is plausible that

this may have impacted employees' willingness to voluntarily participate in the study, which

would require additional time spent completing web-based activities (i.e., online surveys,

training, and assessments).

Another unanticipated study limitation resulting from COVID-19 site restrictions

involves the behavior variable. The proposed method, pre-training and post-training observation

using a performance checklist, was replaced with an alternative method, online survey items.

Thus, the behavior variable is not a measure of actual behavior, rather, it represents participants'

intentions for behavior.

Delimitations. This research is limited to its context, a single site of a medical device

manufacturing company. Findings may not be generalizable to other geographic locations or

industries. In addition, this study features an asynchronous, stand-alone e-learning training. Findings based on different types of online training (e.g., online training conducted synchronously or online training courses) may vary.

Interpretation of Findings and Implications for Practice

Results of the present study did not find degree of individualism to be predictive of training transfer at a level of statistical significance. These results were somewhat surprising given that previous research demonstrates differences in training effectiveness based on culture (Chayakonvikom et al., 2016; Lee et al., 2012). This section presents interpretations of the findings in the context of the study's theoretical frameworks and previous research. Additionally, implications for practice are presented.

Individualism. The finding that Asian participants tended to score less individualistic (i.e., more collectivistic) than White participants is consistent with Hofstede's (2001) nationally defined cultural values and previous research (Shih et al., 2013). However, instances of missing data for the present study's degree of individualism items may indicate a weakness in the online survey method for data collection. For instance, several participants completed one or more but not all of the six sequential degree of individualism items. These items featured slider scale response options ranging from 0 to 20, designed to garner continuous-level data.

Considering that the majority of study participants would not be classified as digital natives (i.e., born in or after the year 1990) (Helsper & Enyon, 2009), it is possible that response rates and accuracy were challenged in part by digital illiteracy. Thus, teaching digital skills to employees may be critical to valid training evaluation. The State of Learning and Development Report (2020) recommends a "workflow learning" approach for teaching new behaviors or

processes to employees; "we need to offer instruction at the exact point of need — while they are moving through the process" (p. 23).

Instances of missing data in the present study suggest that study participants may lack digital skills required for successful completion of online surveys (and online training). This could have valuable implications for practitioners in terms of designing online surveys for training evaluation. It may not be plausible to assume that the functionality of online survey tools (e.g., slider scale response options) is intuitive to all users. Adding instruction at potential points of need may result in increased response rates and validity. Other measures for improving online survey response rates and validity include adjusting question settings to require a response and adding descriptive text for numeric Likert or slider scale response option values.

Vygotsky's (1978) theory of social constructivism asserts that learning is more effectively internalized when there is a social interaction. Thus, training practitioners might support the development of employees' digital skills by creating an online learning and development community. For instance, an online learning and development community site may host an informal forum where employees can post training-related questions and answers.

Reaction. The present study did not find degree of individualism to be predictive of reaction to e-learning training at a level of statistical significance. Descriptive statistics indicated that the majority of participants reported positive reactions to the training. This was also the case in Yoon et al. 's (2016) study, which used questionnaire items featuring Likert scale response options to evaluate employee reactions to training. Reaction scores from the present study were negatively skewed. A larger sample size may increase the normality of the distribution of reaction scores, thus improving the validity of a linear regression model for prediction. Additionally, employing supplemental methods for evaluating reactions to training may provide

increased granularity for further exploration into the question of whether individualism predicts reaction to training.

Incorporating additional methods of assessing employees' reactions to training, for instance, methods yielding qualitative data like short answer questionnaire items, interviews, or focus groups, may yield productive feedback for training practitioners. Supplemental quantitative methods of assessing employees' reactions to training might include data from learning analytics, for instance, views, video plays, or social network analysis.

The theory of connectivism (Siemens, 2005) describes learning as the continual process of connecting and updating information. E-learning design based on connectivism presents learners with opportunities to find and explore information. Thus, learning analytics (digital breadcrumbs) may be used as a method of evaluating learners' reactions to e-learning training (e.g., levels of engagement or sustained interest).

Furthermore, combining theories of social constructivism and connectivism, training practitioners might support the development of knowledge by designing online learning opportunities for employees to make connections across remote locations and share diverse experiences and perspectives. Learning analytics like social network analysis (SNA) may be used to evaluate employees' reactions to this style of online learning. Previous research, including Bossche, Seger, and Jansen's (2010) study addressing the training transfer phenomenon, supports the use of social network analysis as a method of training evaluation.

Learning. The present study did not find degree of individualism to be predictive of learning at a level of statistical significance. This finding is consistent with the results of a study conducted by McFeeter (2003), which did not support a significant difference in recall scores for individualistic and collectivistic learners. Questions from the pre-training/post-training

assessments featured in this study are indicative of recall-level learning, for instance, "True or false: Baseball caps may be worn in the Environmentally Controlled Area (ECA)." McFeeter (2003)'s study, which distinguishes between recall and deep understanding in the context of evaluation of training transfer, found significant differences in deep understanding based on cultural dimensions. The researcher attributes these differences to incongruences in situational factors and pedagogy. This explanation is supported by Brown, Collins, and Duguid's (1989) situated learning theory which explains "knowledge is situated, being in part a product of the activity, context, and culture in which it is developed and used" (p. 32).

This may mean that for training with lower, recall-level learning objectives, degree of individualism may not predict learning, as exemplified in the present study. However, additional research may serve to better understand whether degree of individualism predicts learning for training requiring deep understanding. Implications for training practitioners include understanding the level of learning required by a training (i.e., recall or deep understanding). If limited resources exist, practitioners may prioritize inclusive design efforts towards training content that requires deeper understanding.

The Universal Design for Learning (UDL) framework (CAST, 2018) may be applied by practitioners for the design and development of online training for diverse learners. UDL is characterized by flexibility that allows learners to consume knowledge in ways that are most preferable or suitable for them. Examples of UDL might include the option to take a synchronous or asynchronous version of an online training or a training that features content as text, with an option for audio narration of the text, and graphics. An online training designed based on UDL principles may also feature a window for optional note taking and a glossary of key terms. An online training implementing UDL principles may provide multiple options for users to

demonstrate their knowledge, such as a simulation, scenario, or question and answer game, or an online discussion board.

A secondary notable, yet not statistically significant, result of the study was the difference in mean learning scores based on highest level of education (one of the socio demographic survey items). Participants with higher levels of education tended to achieve lower learning scores. Learning scores were calculated by taking the difference between the pre-training assessment score and post-training assessment score. Somewhat surprisingly, many instances of negative learning scores occurred, indicating that learners performed better on the pre-training assessment than the post-training assessment. It is plausible, especially in light of the increase in computer-based information and communication due to impacts of the pandemic, that learners reached a point of exhaustion or burnout after completing the pre-training assessment, the training, and then sitting to take the 20 multiple choice item post-training assessment.

This may be grounds for considering an option for learners to choose a pathway to test out of taking an online training. For instance, if it is determined that a score of 80% on a post-training assessment demonstrates a sufficient understanding of the training content, learners may opt to take the assessment prior to the training and have the option to forgo the training should they achieve a score of 80% or greater on the pre-training assessment.

Behavior. Significant evidence did not exist to support the hypothesis that participants' degree of individualism would predict behavior attributed to the e-learning training. Similarly, Nazir and Imran (2017)'s hypothesis that personality would predict learning transfer was not supported in their study. Both the present study and Nazir and Imran's study findings seem to be inconsistent with prior research on the relationship between learner characteristics and training

transfer. It is plausible that this is in part due to the use of limited methods, which capture self-reported intentions for behavior rather than observed, actual behavior, in both studies.

As exhibited in the context of the present study, it may not always be feasible for training effectiveness at the level of behavior to be evaluated based on observation. Current practice at the study site classifies training according to risk-level, which factors into the determination of the level of training evaluation required. Thus, observation of post-training behavior, for instance, an operator demonstrating the assembly of a medical device part, occurs for selected knowledge or skills. Typically, the observation is associated with on-the-job (OJT) training, not online training. Further exploration of evaluating training conducted online, for instance, training for remote employees, or training for knowledge or skills that are less tactile in nature, for instance training on requirements for data security and privacy, is a ripe area for research. With improved accuracy of the measure of training effectiveness in terms of behavior, the impact of cultural differences on training transfer may become clearer.

Recommendations for Future Research

This study did not find sufficient evidence to conclude, with statistical significance, that individualism predicts participants' transfer of e-learning training at the level of reaction, learning, or behavior. Future research that employs a larger, more normally distributed sample may be able to further examine whether the cultural dimension, individualism, predicts e-learning training transfer.

In addition, alternative methods of training evaluation may be beneficial to further investigation of individualism and e-learning training transfer. The present study used online surveys and online assessments. Like the e-learning training being evaluated, effective use of these online tools requires independent digital literacy. Future studies might evaluate training

transfer using qualitative methods including short answer questionnaire items, interviews, or

focus groups. Alternative quantitative methods might include the use of performance indicators

or learning analytics (e.g., views, video plays, or social network analysis). According to the

theory of social constructivism, learning is more effectively internalized when a social

interaction takes place (Vygotsky, 1978). Future studies might explore the role of social

interactions in workplace e-learning training transfer, through the construct of culture, using

social network analysis as a method of training evaluation.

The present study did not find individualism to be predictive of learning at a level of

statistical significance. However, the level of learning required by the training content featured in

the present study could be classified as recall. McFeeter (2003) distinguishes between recall and

deeper understanding. He found significant differences based on cultural dimensions for content

that required a deep understanding level of learning. His study was conducted in the context of

higher education (participants consisted of graduate school students). Thus, opportunity exists

for a study of individualism as a predictor of training transfer, for training content that requires a

deep understanding level of learning, in the context of workplace.

Another topic that has not been given significant attention in the context of the

workplace is Universal Design for Learning (UDL) (CAST, 2018). Future research might include

comparison studies of workplace e-learning designed with and without the use of UDL

principles. In addition, future studies might evaluate differences in training transfer outcomes

based on culture for workplace e-learning that employs UDL principles.

Perhaps the most surprising outcome of the study was the occurrence of negative learning

scores. A negative learning score indicated that a participant scored higher on the pre-training

assessment than the post-training assessment. One potential explanation for this finding is that

learners were experiencing fatigue or burnout by the time they reached the post-training assessment. Future research might further explore the outcome of negative learning scores using the cognitive load theory (Sweller, 1988) to frame a study on workplace e-learning training transfer.

Finally, the present study evaluated one of Hofstede's (2001) five cultural dimensions as a predictor of training transfer. Future research might evaluate the other cultural dimensions, measured at the individual level rather than national level, as predictors of workplace e-learning training transfer. As workplace e-learning continues to become more prevalent, it is up to educational leaders to focus research efforts on issues of equity and inclusiveness.

Chapter Summary

This chapter presents a summary of findings, along with assumptions, limitations, and delimitations of the study. Interpretations of the findings and implications for practice are discussed in the context of theoretical frameworks and previous research. Finally, recommendations for future research are presented. Although a vaccine is now available and many companies are in the early stages of returning to office, the COVID-19 pandemic will have lasting effects on employees and the workplace. It is likely that trends toward remote work and online training will continue. Thus, it is critical to the equity of workplace learning that training practitioners employ principles of universal design and continually evaluate training effectiveness in terms of knowledge and/or skills transferred to on-the-job behavior.

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Appendix A

Consent Form

You are invited to participate in a research study. The purpose of the study is to evaluate workplace e-learning training. Key information is provided below. Thank you for taking the time to consider. This study is non-clinical and does not have a focus on company products. The University of North Florida is the source of this research.

Key Information	
Participation	Participation is voluntary. The decision whether or not to participate has no impact on employment. Participants have the right to withdraw from the study at any time.
Procedures	Potential participants (i.e., those who have given consent) will be asked to complete a questionnaire used to collect background information such as length of employment with the company (estimated time to complete the questionnaire is less than 10 minutes). Study participants will be asked to take an e-learning training (approximate time to complete is 15 minutes) and participate in pre- and post-training measures that will be used to evaluate the training. These measures include: a post-training survey of reactions to the training (approximate time to complete is 5 minutes), pre- and post-training multiple choice assessments on the training subject matter (approximate time to complete is 10 minutes per assessment), and pre- and post-training observation of practices covered in the training (approximate time to complete is 5 minutes per observation). The researcher will observe participants and record data using a checklist. Observations will occur onsite, once before and once six to eight weeks after completing the training.
Confidentiality	Data collected from the study will be stored securely and remain confidential. Any presentation of the study data will be done in aggregate form (i.e., identifiable responses to surveys will not be shared with participants' employer).
Compensation	Study participants will be compensated with ten points. Compensation has been approved by the appropriate company personnel.
Potential Risks & Benefits	While unlikely, a breach of confidentiality is a potential risk. Safeguards set in place to mitigate this risk include the use of a strong password for the account with access to study data and the use of a coding system such that participants will be assigned a confidential number so that names are not associated with data collected from observation. Potential benefits to participation include increased knowledge of procedures. Potential societal benefits resulting from the study include added knowledge to the field of training, thus promoting increased effectiveness of future workplace e-learning training.
Contact Information	Please feel free to contact the researcher, Allison Archer (email address), with questions or concerns related to the study. You may also contact the University of North Florida Institutional Review Board (email address) with questions regarding your rights as a participant.

I understand the study procedures described above and agree to participate in this study.

Appendix B

Questionnaire Items

Section	Item
Socio Demographic	Age Race Ethnicity Language Highest level of education Disability Length of employment with the company
Degree of Individualism	Individuals should sacrifice self-interest for the group. Individuals should stick with the group even through difficulties. Group welfare is more important than individual rewards. Group success is more important than individual success. Individuals should only pursue their goals after considering the welfare of the group. Group loyalty should be encouraged even if individual goals suffer.
Reaction	Overall, I was satisfied with the training. The training enhanced my knowledge and/or skills related to the subject matter. The training was relevant to my job. The training supports attainment of organizational objectives. The training was an effective use of my time. I was satisfied with the style of training. I would recommend this training to others.
Behavior	If I wanted to, I could easily apply knowledge and/or skills acquired from the training on the job. I feel that applying the knowledge and/or skills I have acquired from the training on the job would be useful. I intend to apply knowledge and/or skills acquired from the training on the job. My practices/behaviors on-the-job will change as a result of the training. I anticipate being able to sustain any changes in my practices/behaviors on-the-job as a result of the training over an extended period of time. If the opportunity presents itself, I will share the new knowledge and/or skills I have acquired from the training with others on the job.