

DISSERTATION

MOTIVATION AND ABILITY FACTORS AS PREDICTORS OF TRAINING TRANSFER
INTENTIONS AND TRAINING TRANSFER BEHAVIORS

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ABSTRACT

MOTIVATION AND ABILITY FACTORS AS PREDICTORS OF TRAINING TRANSFER INTENTIONS AND TRAINING TRANSFER BEHAVIORS

Training transfer, the process of applying knowledge and skills gained during training to the work environment, remains a critical issue for organizational learning professionals. Despite significant investments in training, many programs fail to result in sustained behavioral changes. Using a quantitative approach, this study explored how motivation and ability-related factors predict both training transfer intentions and actual transfer behaviors among healthcare professionals.

Data were collected from 108 employees at a U.S.-based healthcare organization after they participated in one of two medical technology training offerings. The motivation factors examined included transfer effort, motivation to transfer, and performance outcome expectations. The ability factors examined included opportunity to use, personal capacity to transfer, perceived content validity, and transfer design. Multiple regression analyses tested 14 hypotheses. Results showed that motivation to transfer, performance outcome expectations, and transfer design predicted training transfer intentions, while opportunity to use the training was the only factor that predicted training transfer behaviors.

These findings highlight the importance of differentiating between learners' intentions and behaviors in training transfer and emphasize the role of organizational support in training transfer. Practical recommendations for training design, facilitation, and follow-up support and contributions to the training transfer literature are discussed. Future research should incorporate

longitudinal studies and examine mediating variables. This research enhances understanding of the factors that promote effective training transfer in healthcare settings.

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TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	iv
Chapter One: Introduction and Background.....	1
Problem Statement.....	3
Significance of the Problem.....	4
Purpose of the Study.....	5
Research Questions.....	5
Chapter 1 Summary.....	6
Chapter Two: Literature Review.....	8
Learning Theories.....	9
Behaviorism.....	10
Humanism.....	11
Cognitivism.....	12
Constructivism.....	14
Andragogy.....	15
Learner’s Self-Concept.....	16
Learner’s Experience.....	17
Learner’s Readiness to Learn.....	17
Problem Focus Versus Subject Focus.....	18
Learner’s Motivation.....	18
Learner’s Need to Know.....	18
Training Transfer Model.....	19
Trainee Characteristics.....	22
Motivation.....	23
Cognitive Abilities.....	24
Self-Efficacy.....	25
Personality Traits.....	27
Expected Utility.....	29
Individual Goal Intention.....	31
Training Design.....	32

Pre-training measures.....	33
Measures during training	34
Post-training measures	36
Organizational Level/Work Environment.....	38
Social Support.....	38
HRD Evaluation Research and Measurement Model	42
Chapter 2 Summary	44
Chapter 3: Methods.....	47
Significance of the Study	48
Research Design.....	48
Research Questions and Hypotheses	49
Population and Sample	51
Power Analysis	54
Instruments and Measurement	54
Data Collection Method.....	59
Data Analysis Procedures	60
Assumptions.....	60
Limitations:	61
Chapter 3 Summary	62
Chapter 4: Data Analysis and Results	64
Description of Sample.....	64
Summary of Results.....	65
Details of Analysis and Results	69
Multiple Regression Analysis Summary of Training Transfer Intentions.....	70
Descriptive Statistics of Training Transfer Intentions	70
Correlational Analysis of Training Transfer Intentions.....	71
Anova Analysis of Training Transfer Intentions	72
Coefficients: Training Transfer Intentions.....	72
Residual Diagnostics of Training Transfer Intention.....	73
Hypothesis Summary:.....	73
Multiple Regression Analysis Summary of Training Transfer Behaviors.....	73
Descriptive Statistics of Training Transfer Behaviors.....	74

Correlational Analysis of Training Transfer Behaviors.....	75
Anova Analysis of Training Transfer Behaviors.....	76
Coefficients of Training Transfer Behaviors.....	76
Residual Diagnostics on Training Transfer Behaviors.....	76
Hypothesis Summary.....	77
Post-Hoc Group Comparisons - Independent Samples t-Tests on Training Transfer Intentions and Training Transfer Behaviors.....	77
Gender Differences.....	78
Training Modality Differences (In-Person vs. Virtual).....	78
Training Duration Differences (Three-Day vs. One-Day).....	78
Post-Hoc Summary.....	79
Discussion of Findings and Conclusion.....	79
Chapter 5: Discussion and Conclusion.....	81
Summary of the Study.....	81
Discussion of the Results.....	83
Motivation Factors.....	83
Transfer effort.....	84
Motivation to transfer.....	85
Performance outcome expectations.....	87
Ability Factors.....	88
Opportunity to Use.....	89
Personal Capacity to Transfer.....	91
Perceived Content Validity.....	92
Transfer Design.....	93
Post-Hoc.....	95
Limitations.....	96
Implications of the Study.....	96
Future Research Directions.....	98
Conclusions.....	100
References.....	102
Appendix.....	120
Figure 1 Normal P-P Plot of Regression Standardized Residual: Training Transfer Intentions.....	120

Figure 2 Scatterplot: Training Transfer Intentions	120
Figure 3 Normal P-P Plot of Regressions Standardized Residual: Training Transfer Behaviors	121
Figure 4 Scatterplot: Training Transfer Behaviors	121
Table 1 Descriptive Statistics: Training Transfer Intentions	122
Table 2 Pearson Correlation: Training Transfer Intentions	124
Table 3 Anova Analysis: Training Transfer Intentions	125
Table 4 Coefficients: Training Transfer Intentions	126
Table 5 Residual Diagnostics: Training Transfer Intentions	127
Table 6 Descriptive Statistics: Training Transfer Behaviors.....	128
Table 7 Pearson Correlation: Training Transfer Behaviors.....	129
Table 8 Anova Analysis: Training Transfer Behaviors	130
Table 9 Coefficients: Training Transfer Behaviors	131

Chapter One: Introduction and Background

Investments in intangible assets, particularly in developing employees through training, have emerged as essential strategies for organizations to stay competitive (Adler & Kwon, 2002; Bontis, 2001; Hand and Lev, 2003). Many organizations allocate substantial resources to training their workforce to improve their skills and, in turn, increase overall productivity (Kelloway & Barling, 2000). The emphasis organizations place on employee development is clear, as in 2022 alone, U.S. companies invested \$101 billion in employee training (Training Industry Report, 2022). With this level of investment, organizations need to define what makes their training programs successful, identify the key factors that best facilitate the transfer of training to job performance, and effectively leverage those factors (Oglesby, 2012).

The goals of training transfer are to enhance the trainee's effectiveness in the workplace by generalizing and maintaining learned knowledge, skills, and attributes to enhance performance (Blume et al., 2019). According to Kozlowski and Salas (1997), there is a consensus that if knowledge, skills, behaviors, and attitudes are not or cannot be generalized to an employee's work environment or maintained over time, training provides little value to organizations. Desse (1958) stated:

Practically all educational and training programs are built upon the fundamental premise that human beings have the ability to transfer what they have learned from one situation to another. . . The basic psychological problem in the transfer of learning pervades the whole psychology of human training. . . There is no point to education apart from transfer. (p. 213)

Training transfer is a crucial link that connects individual development and change to the specific needs of the organizational system (Yamnill & McLean, 2001). Recognizing the

potential influence of training on both organizational and individual performance, it is essential to understand the mechanisms that support the transfer of training within organizations (Yamhill & McLean, 2001).

According to Salas et al. (2006), assessing whether students are learning the materials or passing the assessments is irrelevant for measuring successful training transfer because these assessments do not include the aspect of performance. Salas et al. (2006) defined training as “the systematic acquisition of knowledge, skills, and attributes that lead to improved performance in a specific environment” (pp. 103-104). For an organization to effectively evaluate the success of their training programs, they must shift their focus beyond just classroom performance and focus on how employees generalize and maintain learned behaviors within their job context over time (Blume et al., 2009). This necessitates understanding the factors that enhance training effectiveness and facilitate the transfer of learned skills to actual job performance, allowing the organization to leverage these factors more effectively (Oglesby, 2012).

Kirkpatrick’s (1967) taxonomy, widely utilized for evaluating training programs, assesses effectiveness based on trainees’ reactions, learning outcomes, behavioral changes, and achievement of training objectives. Phillips (1996) expanded on this taxonomy by introducing the return on investment (ROI) concept, which compares training costs to its outcomes. Despite its potential, this “four-plus-one” model is not extensively applied, with organizations often favoring easier-to-measure levels of evaluation (Blanchard et al., 2000). When attempts to improve learning and development are made, there is also a need to understand and implement factors that improve the level of training transfer demonstrated by the trainees’ behaviors in their work environment (Oglesby, 2012).

Despite substantial investments in employee training and development, organizations face significant challenges in ensuring that training programs effectively transfer acquired knowledge, skills, and attributes to actual job performance (Cheng & Hampson, 2008). This challenge is underscored by varying estimates of the rate of training transfer, with some studies indicating very low success rates (Blume et al., 2010).

In summary, traditional measures of training success, such as classroom performance and assessment scores, do not provide a comprehensive assessment of how effectively employees apply their learning in their work environments. Therefore, the transfer problem centers around an organization's need to identify and address factors promoting the successful transfer of training to job performance and utilize these factors to improve the overall effectiveness of their training programs.

Problem Statement

Adler and Kwon (2002) advocated investing in intangible assets, particularly human capital, as vital for maintaining competitive advantage. Additionally, due to ongoing challenges in training transfer, training professionals consistently stress a need for evidence to guide the design and implementation of effective training programs (Baldwin et al., 2017). Blume et al. (2009) noted increased research on training transfer since Baldwin and Ford's seminal article in 1988. However, concerns persist regarding the practical application of acquired knowledge to job performance (Wang et al., 2010).

Salas and Cannon-Bowers (2001) highlighted the significance of understanding factors that influence the transfer process, such as motivation and ability. Understanding these factors can help training professionals improve training effectiveness, enabling an organization to leverage the competitive advantage of transferring learned skills in the workplace.

Significance of the Problem

Organizations often face significant challenges when trying to understand the long-term effects of training initiatives. For example, Georgenson (1982) indicated that only 10% of training expenditure leads to workplace transfer. However, research by Saks and Belcourt (2006) found that initially, about 62% of learners showed a positive level of knowledge transfer immediately following a learning event. After six months, the percentage of learners who maintained a positive transfer level dropped to 44%. In the final stage of their study, Saks and Belcourt revealed an even greater decrease in sustained knowledge transfer one year later, with only 34% of learners reporting a positive transfer. Ford et al. (2011) argued that estimates of 10% and 64% are not based on observed behavioral measures of training transfer. Regardless of whether the return rate is 10%, 62%, or another rate, Georgenson's (1982) and Saks and Belcourt's (2006) research raises questions about how effective training programs are in creating lasting improvements in employee performance and organizational outcomes. These concerns about training effectiveness are supported by research from Beer et al. (2016), who found that three-quarters of nearly 1,500 managers across 50 organizations expressed dissatisfaction with their organizations' learning and development results.

Organizations must adopt strategies extending beyond the initial learning event to address this challenge (Salas et al., 2006). Ongoing support, training reinforcement, and opportunities for practice and application are crucial for sustaining the positive effects of training over time. In understanding factors contributing to the decline in training transfer, organizations can design more effective training programs that incorporate training reinforcement mechanisms and provide continuous learning opportunities, ensuring that the acquired skills and knowledge are not lost but integrated into daily work practices (Blume et al., 2009).

Purpose of the Study

This research provides practitioners with valuable insights into students' perceptions of their learning based on training modalities. This will inform practitioners' strategies to enhance employees' training transfer from training events to their workplace, ultimately driving organizational learning and effectiveness. By delving into the factors that predict training transfer intentions and behaviors, with a specific focus on motivation and ability factors, this study offers practitioners concrete solutions to improve the long-term effectiveness of their training programs.

A comprehensive quantitative analysis was conducted using self-reported training assessment data to achieve this objective. This approach enables a thorough examination of the relationship between motivation and ability factors and their ability to predict training transfer intentions and behaviors. The study will uncover patterns and trends that can inform practitioners' decision-making processes by analyzing the perceptions of participants participating in learning events.

This research bridges the gap between training events and workplace generalization and maintenance by identifying the motivation and ability factors that predict training transfer intentions and behaviors. It equips practitioners with evidence-based findings and practical recommendations. The study will contribute to the broader field of organizational learning and provide tangible solutions for improving the effectiveness of training programs.

Research Questions

This quantitative study examined the predictability of motivation and ability factors on training transfer intentions and behaviors within a medical technology training program. The research questions are as follows:

Research Question 1: Which motivational factors (transfer effort, motivation to transfer, and performance outcome expectation) positively predict training transfer intentions in a medical technology training program?

Research Question 2: Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design) positively predict training transfer intentions in a medical technology training program?

Research Question 3: Which motivational factors (transfer effort, motivation to transfer, and performance outcome expectation) positively predict training transfer behaviors in a medical technology training program?

Research Question 4: Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design) positively predict training transfer behaviors in a medical technology training program?

Chapter 1 Summary

Investments in employee development through training programs are crucial for organizations to maintain their competitive edge (Adler & Kwon, 2002; Bontis, 2001; Hand & Lev, 2003). Despite significant resources allocated to employee training, organizations face challenges in effectively transferring training knowledge and skills to actual job performance (Kelloway & Barling, 2000). Traditional measures of training success often fall short of evaluating training transfer effectively (Salas et al., 2006). Therefore, it is imperative to identify and address factors facilitating successful training transfer to improve overall training program effectiveness.

Ongoing challenges in understanding factors influencing the training transfer process highlight the need for evidence-based strategies to guide the design and implementation of

effective training programs (Baldwin et al., 2017). Varying estimates of training transfer success rates and concerns about the long-term effectiveness of training initiatives underscore the significance of the problem (Georgenson, 1982; Saks & Belcourt, 2006). Organizations are urged to adopt strategies beyond the initial learning event to address these challenges effectively (Salas et al., 2006).

This study aims to provide valuable insights into factors predicting training transfer intentions and behaviors, specifically focusing on motivation and ability within a medical technology training program. By bridging the gap between training events and workplace application, the study offers concrete solutions for enhancing the effectiveness of training programs (Salas & Cannon-Bowers, 2001).

The research questions examine the potential influence of motivational and ability factors on training transfer intentions and behaviors (Salas & Cannon-Bowers, 2001). Overall, the groundwork laid in this chapter illuminates the challenges and importance of training transfer and sets the stage for the subsequent research conducted in the dissertation.

Chapter Two: Literature Review

Training transfer is the process by which knowledge, skills, and behaviors acquired in a learning environment are applied to real-world settings (Kozlowski & Salas, 1997). Grounded in Baldwin and Ford's (1988) training transfer model, the study of training transfer has evolved to encompass a multifaceted interplay of individual, instructional, and organizational factors (Lim & Morris, 2006). This chapter comprehensively explores determinants influencing training transfer effectiveness, drawing on a rich body of empirical research and theoretical frameworks.

Baldwin and Ford (1988) identified three primary factors influencing training input: trainee characteristics, training design, and the work environment. Subsequent studies have delved deeper into these domains, uncovering intricate relationships and shedding light on the mechanisms that drive successful training transfer (Blume et al., 2010; Lee et al., 2014; Saks & Belcourt, 2006). Moreover, scholars like Ford (2021) have emphasized the significance of performance effectiveness, highlighting the need to go beyond mere training transfer to assess the relevance and impact of trained behaviors on organizational goals.

At the individual level, factors such as motivation (Lee et al., 2014), cognitive abilities (Blume et al., 2010), self-efficacy (Wood & Bandura, 1989), and personality traits (Rowold, 2007) have been identified as critical determinants of learning and training transfer outcomes. Understanding these individual-level factors is essential for tailoring training interventions to meet learners' diverse needs and preferences.

Training design, including pre-training, during-training, and post-training measures, significantly influences training transfer effectiveness (Saks & Belcourt, 2006). Aligning training content with workplace demands, providing opportunities for active application, and

implementing relapse prevention strategies have emerged as key strategies for enhancing training transfer success (Machin, 2002; Weissbein et al., 2011).

At the organizational level, the work environment plays a pivotal role in facilitating or inhibiting training transfer (Rouiller & Goldstein, 1993). Social support from peers and supervisors (Bates et al., 2000), opportunities for implementing learned material (Cromwell & Kolb, 2004), and organizational and learning cultures (Simosi, 2012) significantly shape training transfer climate and outcomes.

In recent years, human resource development research has witnessed significant advancements in exploring various aspects of training transfer (Blume et al., 2009). Though significant advancement has occurred, there is significant variability across the studies (Cheng & Hampson, 2008). Future research should aim to operationalize theoretical frameworks, test hypothesized relationships, and explore emerging factors influencing training transfer outcomes to understand the multidimensional process (Gessler, 2012). Additionally, more field-specific studies are needed to examine the impact of methodological and didactic design elements on training transfer effectiveness (Burke & Hutchins, 2007).

This chapter provides a comprehensive overview of the determinants influencing training transfer effectiveness, emphasizing the importance of considering individual characteristics, training design factors, and organizational environments in designing effective training programs and interventions. By addressing these factors comprehensively, practitioners and scholars can contribute to the broader goals of organizational learning and human resource development.

Learning Theories

Learning theory clarifies how learning takes place and offers valuable insights into how this understanding can be applied in practical settings (Merriam & Bierema, 2014). It provides a

framework for educators and practitioners to design effective teaching methods and learning experiences that optimize the increase in knowledge, skills, and attributes the students gain through training (Combs et al., 2006). Closing the gap between theory and practice allows practitioners to create meaningful and impactful learning environments that foster continuous growth and improvement and hold the potential for significant advancement in the science and application of training (Cannon-Bowers et al., 1991). Knowles (1984) indicated that learning theories could be grouped into mechanistic and organismic worldviews. Merriam and Bierema (2014) discuss several learning theories, including behaviorism, humanism, cognitivism, social cognitive theory, and constructivism.

Behaviorism

Ivan Pavlov's experiment with a dog and a bell is a well-known precursor to behaviorism (Merriam & Bierema, 2014). In his study, Pavlov rang a bell before feeding the dog. Over time, the dog associated the bell with food; even without food, just hearing the bell made the dog salivate. This demonstrated how external stimuli can trigger specific animal responses, establishing the foundation for the behaviorist approach.

According to behaviorists such as Merriam et al. (2007), human behavior is profoundly influenced by the arrangement of stimuli in the environment. This viewpoint underscores the role of external factors and individuals' interactions with their surroundings in molding their behaviors and responses to various circumstances. Behaviorism accentuates the importance of observable behaviors and the impact of environmental influences on human actions and learning processes without focusing on internal mental processes (Grippin & Peters, 1984).

In learning, Human Resource Development (HRD) practitioners who adhere to behaviorism emphasize rewards as stimuli or reinforcements for learners, and they meticulously

analyze the stimuli learners encounter in their environment, recognizing their capacity to shape behaviors (Sleezer et al., 2003). This principle forms the foundation of behaviorists' approach to education, wherein positive reinforcement and rewards are leveraged to promote desired behaviors and cultivate effective learning outcomes. Through strategic arrangement of stimuli and judicious use of reinforcements, educators and HRD professionals can mold behaviors and facilitate meaningful learning experiences for individuals.

In summary, highlighting the role of external factors and observable behaviors, behaviorism informs the practices of HRD professionals in education, where a deliberate arrangement of stimuli and utilization of rewards guide learners toward desired outcomes (Jacobs, 1987). By embracing these principles, educators and HRD experts can effectively shape behaviors and cultivate meaningful learning experiences, showcasing the enduring relevance of behaviorism in shaping our understanding of human development and learning.

Humanism

Humanism and behaviorism stand as contrasting paradigms in psychological perspectives. While behaviorism centers on external stimuli and observable behaviors, humanism accentuates an individual's inherent capacity for growth, freedom of choice, and the pursuit of self-actualization through fulfilling a hierarchy of needs (Merriam & Bierema, 2014). Humanism asserts that individuals possess intrinsic potential for development and underscores their autonomy in directing their behavior.

Humanistic theory introduces a hierarchy of needs posited by Maslow (1970), outlining the successive stages individuals must fulfill to attain self-actualization. These stages encompass physiological needs (such as breathing, food, water, sleep, and excretion), safety needs (security, employment, resources), love/belonging needs (social relationships, intimacy), esteem needs

(self-respect, achievement, recognition), and ultimately, the need for self-actualization (morality, creativity, problem-solving). Maslow (1970) contends that individuals must satisfy the requirements of each level before advancing to the subsequent one.

Humanism and behaviorism offer divergent perspectives within psychology, each providing unique insights into human nature and behavior. While behaviorism scrutinizes external influences and observable actions, humanism champions intrinsic potential, freedom of choice, and the pursuit of self-actualization through fulfilling a hierarchy of needs. Illustrated by Maslow's hierarchy, humanistic theory underscores the significance of acknowledging and addressing fundamental human needs as a pathway to self-realization. These contrasting viewpoints illuminate the multifaceted nature of human existence, furnishing valuable frameworks for comprehending and navigating the intricacies of human behavior and development.

Cognitivism

According to Merriam and Bierema (2014), cognitivism brought about a significant shift in the focus of learning, moving away from external environmental factors (behaviorists) or the overall individual (humanists) towards the learner's internal mental processes. Piaget's (1972) cognitive development model outlines four stages through which a person progresses during adolescence: instrumental (pre-verbal), pre-operational (ages 1.5-2 to 6-7), concrete operational (ages 7-8 to 11-12), and formal operational (ages 11-12 to 14-15).

In the instrumental stage, individuals demonstrate patterns that reveal an inherent logic in coordinating their actions (Piaget, 1972). The preoperational phase begins with language acquisition, where actions are internalized and transformed into representations, facilitating the reconstruction and reorganization of thoughts (Piaget, 1972). During the concrete operational

phase, individuals construct a logic of reversible actions, forming structures such as classification systems, ordering systems, concepts of numbers, measurements of lines and surfaces, perspectives, and types of causality (Piaget, 1972). In the formal operational stage, individuals act based on objects' meaning, regardless of whether they are true or false. They reason by associating one term with another closely resembling the original without realizing that these terms may not be the same (Piaget, 1972).

It is important to note that Piaget's model illustrates a linear progression through each stage, but individuals may pass through them at different rates, particularly in varying cultural settings (Merriam et al., 2007). Knight and Sutton (2004) proposed that adults can move among these stages when appropriate in specific situations. Building on Piaget's theory, Sinnott (2010) suggests that individuals can go beyond problem-solving by engaging in creative thinking and potentially redefining the problem or engaging in "problem-finding." This expands the scope of cognitive development, highlighting the potential for continuous growth and adaptability in problem-solving approaches.

In review, the cognitivist perspective marks a notable shift in the study of learning, focusing on the learner's internal mental processes. Jean Piaget's (1972) cognitive development model presents a framework of four distinct stages in the progression of individuals' cognitive abilities during adolescence, namely instrumental, preoperational, concrete operational, and formal operational stages. These stages encompass the development of logic, language acquisition, and problem-solving skills, ultimately culminating in the ability to reason based on meaning. Sinnott's (2010) extension of Piaget's theory further emphasizes the potential for ongoing growth and adaptability in problem-solving, including the capacity for creative thinking and redefining problems, thus illustrating the dynamic nature of cognitive development.

Cognitivism brought forth a deeper understanding of the internal mental processes involved in learning and problem-solving, enabling educators and researchers to better comprehend and support individuals' cognitive development throughout their lifespan (Merriam et al., 2007).

Constructivism

Constructivists perceive knowledge as a product of learners actively constructing it as they seek to make sense of their experiences (Merriam & Bierema, 2014). In this view, learners are not passive recipients waiting to be filled with information; they are engaged individuals seeking to create meaning and understanding from the world around them (Driscoll, 2005).

Piaget's cognitive development theory posits that as an individual's cognitive structure matures; they construct meaning at higher levels of sophistication (Merriam & Bierema, 2014). Additionally, Dewey (1997) emphasized that genuine education is rooted in experience. He viewed the experience as a transaction between an individual and their immediate environment, with information, experiences, and influences exchanged, shaping the individual's perceptions, actions, and understanding of the world (Dewey, 1997). Vygotsky highlighted the role of sociocultural context in shaping experiences. According to Vygotsky (1978), people construct meaning using a culture's symbols and language, which are crucial in their cognitive development.

In summary, constructivism offers a perspective on learning that views knowledge as a product of active engagement by learners in constructing meaning from their experiences. This approach emphasizes that learners are not passive recipients but active participants seeking to make sense of the world around them. Key figures in constructivist learning theory, such as Piaget, Dewey, and Vygotsky, have contributed to this framework (Merriam et al., 2007).

Piaget's cognitive development theory highlighted the maturation and construction of cognitive

structures as individuals construct increasingly sophisticated meanings. Dewey underscored the role of genuine education rooted in experiential transactions with one's environment, shaping perceptions and understanding (Merriam et al., 2007). Vygotsky emphasizes the impact of sociocultural context, where culture's symbols and language play a vital role in cognitive development, illustrating knowledge construction's dynamic and socially influenced nature (Merriam et al., 2007).

Andragogy

Reischmann (2004) stated that "andragogy" was first published by Alexander Kapp, a German High School teacher, in his book "Plato's Educational Ideas". Andragogy remained relatively dormant until Eugen Rosenback presented it in 1921 at a Frankfurt conference. This presentation ignited the interest of a group of scholars known as the 'Hohenrodter Bund,' who sought to revitalize andragogy by investigating its relevance and instructional methods for adult education.

In 1957, Franz Poggeler published the book "Introduction into Andragogy: Basic Issues in Adult Education". Subsequently, several publications on andragogy were published in Switzerland, Yugoslavia, the Netherlands, and Germany (Reischmann, 2004). These publications represented a blend of practice, commitment, ideologies, reflections, and theories without a clear focus (Reischmann, 2004). As a result, they were mainly utilized in local institutions and lacked significant academic support.

In 1968, during a summer session at Boston University, Dusan Savicevic introduced Malcolm Knowles to andragogy. Knowles was intrigued by andragogy and promptly published his inaugural andragogy article, 'Androgogy, Not Pedagogy' (Knowles, 1968). In 1970, Knowles

released his comprehensive andragogical model in the first edition of “Modern Practice of Adult Education: Andragogy Versus Pedagogy.”

Drawing inspiration from his mentor, Lindeman, Knowles distinguished between the assumptions made by those practicing pedagogy and those practicing andragogy (Knowles, 1989). He proposed four assumptions of adult learning, emphasizing the importance of recognizing the learner’s self-concept, experience, readiness, and problem-centered nature. Subsequently, Knowles expanded his framework by introducing two additional assumptions, highlighting the importance of acknowledging the learner’s motivation and the learner’s need to know (Knowles, 1984).

Learner’s Self-Concept

According to Knowles et al. (1998), as individuals mature, they take on greater responsibility for their decisions and lives and develop a strong psychological need to be treated as capable of directing themselves. When individuals experience this psychological need, they may become resentful and resistant if they perceive others as attempting to limit their autonomy. Knowles et al. (1998) suggest that when adults engage in any educational or training activity, they often revert to the conditioning from their previous school experiences. This conditioning leads them to assume a dependent mindset, where they passively say, “teach me,” as if wearing a “dunce hat.”

When an adult student falls back into this conditioned dependency, it creates an internal conflict with their inherent need for self-direction Knowles et al. (1998). This conflict can trigger a natural reaction to withdraw or escape from the situation, leading to a high dropout rate among adults in voluntary education. This dropout rate may be due to the internal struggle between their

desire for autonomy and the ingrained pattern of dependency from their prior schooling experiences.

Learner's Experience

Knowles et al. (1998) stated that experience is something that happens to children, whereas, for adults, experience makes up who they are. Knowles et al. (1998) continued by stating that children gain their self-identity from their parents, siblings, where they live, and friends and that adults define themselves through their experiences. Since no two individuals have lived the exact same experience, the quantity and quality of their experiences may have consequences in adult education, which has led to adult education placing greater emphasis on individualizing teaching and learning strategies.

The experiences we gain through life can have positive impacts, provide significant resources on adult education, and can be tapped into through experiential learning techniques such as group discussions, problem-solving techniques, and simulation exercises (Knowles et al., 1998). While experiences provide valuable resources for adult education, they can also lead to the development of mental habits and biases that hinder openness to new ideas. As Knowles et al. (1998) point out, when we gain experiences, we develop mental habits, biases, and presuppositions that can close us off to new ideas, new perceptions, or alternative ways of thinking. This negative impact requires adult educators to understand the students' mental habits and biases and modify them to open their minds to a new perception or way of thinking.

Learner's Readiness to Learn

Readiness to learn emphasizes the timing of education to coincide with real-life situations (Knowles, 1984). For example, a supervisory training course would best apply to an individual ready for additional responsibility and taking the next step into a supervisory role.

This does not mean one must wait for the learner's readiness to happen organically. Career counseling, simulation exercises, and other techniques can induce an individual's learning readiness (Knowles et al., 1998).

Problem Focus Versus Subject Focus

Knowles also called this assumption an orientation to learning. Much of the learning that occurs as children, mostly in school, is centered around subject learning (Knowles et al., 1998). However, as individuals mature, there is a natural shift from subject-centered learning to life-centered or problem-focused learning. This assumption revolves around the learner's perception of how learning will help them perform their current tasks or solve problems.

Learner's Motivation

The learner's motivation assumption was not initially included in Knowles' original model but was added in 1984. The assumption encompasses external and internal motivators affecting the learner's motivation. External motivators include better jobs, promotions, and higher salaries (Knowles, 1984). Internal motivators include the desire for increased job satisfaction, self-esteem, and quality of life. Knowles indicated that internal motivators exert a more powerful influence on learner motivation than external motivators.

Learner's Need to Know

The learner's need to know was not included in Knowles' original andragogical model and was added in 1989 (Knowles, 1989). This assumption highlights the learner's need to know why they need to learn something prior to learning it. Tough (1979) identified that when adults choose to participate in learning independently, they invest time to understand the benefits of learning new information and the consequences they face if they do not participate. This

assumption indicates that the first task of a facilitator is to help the students understand why they need to know the new concept or way of thinking.

In summary, andragogy recognizes that adult learners have distinct characteristics and learning needs, leading to assumptions that guide the approach to adult learning, including the importance of acknowledging the learner's self-concept, experience, readiness to learn, the shift from a subject focus to problem-centered learning, motivation, and the learner's need to know. By understanding and applying these andragogical principles, practitioners can create more effective and engaging adult learning experiences. These principles are crucial in transferring knowledge and skills acquired in training settings to practical, real-life situations. Recognizing adult learners' unique characteristics and needs is essential for successful training transfer, ensuring that what is learned can be effectively applied in their personal and professional lives.

Training Transfer Model

Brown and Sitzmann (2011) noted that the most frequently cited training transfer model is the model presented by Baldwin and Ford (1988). In their seminal work, Baldwin and Ford (1988) identified that organizations have a training transfer problem. One perceived contributing factor to the training transfer problem was that there was little to no value for trainers and practitioners in the existing literature (Campbell, 1971). Another perspective was that trainers and practitioners failed to implement the existing scientific knowledge (Goldstein, 1980; Wexley, 1984). Baldwin and Ford did not present their stance on the reason for the training transfer problem. Instead, they presented their theoretical framework for the transfer process, as shown in Figure 2.1.

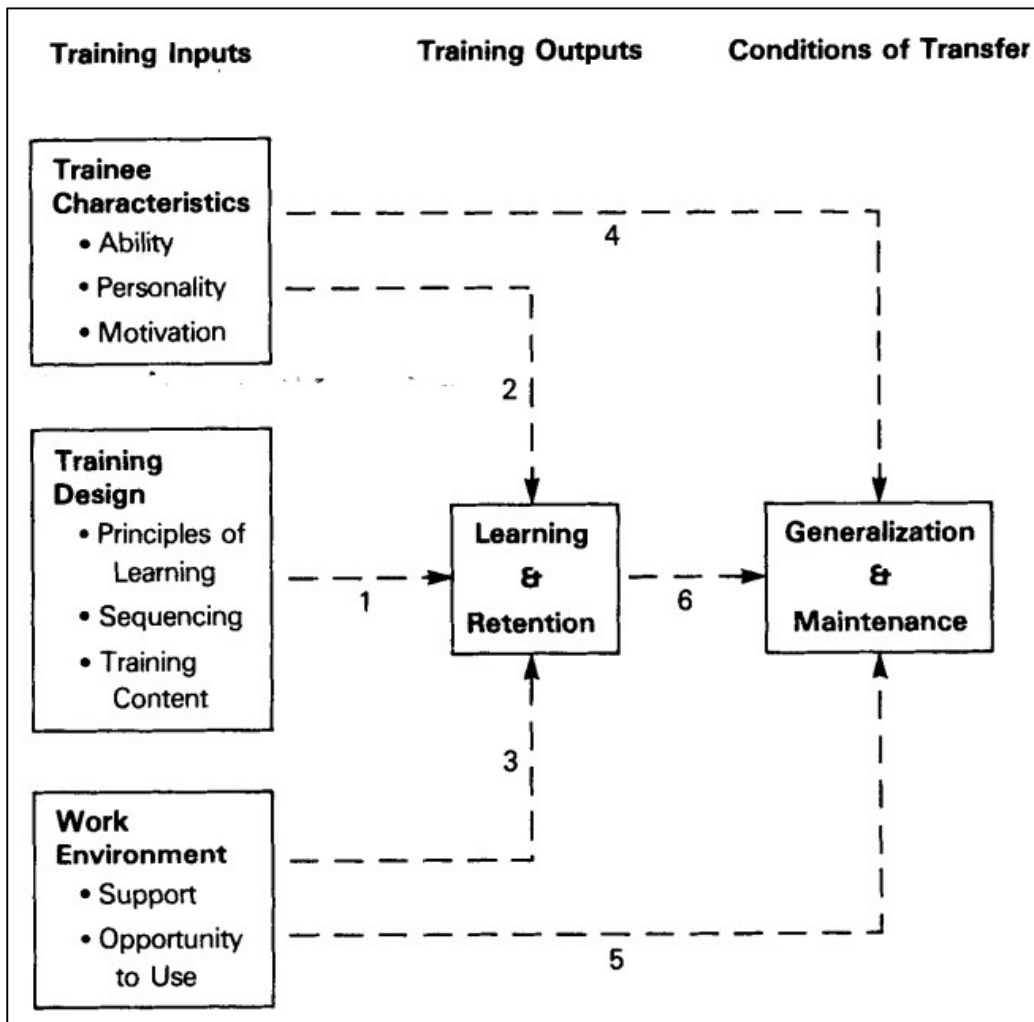
Baldwin and Ford (1988) identified three factors of training input including trainee characteristics, training design, and work environment. They further described trainee

characteristics, including the student's ability, personality, and learning motivation. They describe training design incorporating learning principles, material sequencing, and training content. Lastly, Baldwin and Ford (1988) defined the work environment as the support from supervisors and peers to implement training and an opportunity to use the learned material. Each training input factor directly impacts the learning and retention of the student experiences or what Baldwin and Ford identified as the training outputs. Additionally, they indicate that training outputs, trainee characteristics, and work environment directly impact the condition of training transfer, which Baldwin and Ford referred to as generalization and maintenance.

Baldwin and Ford (1988) further defined the two training transfer conditions as generalization is the student's ability to apply the skills or behaviors learned in the training program to the workplace and maintenance encompasses the student's ability to maintain those skills or behaviors over time. To summarize, generalization occurs when trainees complete a training event and immediately apply the learned knowledge, skills, attitudes, or behaviors when returning to their work environment. Maintenance refers to the trainees' ability to consistently sustain the training transfer of the learned knowledge, skills, attitudes, and/or behaviors over time in their work environment. Baldwin and Ford indicated that research prior to 1988 has mainly focused on the factors of training inputs that may or may not affect training transfer and has not focused on identifying appropriate measurements of the training transfer conditions.

Figure 2.1

A Model of the Transfer Process



Note: Adapted from “Transfer of Training: A Review and Directions for Future Research,” by T. T. Baldwin and J. K. Ford, 1988, *Personnel Psychology*, 41(1), p. 65 (doi:10.1111/j.1744-6570.1988.tb00632.x). Copyright 1988 by Personnel Psychology, Inc.

Ford (2021) identified performance effectiveness as a critical training transfer aspect. As defined by Ford, performance effectiveness refers to the level of expertise that the behaviors demonstrate relevant to the goals of the learning experiences. Ford (2021) continued by stating that this aspect of training transfer goes beyond the mere act of transfer, delving into the value and utility of the acquired behaviors within the organizational context. In essence, organizations

are not just concerned with whether trained behaviors are being transferred; they are equally interested in the effectiveness and relevance of these behaviors in achieving organizational goals (Salas et al., 2006).

Since Baldwin and Ford's (1988) seminal work, there has been a substantial surge in studies dedicated to training transfer, yielding valuable insights and knowledge. (Baldwin et al., 2017). Baldwin et al. (2008) identified nearly 300 articles that contained at least one reference to Baldwin and Ford's 1988 work. Despite the considerable body of research that has emerged since Baldwin and Ford's seminal work, there is still a prevailing need for concrete evidence supporting effective training designs and strategies to enhance training transfer in adult education (Baldwin et al., 2017). Furthermore, there is a growing emphasis on assessing not just the act of training transfer but also the performance effectiveness of trained behaviors concerning their relevance and utility to organizational goals (Salas et al., 2006). This evolution highlights the ongoing quest for more effective training practices and methodologies to maximize the impact of training transfer within the workplace.

Trainee Characteristics

Research across various domains sheds light on the multifaceted nature of factors influencing trainee characteristics (Tonhauser & Buker, 2016; Blume et al., 2010). Motivation plays a central role in this process, with the distinct facets identified as learning motivation, training motivation, and transfer motivation. Studies by Lee et al. (2014) and Naquin and Holton (2002) underscore the significant positive impact of learning and transfer motivation on training transfer.

Self-efficacy emerges as a critical determinant, influencing both learning and transfer motivation, as well as training transfer itself, as demonstrated by various studies, including

Velada et al. (2007) and Colquitt et al. (2000). Personality traits, particularly those encompassed in the Big Five model, offer further insights, with studies like Blume et al. (2010) indicating moderate to strong relationships between cognitive ability, conscientiousness, and voluntary participation, and training transfer. However, findings across studies on personality traits remain inconsistent, necessitating further investigation.

Expected utility emerges as a significant predictor of training transfer, with studies by Bates et al. (2000) and Velada and Caetano (2007) highlighting the importance of aligning training designs with trainees' needs to optimize transfer. Finally, Smith et al. (2008) explored that individual goal intentions are pivotal in linking motivational factors to training outcomes, emphasizing the intricate interplay between motivation and training effectiveness. These findings underscore the complexity of training transfer processes and the need for tailored approaches to maximize effectiveness and ensure meaningful outcomes.

Motivation

Transfer research identifies learning, training, and transfer as three distinct and interconnected facets of motivation. Learning motivation refers to trainees' desire to engage with a training program's content (Noe, 1986). Training motivation pertains to the intensity of commitment in learning events (Noe, 1986). Transfer motivation encompasses participants' motivation to apply newly acquired competencies in their everyday work routine (Tannenbaum & Yukl, 1992).

In their research on exploring the differences between high and low performers, Lee et al. (2014) suggested that both learning and transfer motivation have a significant positive impact on the transfer of training. Naquin and Holton (2002) introduced the construct Motivation to Improve Work Through Learning (MTWIL), which posits that an individual's MTWIL is a

function of both training and transfer motivation and is influenced by positive affectivity, commitment, and extraversion. Various factors influence training and transfer motivation, including self-efficacy expectations, personality traits, and work environment variables (Colquitt et al., 2000).

Naquin and Holton (2002) stated that the concept of motivation needs to move beyond the basics of motivation to learn and move towards a motivation to transfer. Motivation for transfer often serves as a mediator between various input variables, including supervisor and peer support (Bhatti et al., 2013), training characteristics (Grohmann et al., 2014), and outcome expectancy (Scaduto et al., 2008), and actual transfer of training. Gegenfurtner et al. (2013) identified two dimensions of extrinsic transfer motivation, autonomous and controlled, along with transfer intention, highlighting the nuanced nature of motivation in the transfer process. Research by Renta-Davids et al. (2014) distinguishes between work-oriented and learning-oriented motivation, both of which influence the transfer of training.

Despite the growing evidence supporting the importance of transfer motivation, further research is needed to fully understand its mediating role and various sources (Gegenfurtner et al., 2009). While the current body of literature indicates a positive relationship between transfer motivation and transfer of training, it remains insufficient for a comprehensive understanding, underscoring the need for continued investigation (Bhatti et al., 2013).

Cognitive Abilities

Cognitive abilities have long been associated with success in formal vocational training (Carter, 2002). The importance of an individual's cognitive ability to impact the transfer of training is often overlooked (Tonhauser & Buker, 2016). Bates and Holton (2004) have begun to address this gap by examining the direct influence of learners' cognitive abilities on the training

transfer process. They investigated how participants with varying levels of workplace-related reading and writing skills differed in their ability to apply learned material to the workplace. They found significant differences in training transfer outcomes based on these skills, indicating that reading and writing proficiency enhances transfer motivation and training effectiveness. Supporting Bates and Holton, Blume et al. (2010) conducted a meta-analysis revealing that cognitive ability exhibits the strongest correlation with training transfer among all known variables. However, they indicated that the causality of this relationship is only moderate.

Lee et al. (2014) delved into the influence of pre-training work performance on the relationship between variables in the work environment and the transfer process. As mentioned above, they categorized participants into high- and low-work performance groups and observed significant differences in training transfer dynamics. Interestingly, while learning motivation positively influenced the training transfer in low-work-performance participants, support from superiors directly impacted the training transfer in high-work-performance participants.

In summary, some studies have hinted at a positive association between cognitive skills and training transfer, but the issue remains complex and largely unexplored. Future research should consider cognitive abilities and investigate the influence of participants' prior knowledge to enhance the accuracy and reliability of measuring training transfer effects. This approach will provide a more comprehensive understanding of the role of cognitive abilities in the transfer process.

Self-Efficacy

Wood & Bandura (1989) defined self-efficacy as an individual's belief in their capacity to influence their motivation, mental resources, and effort towards achieving a goal. Tziner et al. (2007) examined six trainee characteristics within a single training climate to predict training

effectiveness. The characteristics researched included conscientiousness, self-efficacy, motivation to learn, learning goal orientation, and performance goal orientation. Velada et al. (2007) aimed to identify the factors determining the transfer of training to the trainee's workplace. Similarly, Chiaburu et al. (2010) explored how self-efficacy, trainees' learning goal orientation, and motivation to transfer impact training transfer. All three studies indicate that self-efficacy significantly predicts training transfer. Colquitt et al. (2000) and Lee et al. (2014) identified self-efficacy as having a positive association with pre-training motivation, learning motivation, and transfer motivation. Meta-analyses, such as those conducted by Blume et al. (2010), further validate the positive correlation between self-efficacy and training transfer.

Locus of control, a key component of Noe's (1986) model of motivational factors influencing training effectiveness, refers to an individual's belief about the extent to which events depend on their actions, either internally or externally. While Cheng's (2000) study on MBA graduates' transfer of knowledge and skills to their workplaces and Noe & Schmitt's (1986) exploration of a model describing the influence of trainees' career and job attitudes on training outcomes found no significant impact of locus of control on the training transfer process, other studies, such as Tziner et al.'s (1991) research on relapse prevention, demonstrated a positive effect on training transfer. Colquitt et al.'s meta-analysis (2000) confirmed these positive findings across various evaluation levels, indicating that an internal locus of control significantly influences training transfer more than an external locus. However, Blume et al. (2010) suggested a slight negative correlation between the locus of control variables and training transfer, which adds complexity to the relationship.

In summary, self-efficacy emerges as a robust predictor of training transfer, supported by various studies, including those by Tziner et al. (2007), Velada et al. (2007), and Chiaburu et al.

(2010). Colquitt et al. (2000) and Lee et al. (2014) further reinforce the positive association between self-efficacy and pre-training motivation, learning motivation, and transfer motivation. Meta-analyses conducted by Blume et al. (2010) validate this correlation, highlighting the pivotal role of self-efficacy in facilitating effective training transfer. Conversely, locus of control presents a more nuanced picture, with conflicting findings regarding its impact on training transfer. While some studies, such as those by Tziner et al. (1991), demonstrate a positive effect of an internal locus of control, others, like Blume et al. (2010), suggest a slight negative correlation, adding complexity to the relationship. Nonetheless, Colquitt et al.'s (2000) meta-analysis affirms the significance of an internal locus of control in influencing training transfer across various evaluation levels. These insights underscore the importance of understanding individual beliefs and perceptions in shaping training effectiveness and highlight avenues for further research to unravel the intricacies of these motivational factors.

Personality Traits

Personality traits, particularly those in the Big Five model, openness, conscientiousness, extraversion, agreeableness, and neuroticism, have been studied for their impact on training transfer, although results are mixed. Hinrichs (2014) and Rowold (2007) explored the link between the Big Five personality traits and the training transfer process using Kirkpatrick and Kirkpatrick's (2006) evaluation levels. Blume et al.'s (2010) analysis showed moderate connections to training transfer for traits like cognitive ability and conscientiousness, while others, such as neuroticism, extraversion, and agreeableness, showed only minor associations. Demographic variables like age, gender, education, and job involvement had similarly limited predictive power. These findings imply that while certain traits, particularly conscientiousness,

may support transfer, personality alone is not enough without considering the training context and environmental factors.

Similarly, through their integrated review of training transfer literature, Burke and Hutchins (2007) indicated that the Big Five variables had minimal to no empirical evidence indicating a relationship with transfer. However, Colquitt et al. (2000) reported a moderate to strong impact of conscientiousness on training transfer and work performance, albeit with unexpected adverse effects on learning and participant reaction to training.

Herold et al. (2002) failed to establish a significant impact of conscientiousness on training transfer. Colquitt et al. (2000) suggested a negative, non-significant relationship between conscientiousness and learning and transfer motivation. Conversely, Colquitt and Simmering (1998) find a significant positive influence of conscientiousness on learning motivation.

Machin and Fogarty's (2004) study of antecedents of transfer intentions substantiated a significant negative influence of the negative affectivity of a person on training transfer intentions. Moreover, within neuroticism, emotional stability emerges as a significant positive contributor to learning, according to Herold et al. (2002). However, the relationship between extraversion and training transfer remains inconclusive, as Blume et al. (2010) suggests a positive association, while Naquin and Holton (2002) find no such link, and Rowold (2007) indicates a strong negative effect of introversion on both learning and transfer motivation. Similarly, the impact of agreeableness on transfer varies, with Blume et al. (2010) reporting a negative association and Rowold (2007) highlighting a positive influence on learning and transfer motivation. In contrast, while Rowold (2007) doubts any connection between openness to experience and training transfer, Herold et al. (2002) and Blume et al. (2010) identify positive associations with both learning and transfer.

Overall, research exploring the relationship between the Big Five personality dimensions and training transfer yields mixed findings. While Hinrichs (2014) and Rowold (2007) delve into the correlation between personality traits and training transfer outcomes, Blume et al. (2010) provide a comprehensive analysis indicating moderate relationships between cognitive ability, conscientiousness, and voluntary participation with training transfer. Similarly, Herold et al. (2002) fail to establish a significant impact of conscientiousness on transfer or learning. Machin and Fogarty (2004) demonstrate a significant negative influence of negative affectivity on transfer intentions, while neuroticism, particularly emotional stability, emerges as a positive contributor to learning, according to Herold et al. (2002). Nonetheless, inconclusive findings persist regarding the impact of extraversion and agreeableness on transfer, as reported by Blume et al. (2010) and Rowold (2007), underscoring the need for further investigation to clarify the nuanced relationship between personality traits and training transfer outcomes.

Expected Utility

Studies have identified a significant positive impact of the expected personal outcomes of engaging in a training program on training transfer (Bates et al., 2000; Renta-Davids et al., 2014; Velada & Caetano, 2007). Bates et al. (2000) studied and measured the impact of content validity, opportunity to use, supervisor support, and co-worker support on training transfer. Their research identified significant increments in explained variance in performance and that content validity, peer support, change resistance, and supervisor sanctions are significant predictors of training transfer.

In their research, Velada and Caetano (2007) analyzed the mediating effects of the perception of learning on occupational satisfaction, affective reactions, utility reactions, and perceived training transfer. They determined that teachers who attended a professional training

program showed that occupational satisfaction and affective and utility reactions are positively associated with the perception of learning and perceived training transfer. According to Velada & Caetano (2007), for practitioners or organizations to enhance the training transfer of the trainees, special attention must be paid to the training design to ensure the training matches the trainees' needs, which will assist trainees to acquire a higher level of learning.

Renta-Davids et al. (2014) identified that the relevance and effectiveness of training significantly influence training transfer. Specifically, the degree to which the training aligns with participants' workplace activities and professional development positively impacts training transfer, as does the effectiveness of the training in facilitating knowledge and skill acquisition. Additionally, factors such as motivation to participate and a conducive workplace also have a positive role in training transfer. Renta-Davids et al. (2014) also found that the perceived relevance of training is a mediator between the complexity of the job task and training transfer.

Van der Locht et al. (2013) investigated whether elements in a training program identical to aspects of participants' work situations enhance training transfer beyond the influence of motivation to learn and expected utility. Their findings suggest that identical elements, expected utility, and motivation to learn independently contribute to predicting the training transfer of the managers. Moreover, motivation to learn partially mediates these relationships, while identical elements and expected utility also exhibit direct associations with training transfer (Van der Locht et al., 2013).

The previous studies have explored the factors that influence training transfer, providing valuable insights to improve training effectiveness. Bates et al. (2000) showed that expected personal outcomes significantly affect training transfer, with content validity, peer support, resistance to change, and supervisor sanctions as important predictors of performance ratings.

Similarly, Velada and Caetano (2007) found that job satisfaction, affective reactions, and perceived usefulness are positively linked to learners' perceptions of learning and training transfer among teachers in professional development programs. They highlight the importance of aligning training designs with trainees' needs to enhance training transfer. Renta-Davids et al. (2014) identified the relevance and effectiveness of training as key factors influencing training transfer, emphasizing the need to align training with workplace activities and professional growth. They also noted that motivation to participate and supportive workplace features positively affect training transfer. Meanwhile, Van der Locht et al. (2013) examined the role of identical elements in training programs, revealing their independent contributions to predicting training transfer among managers. These findings underscore the multifaceted nature of training transfer and emphasize the need for tailored training designs to maximize impact and achieve meaningful results.

Individual Goal Intention

According to Blume et al. (2010), research in meta-analytic studies often overlooks the consideration of training objectives or goals. However, Smith et al. (2008) conducted a study in a non-profit organization in which they developed and tested a model integrating goal theory with a training motivation framework. Their model was designed to predict employees' goal intentions and training outcomes. They hypothesized that goal orientation, alongside self-efficacy, expectancy, and valence, would influence goal intentions and subsequent training outcomes such as affective responses, perceived utility of training, and intention to transfer or utilize the training. Smith et al. (2008) indicated that goal orientation significantly predicted a substantial portion of the variance in proximal antecedents (valence, expectancy, and self-efficacy), while these proximal factors explained significant variance in goal intentions.

Furthermore, Smith et al. (2008) found goal intentions to be related to training outcomes, with affect, utility, and transfer intention all showing significant associations. Smith et al. (2008) study highlighted the mediating role of goal intentions in linking proximal factors to training outcomes, emphasizing their importance in the causal pathway. Additionally, valence emerged as a significant mediator between goal orientation and intentions, illustrating the intricate relationship between motivational factors and training outcomes. Smith et al. (2008) interpreted these findings to support the crucial mediatory function of goal intentions, similar to the construct of training motivation in Colquitt et al.'s (2000) model.

Training Design

Pre-training, during training, and post-training measures offer valuable insights into enhancing the effectiveness of training programs and maximizing training transfer to the workplace (Bates et al., 2000; Hinrichs, 2014; Machin, 2002; Tziner et al., 1991). Machin (2002) emphasizes the importance of engaging learners before training begins, suggesting that pre-training measures ensure readiness and enhance engagement during learning events. During training, alignment between training content and workplace demands, as emphasized by Bates et al. (2000) and Hinrichs (2014), is crucial for fostering training transfer. Van der Locht et al. (2013) further highlight the significance of identical elements between learning and implementation situations in promoting transfer motivation and training transfer. However, contradictory findings, such as those presented by Lakomski (2009) and Yamnill and McLean (2001), underscore the complexity of predicting learning transfer.

Post-training measures, such as relapse prevention strategies, as explored by Marx (1982) and Tziner et al. (1991), offer promising avenues for maintaining trained behaviors and facilitating long-term change. Despite the positive effects demonstrated by some studies, others,

like those by Burke (1997) and Burke & Baldwin (1999), suggest a limited impact on training retention and training transfer.

Pre-training measures

Machin (2002) indicated that learners should be engaged before training starts. Machin (2002) continued by indicating that pre-training measures ensured that individuals were ready to be fully engaged during the learning event and that training materials should be distributed to learners who benefit the most from the training. In an intervention study, Weissbein et al. (2011) explored the efficacy of using videos to influence participants' attribution style as a pre-training measure to enhance training transfer. The video depicted enhancing negotiation skills through personal effort and negotiation strategies relevant to the upcoming seminar. These videos aimed to boost participants' learning motivation before the training. Their study identified that using videos in pre-training significantly influenced participants' controlling convictions, subsequently positively impacting learning motivation and directly enhancing training transfer (Weissbein et al., 2011).

Other studies have found that the student's ability to choose to attend a training event can influence training and transfer (Baldwin et al., 1991), though not always in the obvious ways. One study found that mandated training signaled a higher level of importance than optional training, and as a result, the students experienced a higher intention to transfer training (Baldwin et al., 1991).

To summarize, pre-training measures highlight the critical role of engagement before the commencement of training programs in maximizing learning outcomes and transfer to the workplace. Machin (2002) underscores the importance of ensuring learners' readiness and engagement before training initiation, emphasizing the significance of pre-training measures in

this process. Additionally, Weissbein et al. (2011) stated that the potential of pre-training interventions to directly influence the transfer of training lies in their ability to positively shape participants' controlling beliefs. Furthermore, insights from studies such as those by Baldwin et al. (1991) shed light on how the influence of students' autonomy in choosing training events can affect their intention to transfer knowledge and skills. Overall, this section emphasizes the importance of proactive strategies in preparing learners for training and highlights avenues for enhancing training transfer through targeted pre-training interventions.

Measures during training

Bates et al. (2000) emphasized the necessity for training content to align with workplace demands to foster training transfer. Similarly, Hinrichs (2014) highlighted the positive impact of training's transfer orientation, reflecting its resemblance to real work situations. Van der Locht et al. (2013) examined the role of identical elements between learning and implementation situations, finding that similarities positively influenced transfer motivation and training transfer. The theory of identical elements is employed to explain the prerequisites required for the transfer of training. It advocates the notion that training transfer occurs when the training environment closely resembles the performance setting that trainees expect to encounter (Van der Locht et al., 2013). To illustrate, the identical elements theory explains that training transfer occurs when training components such as equipment, learning objectives, practical exercises, and assessments match the learner's knowledge, skills, and behaviors that are expected to be replicated when the learner returns to their workspace. Molenda and Russell (2005) point out that "there is a trend to move training as close as possible to the work situation, both to save time off the job and to increase the likelihood that workers use the new knowledge and skills" (p. 366).

Not all research supports the identical elements theory, as some show that it cannot accurately predict training transfer. For example, Lakomski (2009) indicated that it is impossible to replicate a learner's work environment identically within a learning event and that no two learning experiences are exactly the same. Yamnill and McLean (2001) similarly argued that learning events could only be similar to portions of the learner's workplace and that trainees must be able to generalize the learning content to successfully transfer the training to their workplace.

Yelon and Ford (1999) stated that practitioners and researchers have primarily focused on one type of training transfer that requires the learners to learn and directly apply a specific procedure. In contrast to this type of training transfer, Yelon and Ford (1999) presented a multidimensional perspective that includes closed and open skills. They defined closed skills as training tied to learning specific skills to be replicated identically in the transfer environment, while open skills are tied to learning principles. Yelon and Ford (1999) observed that closed skills require trainees to respond in one specific way on the job according to implemented rules, and open skills allow for variability and freedom in performance. Additionally, they indicate that with open skills, trainees have more autonomy in deciding whether, how, and when to transfer their training. For instance, those highly motivated to learn an open skill are more likely to seek opportunities in the workplace to apply their training and may also seek coworker support for applying trained skills (Ford et al., 1992). Baldwin et al. (2009) indicated that certain predictor variables, such as self-efficacy and motivation to learn, are expected to have a more pronounced impact on training transfer for open skills than closed skills.

In short, Bates et al. (2000) stressed the importance of aligning training content with workplace needs, while Hinrichs (2014) underscored the value of training that mirrors real work

situations. Van der Locht et al. (2013) emphasized the role of identical elements theory in motivating transfer. However, challenges exist, as some research questions the applicability of identical elements theory (Lakowski, 2009; Yamnill & McLean, 2001) and highlights the distinction between closed and open skills (Yelon & Ford, 1999). Optimizing training relevance and alignment with workplace demands is crucial for enhancing transfer effectiveness.

Post-training measures

According to Marx (1982), the relapse prevention model is one of the most promising approaches to maintaining newly trained behaviors (Marlatt & Gordon, 1980). Although the relapse prevention model was developed in studies of addictive behaviors, Marx (1982) indicated that it has powerful implications for managerial training, as managers must negotiate disruptive psychological and environmental influences to successfully transfer training and maintain long-term change.

Supporting Marx (1982), Noe et al.'s (1990) research on relapse prevention strategies aimed to prevent participants from reverting to old behavior patterns after training, thereby facilitating the transfer of training contents and the results of their study indicate that relapse prevention strategies may increase the trainee's awareness to situations when the use of a trained skill is relevant and to facilitate the trainee's manager involvement in the development of the new skill. Tziner et al. (1991) also provided support when they utilized a relapse prevention module with a two-week training program to evaluate the model's effect on post-training transfer. Their study encompassed 81 participants and evaluated reactions, knowledge, and on-the-job skill usage reported by trainees and supervisors. Tziner et al. (1991) revealed that participants exposed to the relapse prevention module demonstrated significantly higher knowledge acquisition and strategy utilization levels than control groups. Additionally, they

indicated that the interaction between locus of control, perceived support, and the relapse prevention intervention influenced the extent of strategy utilization, underscoring the potential efficacy of the relapse prevention model in enhancing the post-training application of skills within the workplace.

While the above studies have shown positive effects on learning and transfer, others have not substantiated significant effects. For example, Burke (1997) completed a study with 90 participants who had taken assertive communication training. The participants were randomly assigned to either a full relapse prevention, modified relapse prevention, or a control group. Burke's (1997) results indicated that neither module significantly affected trainees' ability to retain course content, transfer strategies, or use of the trained skills. Additionally, Burke & Baldwin (1999) investigated the effects of two supplemental relapse prevention modules given to 78 research scientists attending a coaching skills training program. Burke & Baldwin's (1999) results indicated that the relapse prevention modules only modestly influenced the trainees' use of transfer strategies and that the impact was contingent on the trainees' transfer climate.

Overall, Marx's (1982) emphasis on the relapse prevention model to sustain newly acquired behaviors offers significant potential for managerial training. Noe et al. (1990) and Tziner et al. (1991) further support this approach, highlighting its effectiveness in preventing the regression to old behaviors and enhancing post-training skill application. However, studies like those by Burke (1997) and Burke & Baldwin (1999) reveal mixed results regarding the impact of relapse prevention modules on transfer outcomes. Consequently, there remains a critical need for research into field-specific determinants that positively influence training transfer processes, mainly focusing on methodological and didactic design elements. Addressing these gaps is vital

for advancing our understanding of training design's role in facilitating effective transfer, as underscored by Burke & Hutchins (2007).

Organizational Level/Work Environment

As conceptualized by Rouiller and Goldstein (1993), transfer climate serves as a framework for assessing how the work environment influences the effectiveness of training transfer. It encompasses the assistance and support management, colleagues, and subordinates provided to facilitate the transfer process, along with task-related and structural circumstances within the workplace (Rouiller & Goldstein, 1993). Additionally, transfer climate encompasses positive and negative consequences that affect the extent to which training transfer occurs. Regarding organizational support, Cheng and Ho (2001) reported conflicting findings: ten studies found a positive relationship, two found a negative one, and five found no significant relationship between organizational support and transfer outcomes. Rouiller and Goldstein (1993) suggested that 54% of the variation in training transfer success can be attributed to a combination of learning success and transfer climate. Notably, the most crucial determinants within the work environment that positively influence training transfer include social support and various structural and organizational circumstances (Tonhauser & Buker, 2016).

Social Support

Social support emerges as the pivotal element within the organizational context's transfer climate and is the most extensively explored aspect concerning the transfer of training (Grossman & Salas, 2011). Research confirms the significant positive impact of colleague support on the success of the transfer, such as Ng (2013), who collected data from Malaysia's state health department and identified that peer support had a significant positive influence on training transfer. In addition to Ng's (2013) research, Salamon et al. (2021), who researched the

impact that the number of coworkers attending the same training interacts with peer support to influence training motivation and transfer, found that when more coworkers attended the same training, peer support had a strong influence on training motivation and transfer.

Findings regarding support from superiors vary. Ng's (2013) study found a significant positive influence of peer support on training transfer and found that supervisor support was not significantly associated with training transfer. Chiaburu and Marinova (2005) shared similar findings in their research of 186 employees. They found that peer support predicted pre-training motivation and training transfer, while supervisor support was unrelated to pre-training motivation and training transfer.

Other studies (Cromwell & Kolb, 2004; Scaduto et al., 2008; Brinkerhoff & Montesino, 1995) indicate a substantial positive influence of superior support on training transfer. Cromwell & Kolb (2004) researched organizational, supervisor, and peer support at one-month, six-month, and one-year intervals. Their research revealed that trainees reporting higher levels of organization, supervisor, peer support, and participating in a peer support network reported greater levels of knowledge and skill transfer, but only at the one-year mark. Interestingly, participation in a peer support network did not significantly impact training transfer at any time point. Short-answer responses highlighted time constraints and lack of management support as significant barriers to transfer.

Brinkerhoff and Montesino (1995) found a significantly higher level of training transfer among trainees who received supervisor support in a structured post-training intervention than among trainees who did not receive the supervisor interventions. Scaduto et al. (2008) surveyed 495 employees, and their findings supported the importance of leader-member exchange for

training transfer. Xiao (1996) identified that supervisor support was more influential than peer support or rewards among organizational variables that promote training transfer.

Hinrichs (2014) distinguishes between attitude-related and action-related support from superiors. While action-related support (discussion of practical application possibilities) predicts transfer success, attitude-related support (interest in application) lacks a direct significant influence. Additionally, Blume et al. (2010) assert that supervisor support exerts a more significant impact than colleague support on training transfer. Bhatti et al. (2013) advocated closer examination of various dimensions of social support from superiors and colleagues in future research.

In summary, social support, particularly from colleagues and supervisors, plays a crucial role in facilitating the transfer of training within organizational contexts. Studies have consistently highlighted the positive impact of peer support on training transfer, with research by Ng (2013) and Salamon et al. (2021) underscoring its significance, especially when multiple coworkers attend the same training. However, findings regarding the influence of supervisor support on training transfer are more varied. While some studies, such as those by Cromwell & Kolb (2004) and Scaduto et al. (2008), emphasize the importance of superior support, others, like Ng (2013) and Chiaburu & Marinova (2005), suggest a less significant role. Additionally, Hinrichs (2014) distinguishes between attitude-related and action-related support from superiors, highlighting the nuanced nature of this relationship. Moving forward, further research could delve into the various dimensions of social support from superiors and colleagues to understand their impact on training transfer.

Structural and Organizational Circumstances

Opportunity to use learned material refers to the extent participants are provided with the necessary resources to apply learned material after training sessions (Bates et al., 2000). Studies consistently demonstrate that positive training transfer is limited or absent when there is no opportunity to use training content at work, as discussed previously with Cromwell and Kolb (2004) and Ford et al. (1992). Renta-Davids et al. (2014) further confirmed that task variability positively influences training transfer, where diverse work tasks offer more opportunities for application.

The findings regarding commitment as a determinant of training transfer are inconsistent. For instance, Cheng's (2000) study of MBA students revealed a significant negative impact of commitment on learning motivation. Facticeau et al. (1995) surveyed 967 managers and supervisors and assessed fourteen constructs, confirming a positive relationship between commitment and learning motivation. Pidd (2004) also noted that participants' identification with the company influences social support's influence on training transfer.

Simosi (2012) distinguished between humanistic and achievement cultures, showing significant positive effects on transfer. Kontoghiorghes (2004) found that risk-taking, innovation-driven, and quality-driven cultures positively influence training transfer. Lim and Morris (2006) confirmed the positive influence of organizational climate on training transfer, including factors like reactions to change, learning support, transfer opportunities, and colleague feedback. Martin (2010) also demonstrated that a positive management attitude toward training programs enhances transfer rates. Egan et al. (2004) found positive impacts of learning culture integration and training alignment with company strategy on transfer motivation, respectively.

Studies examining structural and organizational aspects concerning training transfer are relatively limited in scope and focus (Tonhauser & Buker, 2016). There is a demand for more

research on the relationship between distinct determinants, including implementation opportunities, commitment, and organizational and learning cultures, and their impact on training transfer, particularly regarding organizational and learning cultures as antecedents.

Overall, the availability of opportunities to use learned material is crucial for achieving positive training transfer, as highlighted by studies such as those by Bates et al. (2000) and Renta-Davids et al. (2014). However, the relationship between commitment and training transfer remains inconsistent across various studies, with findings ranging from negative impacts to positive associations (Naquin & Holton, 2002; Tannenbaum & Yukl, 1992). Similarly, organizational and learning cultures play significant roles in shaping training transfer outcomes, with factors like humanistic cultures, innovation-driven environments, and positive management attitudes demonstrating positive effects (Cooke & Rousseau, 1988; Simosi, 2012). Despite these insights, research on structural and organizational aspects affecting training transfer remains limited, indicating a need for further exploration and an understanding of the interplay between different determinants and their influence on transfer outcomes.

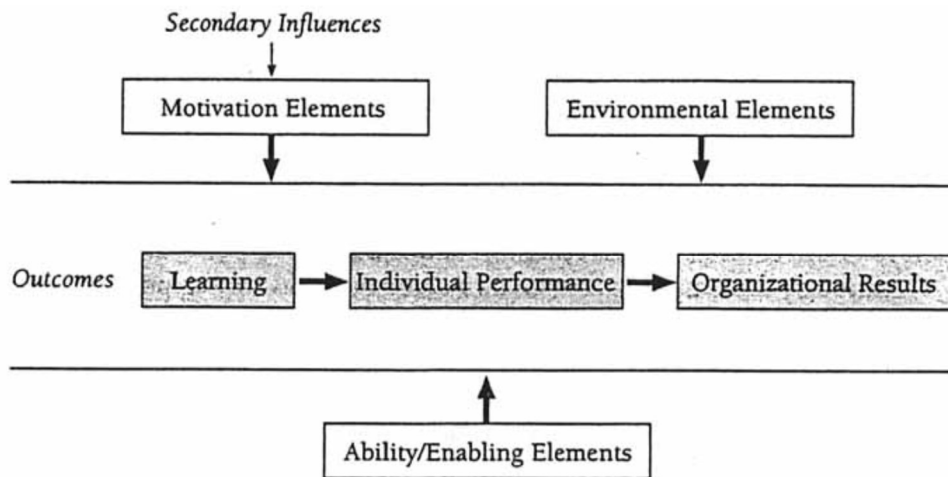
HRD Evaluation Research and Measurement Model

“Evaluation of interventions is among the most critical issues faced by the field of human resource development (HRD) today,” and due to global competition, HRD has been called on “to demonstrate that programs contribute directly to the organization’s bottom line” (Holton, 1996, p. 5). Holton (1996) labeled the then-current models for training evaluations as, at best, taxonomies implemented incompletely and have little empirical testing. Holton developed a conceptual model, Figure 2.2, illustrating learning, individual performance, and organizational results as three measurable learning outcomes desired in an HRD intervention. The conceptual evaluation model includes three secondary influences. Referring to Noe’s (1986) framework,

Holton identified ability, motivation, and environment as three primary intervening variables on the trainees' behavior in a training event.

Figure 2.2

Conceptual Evaluation Model

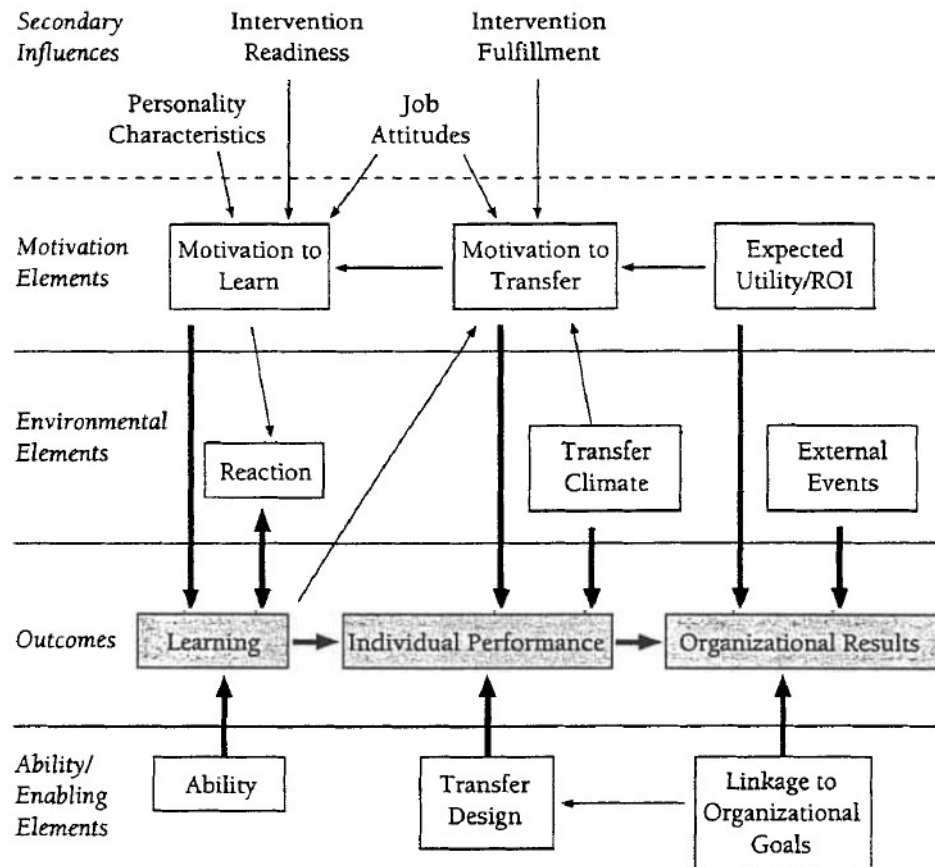


Note: Adapted from “The Flawed Four-Level Evaluation Model”, by E. F. Holton III, 1996, *Human Resource Development Quarterly*, 7(1). p. 9. (doi:10.1002/hrdq.3920070103). Copyright 1996 by Jossey-Bass Publishers.

Holton (1996) included a complete model outlining all hypothesized relationships, as shown in Figure 2.3 below. Holton (1996) identified primary intervening variables as ability, motivation to learn, reaction to learning, transfer design, motivation to transfer, transfer climate, expected utility, linkage to organizational objectives, and external events. Primary intervening variables have one arrow pointing to the specific outcome they affect. Holton (1996) identified secondary intervening variables as intervention readiness, job attitudes, personality characteristics, and intervention fulfillment. Secondary intervening variables have one or more arrows pointing to the primary intervening variable(s) they affect. The thick arrows indicate a primary relationship, whereas the lighter arrows indicate a secondary relationship. Holton (1996) called for future research to operationalize the variables and test the hypothesized relationships.

Figure 2.3

HRD Evaluation Research and Measurement Model



Note: Adapted from “The Flawed Four-Level Evaluation Model”, by E. F. Holton III, 1996, *Human Resource Development Quarterly*, 7(1). p. 17. (doi:10.1002/hrdq.3920070103). Copyright 1996 by Jossey-Bass Publishers.

Chapter 2 Summary

The exploration of training transfer reveals a multifaceted process influenced by various factors at the individual, training design, and organizational levels. Baldwin and Ford’s (1988) model laid the groundwork for understanding these complexities, emphasizing the importance of trainee characteristics, training design, and the work environment. Since then, scholars such as Ford (2021), Baldwin et al. (2017), and Holton (1996) have expanded our understanding,

shedding light on the nuanced interplay between different determinants and their impact on training transfer effectiveness.

At the individual level, factors such as motivation (Lee et al., 2014), cognitive abilities (Blume et al., 2010), self-efficacy (Wood & Bandura, 1989), and personality traits (Rowold, 2007) play crucial roles in shaping learning motivation, transfer motivation, and ultimately, the transfer of training. Understanding these individual-level determinants is essential for designing interventions that cater to learners' unique needs and enhance transfer outcomes.

Moreover, training design factors significantly influence transfer outcomes, including pre-training, during-training, and post-training measures (Saks & Belcourt, 2006). Aligning training content with workplace demands, providing opportunities for active application, and implementing relapse prevention strategies are crucial to fostering training transfer success (Machin, 2002; Weissbein et al., 2011).

At the organizational level, the work environment plays a pivotal role in facilitating or hindering training transfer (Rouiller & Goldstein, 1993). Social support from colleagues and supervisors (Bates et al., 2000), opportunities for implementing learned material (Cromwell & Kolb, 2004), and organizational and learning cultures (Simosi, 2012) significantly impact transfer climate and, ultimately, transfer effectiveness.

Despite significant progress in understanding training transfer, several gaps remain in the literature. Future research should focus on operationalizing theoretical frameworks, testing hypothesized relationships, and exploring emerging factors influencing transfer outcomes. Additionally, there is a need for more field-specific studies that examine the impact of methodological and didactic design elements on transfer effectiveness (Burke & Hutchins, 2007).

This review underscored the importance of considering individual characteristics, training design factors, and organizational environments in designing effective training programs and interventions. By addressing these factors comprehensively, practitioners and scholars can enhance training transfer and contribute to the broader goals of organizational learning and human resource development.

Chapter 3: Methods

This chapter describes the research questions, design, and methodology used in this study, including information regarding sample selection, data collection, description of the survey instruments, data analysis techniques, and expected findings. Based on a review of training transfer literature, a gap was identified to determine what factors influence training transfer intentions and behaviors (Cheng & Hampson, 2008).

The research study outlined below investigated motivation and ability factors to understand their potential to predict training transfer intentions and behaviors within a medical technology training program. The motivational factors included transfer effort, motivation to transfer, and performance outcome expectations. The ability factors included the opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design. The study comprehensively analyzed the interplay of these factors and their ability to predict the training transfer intentions and behaviors.

This study applied Baldwin and Ford's (1988) training transfer framework. It sought to understand motivational and ability factors from the Learning Transfer System Inventory (LTSI) (Holton et al., 2000) as predictors of training transfer intentions and behaviors (Machin & Fogarty, 2004; Al-Eisa et al., 2009). This sequential research design used quantitative research methodology with surveys as the data-collection method. Study participants were physicians, nurse practitioners, and physician assistants who voluntarily participated in a new provider training class or an efficiency training of an electronic health records system provided by the participating organization. The study's results will help healthcare organizations understand the factors most likely influencing training transfer intentions and behaviors. The results of this

research seek to provide organizations with information to create training programs that better support increased transfer and performance improvement levels.

Significance of the Study

Since Baldwin and Ford's (1988) seminal work, researchers have emphasized the persistent gap between training activities and their successful application in real-world contexts (Blume et al., 2010). Bridging this gap necessitates further research into factors propelling individuals' intentions and behaviors to transfer knowledge and skills acquired in training environments to their professional practice. Training transfer aims to enhance the trainee's effectiveness in the workplace by fostering the maintenance and generalization of acquired knowledge, skills, and attributes to improve overall performance (Blume et al., 2019).

Research Design

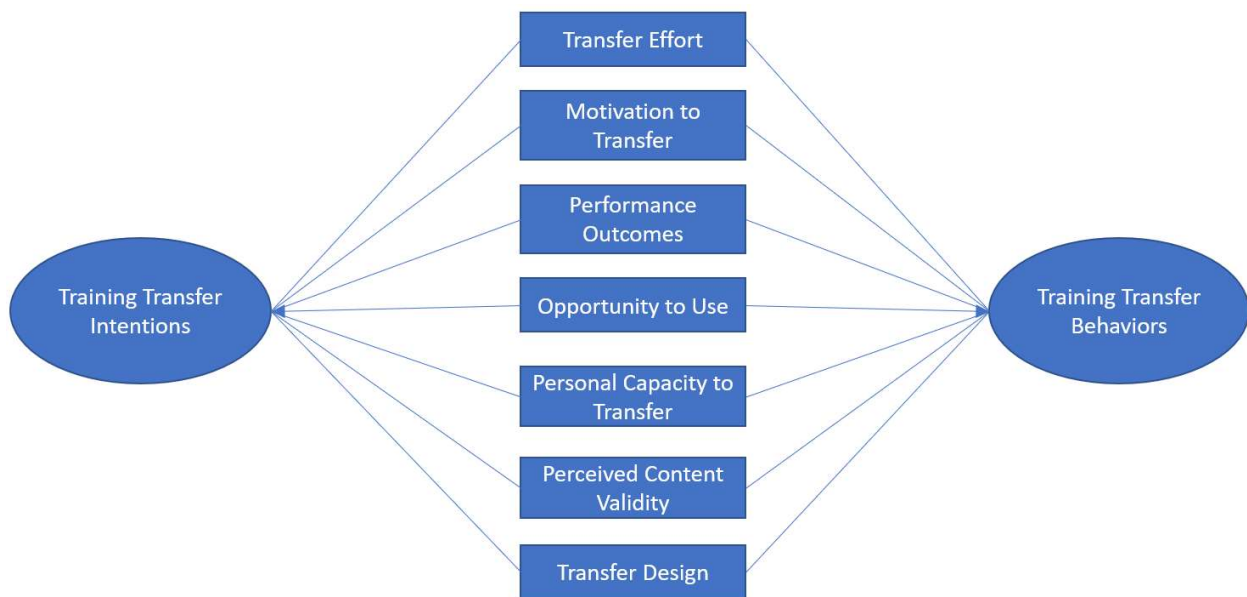
This study utilized quantitative research methodology by employing two multiple regression analyses using the motivation and ability factors of the LTSI to predict training transfer intentions and behaviors. The participants included medical doctors, physician assistants, and nurse practitioners who attended one of two learning events organized by the healthcare organization involved in the research. The sample was a convenience sample as all attendees of these training events were invited to participate in the study. The learning events shared a consistent curriculum and structure facilitated by medical doctors or an electronic health record trainer. The participating organization employs both students and faculty.

Participants responded to two surveys: the first survey combined an abbreviated version of the Learning Transfer System Inventory (LTSI) by Holton et al. (2000) and the Training Transfer Intentions questionnaire by Machin and Fogarty (2004). The second survey was the Training Transfer Behavior questionnaire adapted from Machin and Fogarty (2004). The first

survey was administered immediately following the training event. The survey consisted of seven factors of the LTSI: transfer effort, motivation to transfer, performance outcomes, opportunity to use, personal capacity to transfer, perceived content validity, and transfer design and the 12 questions from the Training Transfer Intentions questionnaire. The Training Transfer Behaviors questionnaire was administered approximately 30 days post-training. Figure 3.1 illustrates the research design used for this research.

Figure 3.1

Research Design



Research Questions and Hypotheses

This multiple regression study examined the potential influence of motivation and ability factors on training transfer intentions and behaviors within a medical technology training program. The research questions and hypotheses are as follows:

Research question 1 - Which motivational factors (transfer effort, motivation to transfer, performance outcome expectation) positively predict training transfer intentions in a medical technology training program?

H₁: Transfer Effort – Performance Expectation will positively predict training transfer intentions in a medical technology training program.

H₂: Motivation to transfer will positively predict training transfer intentions in a medical technology training program.

H₃: Performance Outcome Expectation will positively predict training transfer intentions in a medical technology training program.

Research question 2 - Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, transfer design) positively predict training transfer intentions in a medical technology training program?

H₄ – Opportunity to use learning will positively predict training transfer intentions in a medical technology training program.

H₅ – Personal Capacity to Transfer will positively predict training transfer intentions in a medical technology training program.

H₆ – Perceived Content Validity will positively predict training transfer intentions in a medical technology training program.

H₇ – Transfer Design will positively predict training transfer intentions in a medical technology training program.

Research question 3 - Which motivational factors (transfer effort, motivation to transfer, performance outcome expectation) positively predict training transfer behaviors in a medical technology training program?

H₈: Transfer Effort – Performance Expectation will positively predict training transfer behaviors in a medical technology training program.

H₉: Motivation to transfer will positively predict training transfer behaviors in a medical technology training program.

H₁₀: Performance Outcome Expectation will positively predict training transfer behaviors in a medical technology training program.

Research question 4 - Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, transfer design) positively predict training transfer behaviors in a medical technology training program?

H₁₁ – Opportunity to use learning will positively predict training transfer behaviors in a medical technology training program.

H₁₂ – Personal Capacity to Transfer will positively predict training transfer behaviors in a medical technology training program.

H₁₃ – Perceived Content Validity will positively predict training transfer behaviors in a medical technology training program.

H₁₄ – Transfer Design will positively predict training transfer behaviors in a medical technology training program.

Population and Sample

Convenience sample data were collected from participants attending either a new hire training event or a technical efficiency training event within the ambulatory setting of the healthcare organization. These participants comprised medical doctors, nurse practitioners, and physician assistants representing diverse specialties such as pediatrics, family medicine, and internal medicine.

Approximately 171 individuals voluntarily enrolled in the training events to enhance efficiency practices related to the organization's electronic health records system. All attendees

were given the opportunity to take part in the study. Of the 171 attendees, 108 completed the LTSI and Training Transfer Intentions questionnaire immediately following the training event; among those respondents, 82 completed the Training Transfer Behaviors questionnaire 30 days after the training event.

The training events, spanning one day for the new hire training or three days for the efficiency training, were meticulously designed to elevate participants' proficiency in utilizing the electronic health records system. The new hire training, conducted by an electronic health record trainer, included guided hands-on demonstrations and allotted time for students to build efficiency tools throughout the event. The efficiency training, conducted by medical doctors, featured short lectures, demonstrations, and allotted time for students to build efficiency tools throughout the event. The lecture sessions focused on strategies to facilitate habit change (Clear, 2018) and productivity enhancement techniques (Allen, 2001). The demonstration sessions lasted 10-15 minutes each, followed by varying amounts of time to engage in guided hands-on exercises tailored to each topic. Alternatively, students could explore other efficiency strategies deemed more relevant to their needs. Both learning events covered various topics essential for optimizing workflow efficiency, including the following:

- Organizing the InBasket for efficient message management.
- Utilizing QuickActions to streamline common responses to messages.
- Leveraging EZ and Speed buttons for quick access to common choices.
- Implementing Pre-charting to complete clinical documentation before patient encounters.
- Creating SmartPhrases to quickly insert commonly used words, sentences, or paragraphs into notes.

In the efficiency training, participants were grouped according to their specialties, such as dermatology, cardiology, and family medicine, allowing for targeted instruction and peer-to-peer learning. Each specialty group was led by a department technical lead, a medical doctor specializing in the respective field. This arrangement ensured that feedback and guidance provided to participants were specific to their specialty. Additionally, 2-3 electronic health record trainers offered ongoing support to all groups throughout the training. Participants were grouped in the new hire training based on their start dates.

Referencing Figure 3.2, which outlines the schedule for day one of the efficiency training events, it is essential to note that the listed times for the demonstrations include the demonstration and hands-on portions of the training sessions.

Figure 3.2

Example of the Efficiency Training Day One Schedule

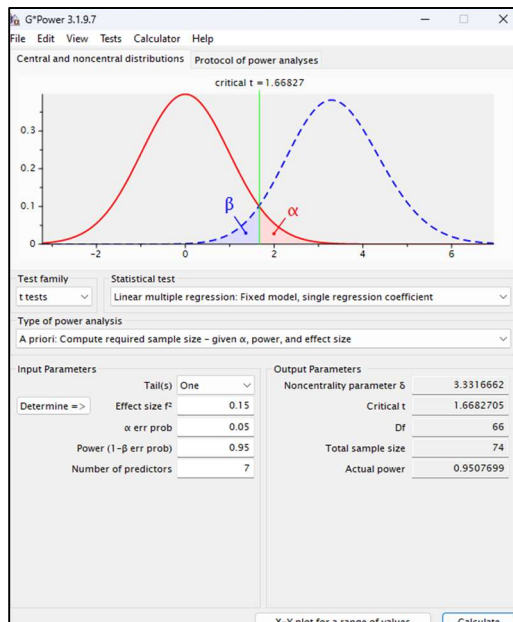
7:00 AM	8:00 AM	60	Breakfast	Workbook Pg.
8:00 AM	8:10 AM	10	CITE Welcome / Display setting to 100%	
8:10 AM	8:30 AM	20	Game Show	
8:30 AM	8:50 AM	20	CITE Intro PPT and Signal (Habit Change)	
8:50 AM	9:00 AM	10	Test patient and Break Out Group introductions	
9:00 AM	9:20 AM	20	In Basket: Efficiencies Overview	
			Hands On	
9:20 AM	9:35 AM	15	Break	
9:35 AM	10:05 AM	30	In Basket: Organize and Dedutter	pg. 12
			Hands On	
10:05 AM	10:30 AM	25	In Basket: Basic Message Management	pg. 17
			Hands On	
10:30 AM	10:50 AM	20	In Basket: System QuickActions (EZ Buttons)	pg. 24
			Hands On	
10:50 AM	11:05 AM	15	Break	
11:05 AM	12:00 PM	55	In Basket: Building Custom QuickActions	pg. 28
			Hands On	
12:00 PM	1:00 PM	60	Lunch - with Break Out Groups	
1:00 PM	1:15 PM	15	Welcome Back - Name that Tune	
1:15 PM	2:00 PM	45	In Basket: Deferring In Basket Items: Part I & II	pg. 36, pg 39
			Hands On	
2:00 PM	2:45 PM	45	Pre-Charting: The Basics	pg. 48
			Hands On	
2:45 PM	3:00 PM	15	Break	
3:00 PM	3:45 PM	45	Pre-Charting: Information Gathering	pg. 56
			Hands On	
3:45 PM	4:00 PM	15	End of Day Review & Quiz	
4:00 PM	4:15 PM	15	End of Day Reflection	

Power Analysis

A power analysis was completed using G*Power software (Faul et al., 2007). The analysis identified that 74 participants would be required to participate in this study. As the figure below shows, the calculation used multiple regression: Fixed model, single regression coefficient. The input factor included one tail, an effect size of .15, and seven predictors. 74 participants would achieve a power rating of .95.

Figure 3.3

*G*Power Analysis*



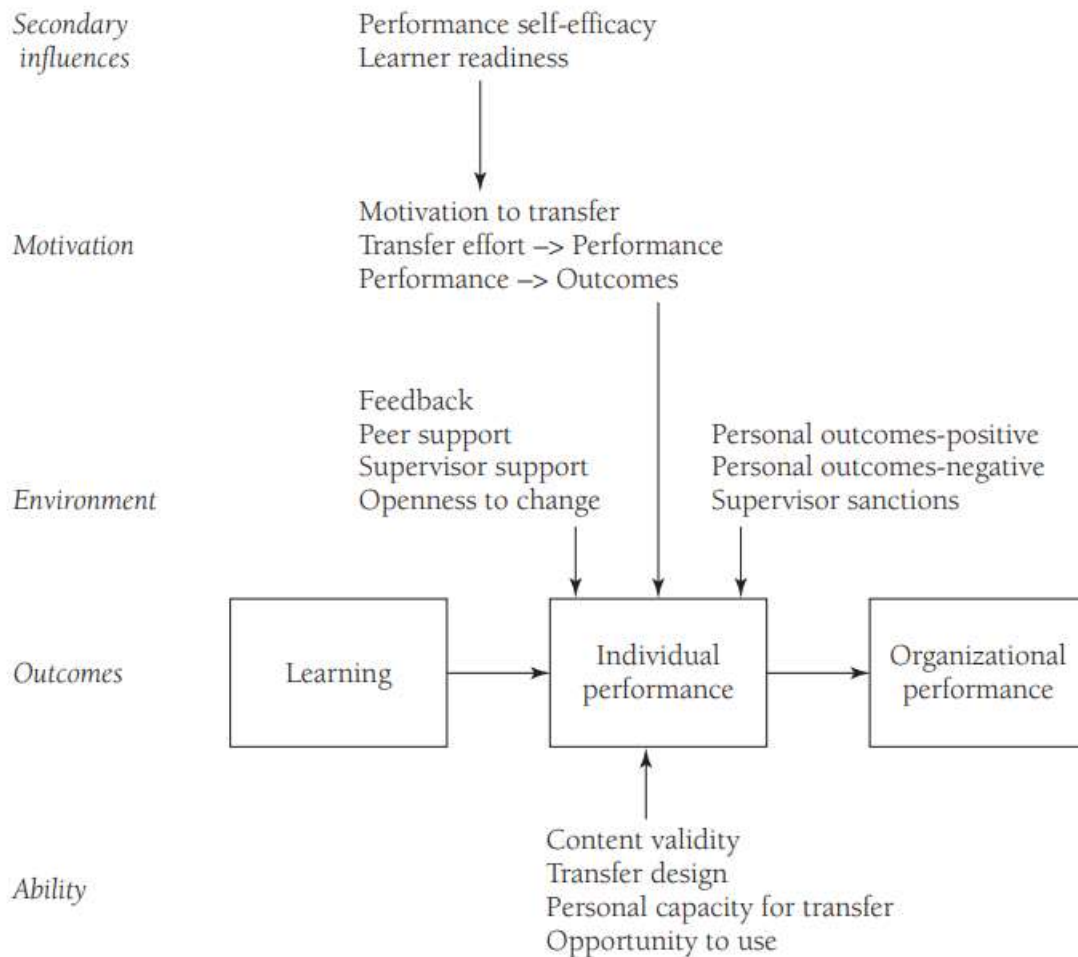
Instruments and Measurement

The LTSI was developed by Holton et al. (2000) and is widely utilized in human resource development to assess factors influencing the transfer of training and explore training effectiveness. The LTSI survey evaluates individual, training, and organizational transfer systems. The LTSI consists of sets of questions for four factors: motivation, work environment, ability, and trainee characteristics (also known as secondary influences) (Chen et al., 2005).

Within the four sets of factors are antecedents such as content validity, transfer design, opportunity use, personal capacity, transfer efforts, transfer performance, learner readiness, motivation to transfer, performance self-efficacy, supervisor support, supervisor sections, peer support, performance coaching, positive and negative personal outcomes, and resistance to change (Holton et al., 2000). Figure 3.4 illustrates the elements that affect the transfer of learning to individual performance.

Figure 3.4

Learning Transfer System Inventory: Conceptual Model of Instrument Constructs



Note: Adapted from “Development of a Generalized Learning Transfer System Inventory” by E. F. Holton, R. A. Bates, and W. E. A. Ruona, 2000, *Human Resource Development Quarterly*, 11(4), p. 239. Copyright 2000 by Jossey-Bass Publishers

This study's LTSI was modified to focus exclusively on the ability and motivation sets of factors. The questionnaire included 21 items; each rated on a 5-point Likert scale from strongly disagree (1) to strongly agree (5). The following are the LTSI questions used on the questionnaire for this study. The questions are grouped by the element they are associated with.

Motivation

Transfer effort-performance expectation:

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

Q The harder I work at learning, the better I do my job

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

Motivation to transfer:

Q This training will increase my personal productivity

Q When I leave this training, I cannot wait to get back to work to try what I have learned

Q I believe this training will help me do my current job better

Performance Outcomes:

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

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

Q My Job is ideal for someone who likes to be rewarded when they do something really good.

Ability

Opportunity to use learning:

Q I will be able to try out this training on my job

Q The resources needed to use what I have learned in this training will be available to me

Q I will get opportunities to use this training on the job

Personal capacity to transfer:

Q I do not have time to try to use this training on my job

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

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

Perceived content validity:

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

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

Q I like the way this training seems so much like my job

Transfer design:

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

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

Q The way that the trainer(s) taught the material made me feel more confident I could apply it to my job

The Training Transfer Intentions and the Training Transfer Behaviors questionnaire, adapted from Machin and Fogarty (2004), comprises 12 questions assessing the application of training transfer behaviors. The original questionnaire used by Machin and Fogarty was designed to identify intentions. Modifications were made to the questionnaire to identify training transfer behaviors that inquire about actual behavior rather than intentions. All questions are rated on a 7-

point Likert scale from strongly disagree (1) to strongly agree (7) and were averaged for a composite score. The following is a list of the Training Transfer Intentions questionnaire questions:

1. I will discuss with my supervisor ways to apply the material that I learned in this training program.
2. I will discuss with my co-workers ways to apply the material that I learned in this training program.
3. I will spend time thinking about how to use the skills I learned in this training program.
4. I will look for opportunities to use the skills that I learned.
5. I will review course materials in order to develop the skills that I have learned.
6. I will practice using the skills that I have learned.
7. I will set specific goals for maintaining the skills that I have learned.
8. I will seek expert help/advice in order to maintain the skills that I have learned.
9. I will monitor my success at using the skills I have learned.
10. I will use the knowledge and skills I learned in this training program on the job.
11. The knowledge and skills I learned in this training program are useful to me in my current role.
12. The knowledge and skills I learned in this training program will help me improve my job performance.

The following is a list of the Training Transfer Behaviors questionnaire questions:

1. I have discussed with my supervisor ways to apply the material that I learned in this training program.

2. I have discussed with my co-workers ways to apply the material that I learned in this training program.
3. I have spent time thinking about how to use the skills I learned in this training program.
4. I have looked for opportunities to use the skills that I learned.
5. I have reviewed course materials in order to develop the skills that I have learned.
6. I have practiced using the skills that I have learned.
7. I have set specific goals for maintaining the skills that I have learned.
8. I have sought expert help/advice in order to maintain the skills that I have learned.
9. I have monitored my success at using the skills I have learned.
10. I have used the knowledge and skills I learned in this training program on the job.
11. The knowledge and skills I learned in this training program are useful to me in my current role.
12. The knowledge and skills I learned in this training program have helped me improve my job performance.

Data Collection Method

Data collection for this study involved using two questionnaires. The first data collection, the LTSI and Training Transfer Intentions questionnaires, was administered immediately after the conclusion of the training event. The Training Transfer Behaviors questionnaire was administered through a link emailed to the participants three times, approximately 30 days after training. The first email was sent 25 days post-training with a request to complete the survey within two weeks. The other two emails were sent three days and 24 hours before the

questionnaire deadline, or days 36 and 38 post-training. All Training Transfer Behavior surveys used in this study were collected 25-39 days post-training.

Participants entered their name or NUID, an organizational unique identifier, on both surveys. After the Training Transfer Behavior surveys were received, a participant matching of the surveys was completed using the name or NUID of the participants included in the surveys. The participant's name or NUID was removed once the surveys were matched to ensure privacy. None of the individual data received from the surveys was provided to the participating organization with the participant's name or NUID.

Data Analysis Procedures

This study used two multiple regression analyses to identify how various independent variable values predict the dependent variable's corresponding values (Coolidge, 2021). It analyzed the relationships between multiple independent or explanatory factors (motivation and ability) and their ability to predict the dependent or response variables (training transfer intentions and behaviors). Since this study had multiple independent variables, two multiple regression analyses were performed (Coolidge, 2021).

Assumptions

In the context of this study on the influences of motivational and ability factors on training transfer intentions and behaviors within a medical technology training program, some assumptions and limitations provide the foundation for the research methodology. Below are the assumptions and limitations considered for this research:

History of validity of Survey Instruments: The study assumes that the LTSI (Holton et al., 2000) and the adapted Training Transfer Behaviors questionnaire (Machin & Fogarty, 2004; Al-Eisa et al., 2009) are valid measures for assessing motivational and ability factors and training

transfer intentions and behaviors. If the survey instruments do not effectively capture the intended constructs, the results may not accurately reflect the influence of motivational and ability factors on training transfer intentions and behaviors. An exploratory factor analysis by Holton et al. (2000) and Bates et al. (2012) resulted in a clean and interpretable factor structure. Cronbach's alpha reliability ranged from .63 to .91. Table 3.1 lists the reliability of the motivation and ability factors used in this study.

Table 3.1

LTSI Cronbach Reliability

		Holton et al, (2000)	Bates et al, (2012)
		Cronbach's alphas	
Motivation	Transfer Effort-Performance Expectation	0.81	0.75
	Motivation to Transfer	0.83	0.78
	Performance Outcomes	0.83	0.72
Ability	Opportunity to Use	0.70	0.79
	Personal Capacity to Transfer	0.68	0.78
	Perceived Content Validity	0.84	0.80
	Transfer Design	0.85	0.80

Consistency in Training Events: The study assumes that all learning events shared the same curriculum and structure and were facilitated by Medical Doctors or an electronic health records trainer, ensuring consistency across training experiences. Variability in the training events could introduce confounding factors that may impact the study's internal validity.

Limitations:

Volunteer Bias: The study's participants voluntarily attended an efficiency training event, potentially leading to bias. Some participants may volunteer or respond to questions in ways they believe will help or embarrass the researcher (Coolidge, 2021).

Survey Response Bias: The reliance on self-reported data through surveys may introduce response bias, where participants provide socially desirable responses or inaccurately represent their experiences (Podsakoff et al., 2003). The study's results may be influenced by participants' perceptions rather than objective measures of training transfer intentions and behaviors.

External Validity Concerns: This study focuses on a specific context, medical technology training within a healthcare organization, which may limit the external validity of the findings to other settings or industries. Generalizing the results beyond the healthcare context should be done cautiously, recognizing the potential differences in training environments.

Absence of a Control Group: Establishing the actual effect of the motivational and ability factors on training transfer is challenging without a control group, and alternative explanations cannot be ruled out.

Addressing these assumptions and limitations when discussing and interpreting the study's findings is crucial for comprehensively understanding the research's strengths and potential constraints.

Chapter 3 Summary

This study has endeavored to unravel the intricate dynamics of training transfer intentions and behaviors among healthcare professionals in the rapidly evolving field of medical technology. By exploring both motivational and ability factors, this research sheds light on the nuanced interplay influencing the successful application of knowledge and skills acquired during a medical technology training program.

Using Baldwin and Ford's (1988) training transfer framework, coupled with examining multiple motivational and ability factors from the LTSI (Holton et al., 2000), has provided a robust foundation for our research. Employing quantitative research methodology, we surveyed

physicians, nurse practitioners, and physician assistants who underwent new hire or efficiency training for electronic health records systems. The study's findings hold significant implications for healthcare organizations, offering insights into factors that can enhance training transfer, thereby contributing to increased performance improvement.

The research delved into the predictive relationships between motivational and ability factors and training transfer intentions and behaviors through rigorous data analysis, including multiple regression analysis. The research questions and hypotheses guided this analysis, focusing on motivational factors such as transfer effort, motivation to transfer, and performance outcome expectations, as well as ability factors including opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design.

The LTSI, Training Transfer Intentions, and the adapted Training Transfer Behaviors questionnaire results illuminated the complex landscape of factors influencing training transfer in the medical technology domain. This comprehensive exploration not only contributes to the academic understanding of training transfer but also provides actionable insights for healthcare organizations striving to optimize the impact of their training programs.

As the healthcare industry advances, the importance of seamlessly translating training into real-world practice becomes increasingly evident. This study's findings, rooted in empirical data and sound methodology, contribute to the ongoing dialogue surrounding effective training strategies in medical technology. In moving forward, the insights gleaned from this research can guide the refinement of training approaches, ultimately fostering a more adept and proficient healthcare workforce.

Chapter 4: Data Analysis and Results

This section presents the findings of the two multiple regression analyses conducted to examine the ability of motivational factors (transfer effort, motivation to transfer, and performance outcome expectation) and ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design) in predicting training transfer intentions and behaviors in a medical technology training program. The study was designed to answer four research questions:

Research Question 1: Which motivational factors (transfer effort, motivation to transfer, and performance outcome expectation) positively predict training transfer intentions in a medical technology training program?

Research Question 2: Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design) positively predict training transfer intentions in a medical technology training program?

Research Question 3: Which motivational factors (transfer effort, motivation to transfer, and performance outcome expectation) positively predict training transfer behaviors in a medical technology training program?

Research Question 4: Which ability factors (opportunity to use learning, personal capacity to transfer, perceived content validity, and transfer design) positively predict training transfer behaviors in a medical technology training program?

Description of Sample

Participants in this study included medical doctors, physician assistants, and nurse practitioners who attended either a one-day new hire technical training session or a three-day technical efficiency training event organized by the participating healthcare organization. A total

of 171 individuals were invited to participate in the study (73 attended the new hire training, 98 attended the technical efficiency training). Of those invited, 108 participants completed the first survey (49 attended the new hire training, 59 attended the technical efficiency training). Among these, 82 participants completed the second survey (34 attended the new hire training; 48 attended the technical efficiency training). The first multiple regression analysis included the participants (N=108) who completed the first survey immediately following the training event. The second multiple regression analysis included the participants (N = 82) who completed both the first and second surveys. The smaller population (N = 82) exceeded the minimum required sample size of 74, as determined by the power analysis.

Summary of Results

Research Question 1: Motivational Factors and Training Transfer Intentions

Which motivational factors (Transfer Effort-Performance Expectation, Motivation to Transfer, Performance Outcome Expectation) positively predict training transfer intentions?

Hypothesis 1

H₁: Transfer Effort – Performance Expectation will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that transfer effort was not a significant predictor of training transfer intention, thus there is no statistical evidence to support this hypothesis.

Hypothesis 2

H₂: Motivation to transfer will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that Motivation to Transfer was a significant predictor of training transfer intention, thus there was statistical evidence to support this hypothesis.

Hypothesis 3

H₃: Performance Outcome Expectation will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that performance outcome expectation was a significant predictor of training transfer intention, thus there was statistical evidence to support this hypothesis.

Research Question 2: Ability Factors and Training Transfer Intentions

Which ability factors (Opportunity to Use Learning, Personal Capacity to Transfer, Perceived Content Validity, Transfer Design) positively predict training transfer intentions?

Hypothesis 4

H₄ – Opportunity to use learning will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that the opportunity to use learning was not a significant predictor of training transfer intention, thus there is no statistical evidence to support this hypothesis.

Hypothesis 5

H₅ – Personal Capacity to Transfer will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that personal capacity to transfer was not a significant predictor of training transfer intention, thus there is no statistical evidence to support this hypothesis.

Hypothesis 6

H₆ – Perceived Content Validity will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that perceived content validity was not a significant predictor of training transfer intention, thus there is no statistical evidence to support this hypothesis.

Hypothesis 7

H₇ – Transfer Design will positively predict training transfer intentions in a medical technology training program.

The multiple regression analysis revealed that transfer design was a significant predictor of training transfer intention, thus there is statistical evidence to support this hypothesis.

Research Question 3: Motivational Factors and Training Transfer Behaviors

Which motivational factors (Transfer Effort-Performance Expectation, Motivation to Transfer, Performance Outcome Expectation) positively predict Training Transfer Behaviors?

Hypothesis 8

H₈: Transfer Effort – Performance Expectation will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that transfer effort was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Hypothesis 9

H₉: Motivation to transfer will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that motivation to transfer was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Hypothesis 10

H₁₀: Performance Outcome Expectation will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that performance outcome expectation was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Research Question 4: Ability Factors and Training Transfer Behavior

Which ability factors (Opportunity to Use Learning, Personal Capacity to Transfer, Perceived Content Validity, Transfer Design) positively predict Training Transfer Behaviors?

Hypothesis 11

H₁₁ – Opportunity to use learning will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that the opportunity to use learning was a significant predictor of training transfer behaviors, thus there is statistical evidence to support this hypothesis.

Hypothesis 12

H₁₂ – Personal Capacity to Transfer will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that personal capacity to transfer was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Hypothesis 13

H₁₃ – Perceived Content Validity will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that perceived content validity was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Hypothesis 14

H₁₄ – Transfer Design will positively predict training transfer behaviors in a medical technology training program.

The multiple regression analysis revealed that transfer design was not a significant predictor of training transfer behaviors, thus there is no statistical evidence to support this hypothesis.

Details of Analysis and Results

The two multiple linear regression analyses examined the assumptions of normality, linearity, homoscedasticity, and independence of residuals. A visual inspection of residual plots and histograms (see appendix, Figures 1-4) indicated no severe violations. Multicollinearity was also assessed using the Variance Inflation Factor (VIF) values, ranging from 1.13 to 3.62, indicating no significant concerns regarding multicollinearity.

Multiple Regression Analysis Summary of Training Transfer Intentions

The first multiple linear regression was conducted with 108 participants to examine whether transfer effort, motivation to transfer, performance outcomes, opportunity to use, personal capacity, perceived content validity, transfer design, gender, training modality (in-person or virtual), and training duration (three-day or one-day) significantly predicted training transfer intentions. The overall model was statistically significant and explained approximately 43.6% of the variance in training transfer intentions, with a correlation coefficient of $R = .66$, $R^2 = .44$, an adjusted R^2 of .38, and a standard error of .43. This suggests that the model had moderate explanatory power and that the included predictors meaningfully account for differences in participants' intent to apply learned skills on the job.

Descriptive Statistics of Training Transfer Intentions

Descriptive statistics were calculated to examine central tendencies and variability across the study's key variables (see Appendix, Table 1). Participants reported relatively high intentions to transfer training ($M = 5.99$, $SD = 0.55$), indicating a strong willingness to apply newly acquired skills or knowledge. Similarly, mean scores for motivation to transfer ($M = 4.44$, $SD = 0.55$) and transfer effort ($M = 4.39$, $SD = 0.62$) suggest moderate to high motivation and effort to apply what was learned.

Perceptions of transfer design ($M = 4.51$, $SD = 0.48$) and content validity ($M = 4.24$, $SD = 0.57$) were also favorable, indicating participants generally viewed the training structure and material as conducive to training transfer. Participants reported opportunities to use what they learned ($M = 4.66$, $SD = 0.41$). In contrast, performance outcome expectations were somewhat lower ($M = 3.66$, $SD = 0.57$), suggesting a more neutral view of the benefits of applying training content.

As expected, personal capacity ($M = 1.88, SD = 0.69$) was rated lowest among predictors. The low rating is due to the structure of the questions. For example, Q16 is “I do not have time to try to use this training on my job”. A low rating in response to this question indicated that participants did not agree with the statement, meaning they were positive that they would have the time to use the training in their job.

Demographically, the sample was predominantly female (69%; $M = 0.69, SD = 0.46$). The training modality was approximately evenly split, with 45% attending virtually ($M = 0.45, SD = 0.50$) and 55% attending in person. Regarding duration, 36% completed a 1-day program ($M = 0.36, SD = 0.48$), while the majority of participants attended the 3-day format.

Correlational Analysis of Training Transfer Intentions

Pearson correlations were computed to examine relationships among transfer intentions, motivational factors, contextual support, and transfer design perceptions (see appendix, Table 2).

Training transfer intentions correlated positively and significantly with several predictors. Transfer design showed the strongest positive association ($r = .54, p < .001$), indicating participants who perceived supportive transfer structures were more likely to intend to apply what they learned. Perceived content validity ($r = .40, p < .001$), motivation to transfer ($r = .39, p < .001$), opportunity to use the training ($r = .35, p < .001$), and performance outcome expectations ($r = .33, p < .001$) were also moderately associated with transfer intentions.

A smaller but significant relationship was found between transfer effort and intentions ($r = .24, p = .006$), suggesting that greater effort during training was linked to stronger transfer intentions. Personal capacity correlated negatively with transfer intentions ($r = -.22, p = .012$), suggesting that perceived workload or time constraints may inhibit motivation to transfer learning.

Demographic and delivery format variables were mostly unrelated to transfer intentions, except for the training duration (1-day vs. 3-day), which showed a modest negative correlation ($r = -.17, p = .044$). This suggests participants in the 3-day format tended to report slightly higher intentions to transfer.

Anova Analysis of Training Transfer Intentions

Analysis of variance indicated the regression model (see Appendix, Table 3) significantly predicted training transfer intentions, $F(10, 97) = 7.51, p < .001$. This confirms that the combined predictors explained a significant portion of variance beyond chance.

Coefficients: Training Transfer Intentions

Regression coefficients (see Appendix, Table 4) revealed three predictors with statistically significant unique contributions:

- Motivation to transfer significantly predicted transfer intentions, $B = 0.257, SE = 0.097, \beta = .26, t = 2.65, p = .010$.
- Performance outcomes significantly predicted transfer intentions, $B = 0.249, SE = 0.081, \beta = .26, t = 3.06, p = .003$.
- Transfer design was the strongest predictor, $B = 0.414, SE = 0.123, \beta = .37, t = 3.36, p = .001$.

Personal capacity approached significance, $B = -0.128, SE = 0.066, \beta = -.16, t = -1.94, p = .056$. With a result only slightly above the p-value of .05, this may warrant further exploration. Other predictors, including transfer effort, opportunity to use, perceived content validity, gender, training modality, and training duration, did not uniquely predict transfer intentions ($ps > .05$). Multicollinearity diagnostics indicated no concerns, with tolerance values $> .25$ and variance inflation factors < 4.0 .

Residual Diagnostics of Training Transfer Intention

Residual diagnostics (see Appendix, Table 5) supported the validity of regression assumptions. Standardized residuals ranged from -3.89 to 2.17, with one case slightly exceeding ± 3.0 , indicating a potential outlier; however, Cook's Distance values were low (maximum = 0.12), suggesting no undue influence on the model. Leverage values ranged from .02 to .58 (mean = .09), with none surpassing critical thresholds. Though their influence was minimal, Mahalanobis distances ranged from 2.48 to 61.51, indicating one or more potential multivariate outliers. Visual inspection of the residual plots suggested homoscedasticity and approximate normality, supporting the model's adequacy.

Hypothesis Summary:

The multiple regression analysis supports H₂ (Motivation to Transfer), H₃ (Performance Outcome Expectation), and H₇ (Transfer Design) as significant predictors of training transfer intentions. These findings suggest that when trainees are motivated, expect positive performance outcomes, and perceive the transfer design to be well-structured, their intentions to apply what they have learned increase.

Hypotheses H₁ (Transfer Effort), H₄ (Opportunity to Use), H₅ (Personal Capacity), and H₆ (Perceived Content Validity) were not supported, as these variables did not significantly predict intentions in the full model.

Multiple Regression Analysis Summary of Training Transfer Behaviors

A second multiple linear regression was conducted with 82 participants to examine whether transfer effort, motivation to transfer, performance outcomes, opportunity to use, personal capacity, perceived content validity, transfer design, gender (0 = male, 1 = female), training modality (0 = in-person, 1 = virtual), training duration (0 = three-day, 1 = one-day), and

training transfer intentions significantly predicted training transfer behaviors. The overall model was statistically significant and explained approximately 52.7% of the variance in training transfer behaviors, with a correlation coefficient of $R = 0.73$, $R^2 = 0.53$, adjusted $R^2 = 0.45$, and standard error of 0.60. This indicates a strong collective relationship between the predictors and the outcome variable. The standard error of the estimate was 0.60, suggesting a moderate level of residual variability in observed scores not accounted for by the model.

Descriptive Statistics of Training Transfer Behaviors

Descriptive statistics (see Appendix, Table 6) were calculated to examine central tendencies and variability across key study variables related to training transfer behaviors and associated factors. Participants reported moderately high levels of training transfer behaviors, with a mean score of 5.52 ($SD = 0.81$), indicating that, on average, participants frequently applied learned skills on the job. Transfer effort ($M = 4.35$, $SD = 0.65$) and motivation to transfer ($M = 4.41$, $SD = 0.58$) were also moderately high, suggesting that participants generally put forth effort and were motivated to use training content in practice.

Perceptions of training characteristics were consistently favorable, with mean scores indicating positive views of opportunity to use training ($M = 4.65$, $SD = 0.39$), perceived content validity ($M = 4.24$, $SD = 0.61$), and transfer design ($M = 4.49$, $SD = 0.49$). Performance outcomes expectations were somewhat lower ($M = 3.64$, $SD = 0.58$), reflecting a more neutral or moderate expectation of the benefits from applying the training. Again, as expected, personal capacity showed the lowest mean score ($M = 1.89$, $SD = 0.65$),

Demographically, the majority of the sample identified as female (72%), and participation was relatively balanced between virtual (51%) and in-person (49%) training

modalities. Additionally, 41% of participants completed a one-day training program, with the remainder attending the three-day format.

These descriptive findings indicate that while participants generally demonstrated strong intentions and motivation to transfer training and perceived the training environment positively, personal capacity constraints may still limit the actual enactment of transfer behaviors.

Correlational Analysis of Training Transfer Behaviors

Pearson correlations were computed to examine the relationships among transfer intentions, motivational factors, contextual support, and perceptions of transfer design (see appendix, Table 7).

Training transfer behaviors were most strongly associated with training transfer intentions ($r = .652, p < .001$), followed by significant correlations with transfer design ($r = .483, p < .001$) and perceived content validity ($r = .476, p < .001$). These findings underscore the importance of how training is designed and perceived in shaping behavioral outcomes.

Motivation to transfer ($r = .278, p = .006$) also showed a meaningful positive association. In contrast, transfer effort had a smaller, nonsignificant correlation ($r = .134, p = .116$), suggesting that while effort is related to intention, it may not directly translate into behavior without other supports. As expected, due to the question structure, personal capacity was negatively correlated with transfer behaviors ($r = -0.148, p = 0.093$). Demographic and delivery format variables (gender, training modality, and training duration) showed no significant associations with transfer behavior ($p > .05$), suggesting that motivational and design-related factors more strongly influenced behavioral outcomes than the method or timing of the training delivery.

Anova Analysis of Training Transfer Behaviors

Analysis of variance (see appendix, Table 8) indicated the regression model significantly predicted training transfer behaviors, $F(11, 70) = 7.10, p < .001$. This confirms that the combined predictors explained a significant portion of the variance.

Coefficients of Training Transfer Behaviors

Regression coefficients (see Appendix, Table 9) revealed two significant predictors of training transfer behaviors:

- Training Transfer Intentions was the strongest predictor of transfer behavior, $B = 0.475$, $SE = 0.113$, $\beta = .46$, $t = 4.21$, $p < .001$.
- Opportunity to Use significantly predicted behaviors, $B = 0.378$, $SE = 0.144$, $\beta = .25$, $t = 2.63$, $p = .011$.

These findings suggest that higher levels of transfer behavior are associated with both a strong intention to transfer and opportunities to apply the learned skills.

Motivation to Transfer approached significance ($B = 0.278$, $SE = 0.143$, $\beta = .18$, $t = 1.94$, $p = .056$), suggesting a possible influence, though inconclusively. Other predictors, including transfer effort, performance outcome expectations, personal capacity, perceived content validity, transfer design, gender, training modality, and duration, did not significantly predict transfer behavior in this model ($ps > .05$).

Multicollinearity diagnostics revealed no concerns, with all tolerance values exceeding 0.25 and variance inflation factors remaining below 4.0.

Residual Diagnostics on Training Transfer Behaviors

Residual diagnostics (see Appendix, Table 10) indicated no major violations of regression assumptions. Standardized residuals ranged from -2.54 to 2.69 , within acceptable

limits, with no values exceeding ± 3.0 . Cook's Distance values were low (maximum = 0.12), suggesting no influential cases. Leverage values ranged from .03 to .31 (mean = .14), and Mahalanobis distances ranged from 2.14 to 36.77, with no values indicating undue influence. Residual scatterplots and normal probability plots indicated approximate homoscedasticity and normality of residuals, supporting the model's adequacy.

Hypothesis Summary

In addition to supporting training transfer intentions as a predictor of training transfer behaviors, the multiple regression analysis supports Opportunity to Use (H_{11}) as a significant predictor of training transfer behavior. These findings reinforce the idea that intention to transfer acts as a proximal antecedent of behavior, and that the opportunity to apply new skills is crucial for actual transfer to occur.

While H_9 (Motivation to Transfer) approached significance ($p = .056$), it did not meet the traditional threshold for statistical significance in this model. Therefore, H_9 is not confirmed for behavior, though it may warrant further investigation.

Hypotheses H_8 (Transfer Effort), H_{10} (Performance Outcomes), H_{12} (Personal Capacity), H_{13} (Content Validity), H_{14} (Transfer Design), and the demographic/training structure variables were not supported as predictors of behavior in this model.

Post-Hoc Group Comparisons - Independent Samples t-Tests on Training Transfer

Intentions and Training Transfer Behaviors

Independent samples t-tests were conducted to examine group differences in training transfer intentions and training transfer behaviors based on gender (male vs. female), training modality (in-person vs. virtual), and training duration (three-day vs. one-day). Assumptions of homogeneity of variances were tested using Levene's test and met for all comparisons.

Gender Differences

There were no statistically significant differences between males ($n = 23$) and females ($n = 59$) on training transfer intentions ($t(80) = 1.12, p = .267$), with males ($M = 6.02, SD = 0.54$) and females ($M = 5.87, SD = 0.53$) showing similar scores. The effect size was small to moderate (Cohen's $d = 0.53$), indicating a negligible practical difference.

Similarly, training transfer behaviors did not significantly differ between males ($M = 5.71, SD = 0.80$) and females ($M = 5.44, SD = 0.81$), $t(80) = 1.34, p = .183$. The effect size was moderate (Cohen's $d = 0.81$), but the difference was not statistically significant.

Training Modality Differences (In-Person vs. Virtual)

Comparisons between in-person ($n = 40$) and virtual ($n = 42$) training groups revealed no significant differences in training transfer intentions, $t(80) = 0.77, p = .441$. The means were close, with in-person participants ($M = 5.96, SD = 0.55$) and virtual participants ($M = 5.87, SD = 0.52$) showing similar intentions. The effect size was small (Cohen's $d = 0.54$).

Training transfer behaviors were also comparable between in-person ($M = 5.51, SD = 0.80$) and virtual ($M = 5.53, SD = 0.83$) groups, $t(80) = -0.08, p = .933$, with a negligible effect size (Cohen's $d = 0.41$).

Training Duration Differences (Three-Day vs. One-Day)

Participants trained over three days ($n = 48$) and one day ($n = 34$) showed no statistically significant differences in training transfer intentions, $t(80) = 1.17, p = .244$ (see Tables 23-25). The three-day group ($M = 5.97, SD = 0.53$) had slightly higher intentions than the one-day group ($M = 5.83, SD = 0.53$), with a small to moderate effect size (Cohen's $d = 0.53$).

Likewise, no significant differences were observed in training transfer behaviors between the three-day ($M = 5.55$, $SD = 0.78$) and one-day ($M = 5.47$, $SD = 0.86$) groups, $t(80) = 0.45$, $p = .656$, despite a moderate effect size (Cohen's $d = 0.54$).

Post-Hoc Summary

Across all group comparisons, no statistically significant differences were found for training transfer intentions and training transfer behaviors based on gender, training modality, or training duration. Effect sizes ranged from small to moderate but did not correspond to significant group differences, suggesting that these demographic and training delivery variables may not substantially impact transfer outcomes in this sample.

Discussion of Findings and Conclusion

The results suggest that key motivational and design-related factors significantly influence training transfer outcomes. Specifically, motivation to transfer, performance outcomes, and transfer design emerged as important predictors of training transfer intentions. Additionally, opportunity to use and training transfer intentions were identified as predictors of training transfer behaviors. These findings underscore the importance of fostering both individual motivation and supportive transfer design, as well as ensuring that learners have opportunities to apply new skills in the workplace to maximize the effectiveness of training programs.

The results of this study align with previous research that emphasizes the role of motivation to transfer, performance outcome expectation, transfer design, and opportunity to use in enhancing training transfer. The significant effect of motivation to transfer supports previous literature highlighting the importance of trainee engagement and self-determination in applying learned skills. Similarly, transfer design's impact reinforces the argument that well-structured, applicable training programs enhance transfer outcomes.

However, contrary to expectations, transfer effort, personal capacity to transfer, and perceived content validity were not significant predictors of either training transfer intentions or behaviors. This finding suggests that factors such as organizational support, workplace culture, and external reinforcements may mediate or moderate the relationship between these factors and training transfer. Future research should explore these dynamics in greater depth.

The statistical results presented in this chapter offer clear evidence regarding which motivational and ability-related factors significantly predict training transfer intentions and behaviors among healthcare professionals. While certain variables, such as motivation to transfer, performance outcome expectations, and transfer design, emerged as significant predictors of intentions, only opportunity to use and intentions themselves significantly predicted behavior. These patterns not only affirm the importance of internal and external factors in shaping transfer outcomes but also highlight the complex, and at times inconsistent, pathways through which learning translates into workplace application. The following chapter will interpret these findings in the context of existing literature and theoretical frameworks, identify implications for practice and research, and offer recommendations for improving the design and implementation of effective training programs.

Chapter 5: Discussion and Conclusion

Developing employees through training is one of an organization's key strategies to remain competitive in dynamic environments (Adler & Kwon, 2002). However, to truly evaluate the effectiveness of training programs, organizations must look beyond classroom performance and assess whether employees successfully generalize and maintain the learned behaviors in their actual work settings (Blume et al., 2009).

In response to this challenge, this study examined whether motivation and ability factors could predict training transfer intentions and behaviors among healthcare professionals who completed a medical technology training program. This study collected data from 108 participants who attended a one-day onboarding session or a three-day technical efficiency training. The participating healthcare organization designed and delivered both of the training events.

This chapter discusses the study's findings in detail and integrates them with relevant literature on training transfer. It also outlines the findings' theoretical and practical implications, identifies the current study's limitations, and offers recommendations for future research.

Summary of the Study

Participants in this study included medical doctors, physician assistants, and nurse practitioners who attended either a one-day new hire technical training session or a three-day technical efficiency training event organized by the participating healthcare organization. The researcher invited 171 individuals who participated in the training events to participate in this study. Of those invited, 108 participants completed the first survey. Among the 108 participants, 82 completed both the first and second surveys. The researcher conducted the first multiple

regression analysis using the 108 participants who completed the post-training survey. The second multiple regression analysis included the 82 participants who completed both surveys.

The initial results from multiple regression show that motivation to transfer (H2), performance outcome expectation (H3), and transfer design (H7) are significant predictors of training transfer intentions. This indicates that employees are more likely to intend to apply the training when they are motivated to transfer, anticipate better performance results, and see the transfer design as effective. However, the model did not find transfer effort (H1), opportunity to use (H4), personal capacity (H5), or perceived content validity (H6) to be significant predictors. This emphasizes the need for further research to explore the roles of these factors in training transfer.

For training transfer behaviors, the second multiple regression analysis confirms that training transfer intentions and the opportunity to use (H11) significantly predict training transfer behaviors. The results of this study highlight the importance of both the intention to apply learning and the availability of opportunities to use the training in the trainee's real work environments. Motivation to transfer (H9) approached significance ($p = .056$) but did not meet the threshold, suggesting a potential influence, and further research could clarify this. Other variables, transfer effort (H8), performance outcomes (H10), personal capacity (H12), content validity (H13), and transfer design (H14), did not significantly predict training transfer behavior.

Additional post hoc analyses examined whether gender, training modality, or training duration influenced transfer outcomes. Participants who attended three-day ($n = 48$) and one-day ($n = 34$) sessions did not significantly differ in training transfer intentions, $t(80) = 1.17$, $p = .24$, or in behaviors, $t(80) = 0.45$, $p = .66$. Although the three-day training group reported slightly higher mean scores on intention and behavior outcomes, the effect sizes were small to moderate

(Cohen's $d = 0.53$ for intentions; $d = 0.54$ for behaviors), indicating limited practical significance. Regarding gender, males ($n = 23$) and females ($n = 59$) showed no statistically significant differences in training transfer intentions, $t(80) = 1.12$, $p = .27$, or in training transfer behaviors, $t(80) = 1.34$, $p = .18$. Finally, training modality, in-person ($n = 40$) and virtual ($n = 42$), did not differ significantly in training transfer intentions, $t(80) = 0.77$, $p = .44$, or in training transfer behaviors, $t(80) = -0.08$, $p = .93$.

Discussion of the Results

This section discusses the predictive relationships between key variables and training transfer intentions and behaviors. Drawing from the Learning Transfer System Inventory (LTSI) framework, this analysis grouped the factors into motivation and ability categories. This section will review each factor's impact on training transfer intentions and training transfer behaviors in detail. The following subsections present a focused discussion of each group of factors and their relevance to the training transfer process in the healthcare context examined in this study.

Motivation Factors

This section explores the three key motivation predictors examined in this study: transfer effort, motivation to transfer, and performance outcome expectations. The training transfer literature has widely discussed these factors as influential in determining whether learning is successfully applied in the workplace. However, the findings from this study reveal a nuanced picture of how these predictors operate within high-pressure healthcare environments. While motivation to transfer and performance outcome expectations significantly predicted training transfer intentions, neither factor predicted transfer behaviors. This finding could result from the gap between intention and action observed in prior research. In contrast, transfer effort did not

emerge as a significant predictor of either intentions or behaviors, prompting a closer look at how effort is expressed and measured in real-world settings.

Together, these results suggest that while internal motivational factors play a key role in the learner's desire to transfer learning, the influence on actual behavior is limited without additional support. The following sections discuss each factor in greater detail.

Transfer effort

This study found that transfer effort was not a statistically significant predictor of training transfer intentions or behaviors. Despite literature support for the construct, the transfer effort's lack of predictive power within this study invites additional examination of how transfer effort manifests in applied settings and what contextual variables may mediate its influence.

One possible explanation is that transfer effort was present but not sufficiently targeted. In high-pressure environments like healthcare, professionals often spend energy managing clinical demands, administrative tasks, and interpersonal interactions. The effort involved in multitasking might obscure or weaken the specific effort required to apply newly learned behaviors. Brown et al. (2014) argued that learning transfer requires "desirable difficulty", or effort focused on cognitively demanding tasks that promote long-term retention and application. It is possible that participants confused general work effort with transfer-specific effort, which could reduce the clarity of its behavioral impact.

The study's findings suggest that exerting effort may not be enough to initiate training transfer without structured reinforcement and planning. Gollwitzer's (1999) research on intentions highlights that detailed action plans, such as when, where, and how to implement learned behaviors, can turn motivation into observable performance. Gollwitzer indicated that without action plans, even highly motivated trainees may not demonstrate effort in their

workplace. This finding aligns with Friedman and Ronen's (2015) study, which showed that trainees with explicit transfer plans exhibited higher post-training performance than those with only general goals.

Huang et al. (2016) stated that the trainee's self-efficacy often influences initial effort after a training event, while their ongoing transfer effort is driven by long-term motivation. This study did not focus on post-training support. However, an absence of post-training support or follow-up may have impacted the participants' effort to transfer over time, even if their initial motivation was high. Therefore, the learner's transfer effort may decline without supervisor or peer support.

Sparr et al.'s (2017) research indicates that transfer effort is enacted informally through reflection, feedback-seeking, and peer modeling. These behaviors are difficult to measure through conventional research tools, which could partially account for the null findings in this study. Enos et al.'s (2003) study found that managers who pursued informal practice and learning opportunities demonstrated a higher level of transfer. These findings suggest that effort is not always overt or easily quantified.

The lack of significant findings related to transfer effort does not imply that it is unimportant, but it suggests that measurement limitations may limit its role. Future research should explore how transfer effort unfolds over time, interacts with environmental variables, and expresses itself through informal learning pathways. More longitudinal studies may be required to fully understand the transfer effort's impact on transfer outcomes.

Motivation to transfer

Motivation to transfer was identified as a predictor of transfer intentions, yet motivation to transfer did not reliably predict training transfer behaviors. This disconnect reflects the

intention–behavior gap identified by Sheeran (2002), who stated that although intentions correlate with behavior, a substantial portion of behavioral variance remains unexplained.

The Theory of Planned Behavior (TPB) offers a valuable lens to interpret these findings better. Fishbein and Ajzen (2010) and Ajzen (1991) propose that three components, attitudes toward the behavior, subjective norms, and perceived behavioral control, shape behavioral intentions. In workplace learning, even trainees who intend to apply their training may be influenced by social expectations, internal attitudes about relevance, and perceived control over their work environment.

Another key influence that could be a factor is self-efficacy, the belief in one's ability to apply learned skills in real-world environments. Bandura (1977) asserts that self-efficacy is a foundational component of behavior. Saks and Belcourt (2006) found that trainees with a higher level of self-efficacy were significantly more likely to transfer newly acquired skills. Seyler et al. (1998) and Mathieu et al. (1992) identified a connection between the trainee's confidence in the training environment and their motivation to transfer the new learning to their job. One promising strategy to enhance this transfer is the use of transfer intentions. Gollwitzer (1999) and Sheeran et al. (2005) found that when individuals specify how and when they will perform a behavior, they are more likely to follow through. Creating a training design that supports this idea can make a real difference in training settings. For example, Friedman and Ronen (2015) showed that sales managers who used these specific plans demonstrated stronger transfer after training than those relying only on general motivation.

These insights suggest that motivation to transfer is a multidimensional construct: it must be supported by confidence, contextual control, and tangible behavioral planning. Training

programs that foster self-efficacy and encourage post-training action planning may be better equipped to convert intent into lasting performance gains.

Performance outcome expectations

Performance outcome expectations significantly predicted training transfer intentions but not training transfer behaviors. Performance outcome expectations' ability to predict transfer intentions is consistent with previous studies by Bates et al. (2000) and Velada and Caetano (2007), who emphasized that trainees who expect training to enhance their job performance are more likely to form strong transfer intentions to apply the skills and knowledge they learned. These study results reinforce the idea that the perceived value of training drives the learner's intention to transfer training, though not necessarily putting it into action when they return to the workplace.

The performance outcome expectation finding aligns with Vroom's (1964) expectancy theory. Expectancy theory indicates that individuals are motivated to act when they see a clear connection between their effort, performance, and desirable results. According to Mathieu et al. (1992), this connection strengthens when trainees find the outcomes personally meaningful. In this context, performance outcome expectations represent a type of expected valence that drives motivation to transfer.

However, as Lim and Morris (2006) noted, performance outcome expectations may not lead to actual behavior if the work environment does not support the application of new skills. This study's findings reflect that difference, emphasizing that motivation factors can act as precursors to behavior but do not guarantee behavior changes. Workplace support such as opportunities to apply skills, feedback, and reinforcement are essential for training transfer.

These findings suggest that while performance outcome expectations play a crucial role in shaping the trainees' intentions to transfer their new skills and knowledge, performance outcome expectations are not sufficient on their own to ensure actual behavior change. The alignment with expectancy theory and other studies helps underscore the importance of perceived value in motivating intention. The lack of this study's finding on the predictability between performance outcome expectation and training transfer behaviors could be caused by the gap between the trainee's intention to transfer and their actual behaviors. This underscores the need for supportive workplace conditions that facilitate the application of new skills. In sum, cultivating strong performance outcome expectations is a necessary, but not sufficient, condition for successful training transfer. Real change occurs when individual motivation is met with an environment conducive to action.

Ability Factors

This section explores the four ability factors examined in this study: opportunity to use, personal capacity to transfer, perceived content validity, and transfer design. These variables reflect the broader conditions under which training is enabled or constrained in real-world contexts.

Among these, the opportunity to use emerged as the only variable in the study that significantly predicted actual transfer behaviors. This finding highlights the importance of workplace conditions, particularly whether employees are given the chance, time, and support to apply what they have learned.

Personal capacity to transfer did not significantly predict transfer outcomes. This suggests that even when learners are willing to transfer their new skills and have the resources to act on that intention, they show no significant relationship with training transfer intention or behaviors.

Similarly, perceived content validity, or the extent to which training content is seen as relevant and applicable, showed no significant relationship with intentions or behaviors. While perceived content validity may influence initial receptiveness to a training event, this finding suggests that the learner's perceived relevance of training alone is insufficient to drive transfer. Transfer design significantly predicted transfer intentions but not behaviors. This could be caused by a recurring theme in the literature that well-structured training can inspire confidence and motivation, however intention often fails to translate into action without adequate post-training reinforcement and environmental alignment.

The findings from this study highlight the importance of designing meaningful training and combining it within a workplace support system that promotes application, manages competing demands, and reinforces behavioral follow-through. The following sections explore each of these ability factors in greater depth.

Opportunity to Use

Among all ability factors in this study, the opportunity to use was the only factor that predicted training transfer behaviors. This aligns with Baldwin and Ford's (1988) transfer model, which emphasizes the crucial role of environmental factors in enabling the application of learned skills. Participants who reported more opportunities to use their training were the learners who were more likely to display behaviors conducive to training transfer, reinforcing that opportunity to use is not just access to training but a catalyst for training effectiveness.

This finding closely aligns with Burke and Hutchins (2007), who emphasized the idea of the "transfer climate." Burke and Hutchins (2007) state that transfer climate combines organizational signals, managerial support, and reinforcement strategies that encourage learning application. When the transfer climate is strong, trainees are more likely to see applying new

skills as supported and valued, which directly impacts behavior. Similarly, Tracey and Tews (2005) found that employees in service-heavy environments, such as healthcare, respond best when organizational leadership actively fosters a learning culture by setting clear performance expectations and offering supportive follow-up.

These views expand Bandura's (1977) social learning theory by suggesting that the opportunity to use skills involves more than just physical or procedural aspects; it also includes social modeling, feedback, and a culture that promotes skill use. Training programs should be paired with structured workplace support. Workplace support could include reinforcement systems, ongoing coaching, and recognition of the learner's training transfer behavior. Without workplace support, a well-trained and motivated learner might struggle to apply what they have learned.

Ford et al. (2018) promoted systems-oriented reinforcement strategies, including structured follow-ups by supervisors and peers, performance-based incentives from the organization, and integrating the learner's training goals into their workflow processes. Rouiller and Goldstein (1993) highlighted the importance of certain situational cues, like peer modeling and on-the-job feedback from supervisors and peers, in an effort to encourage employees to apply the training.

Meta-analytic evidence from Blume et al. (2010) supports this finding, showing that transfer climate and supervisor support consistently predict successful transfer across different settings. Their work divides environmental influence into two categories: situational cues (such as opportunities for application and observable role models) and consequences (such as recognition and performance feedback). These factors are not just passive elements but actively influence whether learned behaviors are generalized and maintained.

Organizations aiming to improve transfer must do more than deliver training content. They must intentionally foster environments where reinforcement techniques become routine and post-training discussions are standard practice. This support is vital for skill development and sustaining long-term effectiveness and flexibility for healthcare professionals in high-stress, time-pressure settings.

Personal Capacity to Transfer

Personal capacity to transfer did not significantly predict either training transfer intentions or behaviors. This is a notable finding in healthcare environments, which are demanding in nature and where time, energy, and psychological resources are often limited. The lack of a relationship between personal capacity to transfer and training transfer intentions and behaviors may suggest that, although trainees recognize the importance of applying learned skills, they might lack the resources to prioritize or sustain transfer within their daily workflow.

Previous research has emphasized personal capacity as a crucial factor for implementation. Holton et al. (2000) identified personal capacity to transfer as a core element of transfer readiness. However, Baldwin et al. (2017) stated that trainers often leave out the complexity of the trainees' lived experiences from their training design. In high-stakes settings, learners may be cognitively overwhelmed or emotionally drained, which diminishes the energy available for transfer even if they have positive attitudes toward training.

The disconnect between intention and capacity may also come from a lack of alignment in context. Weiss and Rupp (2011) suggested that personal capacity should not be seen as a fixed trait but as a dynamic state influenced by workload, psychological stress, and perceived control. In the current study, participants might have had the capacity theoretically, but they faced

situational hurdles, such as staffing shortages, regulatory pressures, or competing clinical duties, that reduced their impact on behavior.

Furthermore, transfer trajectories are not always straightforward. Huang et al. (2016) showed that initial self-efficacy predicts early transfer efforts, while motivational and contextual factors shape ongoing behavior. Personal capacity may therefore act more as a threshold variable necessary for transfer but not sufficient on its own.

Choi and Roulston (2015) observed that medical professionals' ability to transfer knowledge was greatly influenced by their professional identity and how relevant they perceived the tasks. Learners who consider training an important aspect of their roles were more likely to make an effort in training even when their capacity was limited. This observation by Choi and Roulston suggests that even when a learner has made a connection between training and their job duties, the learner's personal constraints can affect how the learner might perform.

The results related to personal capacity do not diminish its significance but emphasize the need for interventions that take into account the situational and psychological factors influencing capacity. Training should incorporate stress-reduction techniques, workload management, and personalized pacing to ensure learners have the intention and cognitive and emotional resources to act. Future research could benefit from qualitative research methods or longer tracking periods to observe capacity changes and their impact on transfer behavior.

Perceived Content Validity

Perceived content validity, the degree to which trainees view the training material as accurate, relevant, and applicable to their job, is foundational to effective instructional design. Perceived content validity is often assumed when learners see clear alignment between training

content and real-world responsibilities; they are more likely to engage with and apply the material.

Perceived content validity did not significantly predict either intentions or behaviors. While training content is designed to influence students' perceptions of relevance and application (Velada & Caetano, 2007), the results of this study suggest that content validity alone may not drive transfer without additional factors like motivation and opportunity. This study's finding on perceived content validity is supported by Yelon and Ford (1999), who observed that content validity indirectly affected the learner's behavior through perceived readiness and usefulness.

While perceived content validity establishes a training program's initial credibility and relevance, this study's findings suggest that perceived content validity is not a strong predictor of training transfer intentions or behaviors. Its influence appears to be more indirect, potentially shaping readiness to learn rather than guaranteeing application. These findings reinforce the idea that relevance must be paired with other enabling conditions, such as motivation, opportunity, and reinforcement, in order to translate into meaningful behavioral change.

Transfer Design

Transfer design significantly predicted training transfer intentions but not training transfer behaviors. This indicates that while the training helped participants understand how to apply their learning to their jobs (e.g., using relevant examples and clear connections), it did not adequately predict actual behavioral change. This highlights a key difference between perceiving training as applicable and having the necessary support structures to act on that perception.

According to Holton et al. (2000), transfer design concerns how effectively training prepares learners to apply new skills in the workplace. This includes using realistic scenarios, providing post-training cues, and ensuring job relevance. The current results support this model,

as participants viewed the training as clear and aligned with job tasks. However, the lack of behavioral transfer indicates a gap between the training environment and the actual work environment, which can be referred to as a break in the transfer climate.

Baldwin et al. (2017) describe transfer design as contributing to learning readiness, or the mental preparation to transfer. Still, intention may not translate into action without ongoing support like coaching, reminders, or accountability. Additionally, research on “desirable difficulty” (Brown et al., 2014) suggests that surface-level ease may not encourage deep, transferable learning. If the design prioritized simplicity over active problem-solving or real-world practice, it may have supported recognition but not behavior.

Healthcare work often requires technical precision, adaptability, and emotional regulation. As Van Merriënboer et al. (2006) suggest, effective transfer design must incorporate contextual variability, simulation, and judgment-based tasks to prepare learners for dynamic conditions. If the training did not address these elements, its transfer potential may have been constrained.

Finally, personal variables like goal orientation and perceived accountability can shape how transfer design is received. Stevens and Gist (1997) found that mastery-oriented individuals respond best to training that encourages exploration and reflection. The design may have increased motivation in the present study, but it did not provide the individual scaffolding needed for transfer behavior.

The findings suggest that transfer design can enhance intention, but intention alone is insufficient. To influence behavior, transfer design must operate beyond instructional quality, it must function as a bridge between learning and implementation, supported by both environmental and personal factors.

Post-Hoc

The post-hoc analyses revealed no statistical differences in training transfer intentions or behaviors based on the learner's gender, the training modality, or training duration. This finding indicates that individual characteristics and structural delivery factors may not significantly influence transfer outcomes as previously thought, at least within the sampled healthcare context.

This finding aligns with previous research showing mixed or inconclusive effects of demographic variables on training transfer. For example, Blume et al. (2010) noted that while the learner's individual differences like cognitive ability and personality traits often influence training transfer whereas attributes such as the learner's gender tend to have inconsistent links with transfer behavior. Similarly, Cheng and Ho (2001) concluded in their decade-long review that factors like delivery format and training length rarely cause significant differences unless combined with context-specific reinforcements or design strategies.

The lack of significant differences by training modality suggests that online and in-person formats might equally effectively promote transfer intentions. This is an encouraging sign given the increasing use of virtual learning platforms in healthcare. However, Ford et al. (2018) warn that modality alone may not be enough unless combined with learner engagement strategies, structured follow-up, and alignment with workplace tasks.

The length of training did not lead to notable differences in transfer results. This finding is in alignment with Baldwin and Ford's (1988) idea that the quality and transferability of learning experiences matter more than how long they last. Enos et al. (2003) also emphasized that informal learning and contextual integration often outweigh extended formal instruction when applying behavior.

The consistency of transfer outcomes across gender, modality, and duration highlights that other factors, such as peer support, motivation, and transfer climate, may play a more important role in predicting transfer intentions or behaviors. These findings suggest that training should target these areas rather than just broad demographic or training modality factors.

Limitations

This study had some limitations. First, the data was self-reported by employees participating in this research. According to Coolidge (2021), volunteer participants may respond to survey questions in ways they think will help or embarrass the researcher, or they may answer in a way they believe will be seen as favorable by the organization's leadership. To minimize this limitation, participants were asked to answer questions honestly, and the researcher assured them that their responses would be confidential and would not be seen by anyone within the organization other than the researcher.

Another limitation is the specificity of the research within a healthcare organization. This could restrict the validity of the findings when they are applied to other organizations outside of healthcare. When generalizing these results beyond healthcare, be aware of potential differences in training environments.

Implications of the Study

Practitioners designing training programs should emphasize trainee motivation and perceived usefulness to increase their intention. Equally important is providing learners with post-training opportunities to apply skills. Training programs should also prioritize designing training content that emphasizes real-world application. Additionally, offering ongoing support after training, such as managerial or peer support, is vital for maintaining behavior change. Burke and Hutchins (2007) suggested that conducting follow-up coaching sessions or feedback

loops with the learners after the training could improve the learners' ability to transfer the learned behaviors. This study's emphasis on post-training support mechanisms echoes the reinforcement theory that behaviors accompanied by positive reinforcement are more likely to be repeated (Yamhill & McLean, 2001). A practical approach would include structured recognition or rewards when a learner successfully applies the training.

This study highlights the importance of post-training interventions that help reinforce the use of learned skills. Participants' ability to transfer their behavior was strongly linked to their opportunities to apply the training, indicating that the environment surrounding learners, not just the instructional design, plays a crucial role in maintaining transfer.

Thayer and Teachout (1995) identified the importance of supervisor follow-up. They pointed out that supervisors who set goals, provide feedback, and reinforce training outcomes with learners are more likely to realize a desired behavioral change from the learners. Their study demonstrates how managerial actions extend beyond the classroom, incorporating learned content into daily workflows.

Ford et al. (2018) proposed a systems-oriented perspective, advocating for organizational strategies that link training events with the desired organizational behavior. Their research supports an intentional reinforcement system for the learners that includes supervisor follow-ups and performance management tools. These reinforcement systems must align with the intended training goals.

These studies are based on reinforcement theory (Yamhill & McLean, 2001), which states that behaviors followed by a positive outcome are more likely to be repeated. To implement this, organizations should develop tangible post-training structures, such as

mentorship programs, peer feedback systems, or performance-based rewards, that reinforce and encourage the use of skills.

In designing training, booster sessions, check-ins, and ongoing learning platforms can prolong the impact of training and keep skills sharp. These strategies boost retention, morale, and professional engagement when combined with cultural cues, such as recognition or symbolic rewards. Without this layer of environmental support, even well-trained and highly motivated employees may struggle to transfer skills to their roles.

These findings highlight the importance of interventions at various stages of the training transfer process. During training, efforts should focus on building self-efficacy and clarifying performance expectations. Right after training, organizations should implement strategies to give the trainee opportunities to apply what they have learned, along with peer and manager support, such as mentorship programs or structured action plans. One effective strategy is incorporating goal-setting elements into the training program, which can enhance transfer behavior since setting specific, challenging goals has improved post-training transfer (Locke & Latham, 1992). Finally, reinforcing ongoing strategies, such as booster sessions or continuous learning platforms, can help maintain training transfer behaviors.

Organizations' evaluation metrics must go beyond measuring trainee satisfaction and knowledge retention to assess how well the training is applied in the workplace. These evaluations can be conducted through structured observation, peer feedback, and performance reviews aligned with the training program's learning objectives.

Future Research Directions

This study's findings and limitations have opened several possibilities for future research. First, this study used a 30-day post-training measurement, and it remains unclear whether

behaviors are maintained, fade, or evolve. Long-term studies could explore how training transfer behaviors change over a longer period. Research with multiple check-in points over a period of time could also provide further insights into whether the training's effects persist or shift.

Additionally, future research could examine the mediating role of training transfer intentions between motivational factors and training transfer behavior. A formal analysis would clarify whether factors such as the motivation to transfer and performance outcome expectations directly influence training transfer behavior or mainly operate through training transfer intentions.

A qualitative or mixed-methods study could deepen our understanding of training transfer dynamics. These research methods could capture trainees' experiences, perceptions of the support they receive, and the organizational context in greater detail. Interviews or focus groups could show how perceived real-world constraints influence training transfer for learners.

Conducting replication studies across various industries and job roles would help establish broader relevance. Since this study took place in a healthcare technology setting, research in areas like manufacturing, education, or customer service could reveal specific differences or validate the wider applicability of these findings.

Future research could examine psychological safety, learning climate, or organizational readiness for change. Combining these factors with an existing training transfer model could give researchers and practitioners a more comprehensive and predictive framework. Future studies could investigate how factors such as conscientiousness or achievement personality traits interact with each other or with other factors to influence training transfer intentions or behaviors.

Finally, experimental studies manipulating transfer design elements, performance outcomes, or opportunities to use could provide stronger causal evidence about which factors most influence training transfer intentions and behaviors.

Conclusions

This chapter presented the findings of a study exploring how motivational and ability-related factors influence training transfer intentions and behaviors among healthcare professionals. The Learning Transfer System Inventory (LTSI) showed that motivation to transfer, performance outcome expectations, and transfer design significantly predicted training transfer intentions, while only opportunity to use significantly predicted training transfer behaviors. This study's findings highlight the importance of differentiating between learners' intentions and behaviors in training transfer. The findings also emphasize the role of organizational support in training transfer.

Despite a longstanding assumption that personal capacity and content validity directly contribute to training transfer outcomes, the findings from the study indicate that these variables are statistically nonsignificant. These findings indicate a need to view these factors as moderators rather than primary predictors. Furthermore, the absence of behavioral impact from otherwise intention-driven constructs confirms the importance of moving beyond simple cause-and-effect models toward ones that consider system interdependencies, delayed effects, and feedback loops. This aligns with Colquitt et al.'s (2000) findings that distal predictors, such as training design or personality, may not directly influence training transfer, but instead these predictors operate through mediators like motivation, valence, or self-efficacy.

From a data perspective, the results offer a strategic insight that, regardless of how motivated learners are or how well a course is designed, training transfer is unlikely to happen

without organizational support for learners to use the learned materials. The moderate-to-large effect sizes seen in training transfer behavior models indicate a need for change within organizations, especially in the healthcare sector, where constraints often limit transfer opportunities.

These results should motivate researchers and practitioners to reevaluate how training impact is understood, measured, and supported. For researchers, there is a need to create integrative models that close intention-behavior gaps with mediators. Building on the Theory of Planned Behavior (Ajzen, 1991), as Yamnill and McLean (2001) discussed, perceived behavioral control may be a key factor in explaining why strong intentions to transfer do not always lead to observable behaviors. Future research should also use longitudinal and multilevel methods to track the changing nature of transfer over time and across organizational levels. For practitioners, the message is that training is not just about content delivery. To achieve a return on investment, organizations must create environments that support learning through opportunities, support, and feedback, without which even the most motivated learners may struggle to turn intentions into actions.

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Appendix

Figure 1

Normal P-P Plot of Regression Standardized Residual - Dependent Variable: Training Transfer Intentions

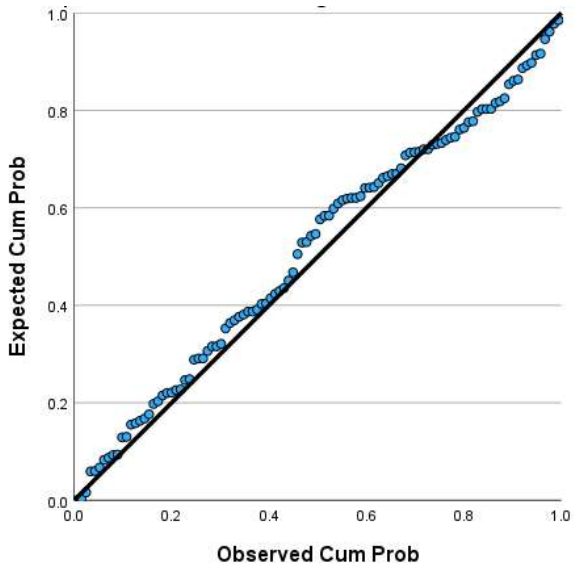


Figure 2

Scatterplot - Dependent Variable: Training Transfer Intentions

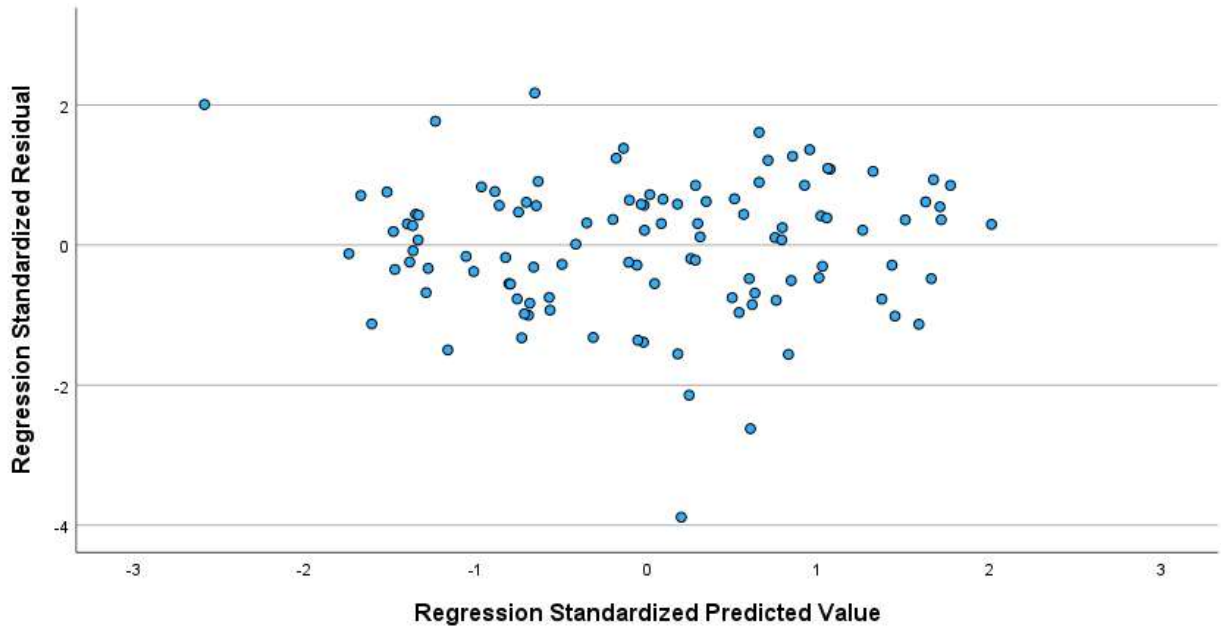


Figure 3

Normal P-P Plot of Regression Standardized Residual - Dependent Variable: Training Transfer Behaviors

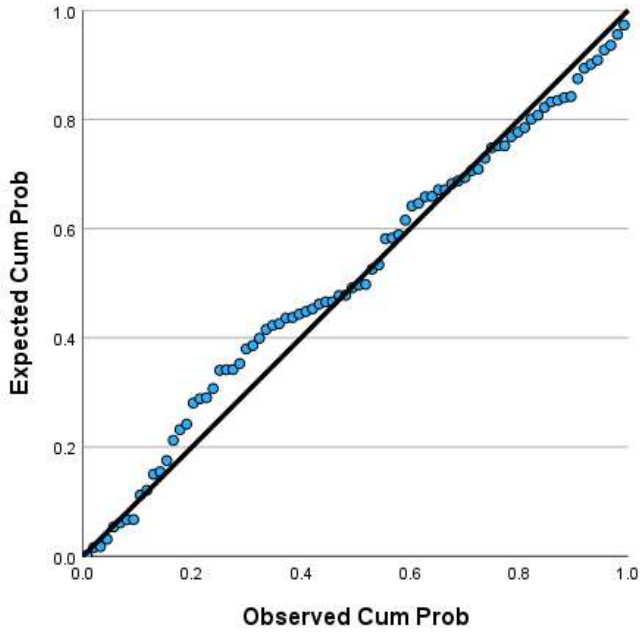


Figure 4

Scatterplot - Dependent Variable: Training Transfer Behaviors

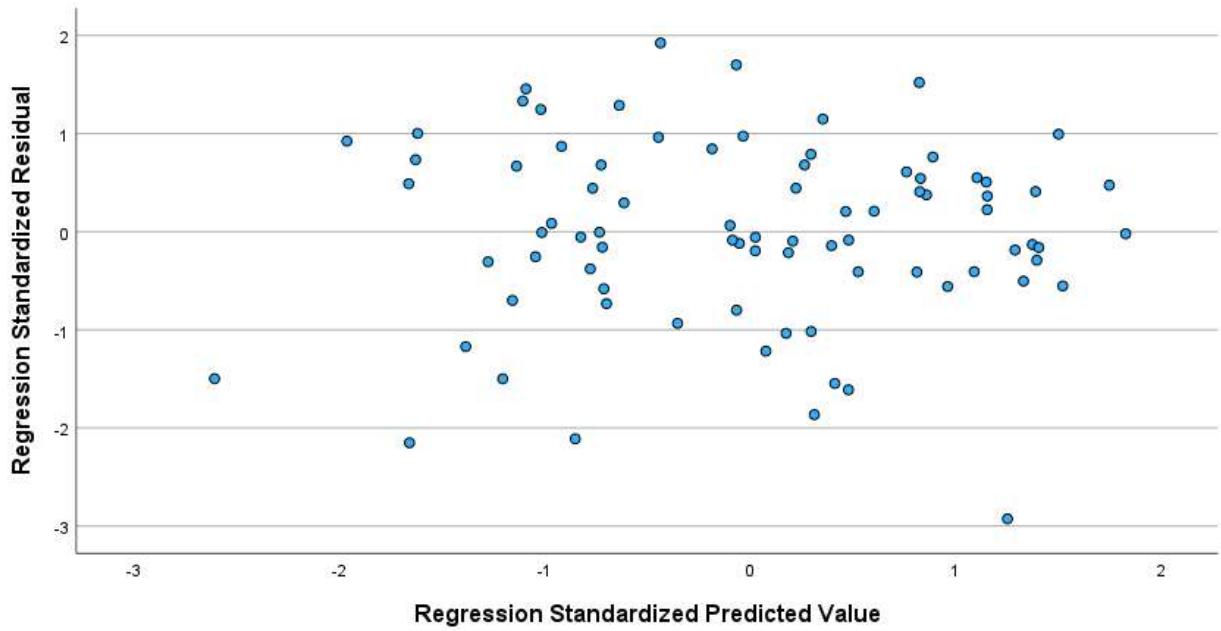


Table 1*Descriptive Statistics: Training Transfer Intentions*

	Mean	Std. Deviation	N
Training Transfer Intentions	5.99	.55	108
Transfer Effort	4.39	.61	108
Motivation to Transfer	4.44	.55	108
Performance Outcomes	3.66	.57	108
Opportunity to use	4.66	.41	108
Personal Capacity	1.88	.69	108
Perceived Content Validity	4.24	.57	108
Transfer Design	4.51	.48	108
Gender	.69	.46	108
Training Modality	.45	.50	108
Training Duration	.36	.48	108

Table 2

Pearson Correlation: Training Transfer Intentions

		Training Transfer Intentions	Transfer Effort	Motivation to Transfer	Performance Outcomes	Opportunity to Use	Personal Capacity	Perceived Content Validity	Transfer Design	Gender	Modality	Duration
Pearson Correlation	Training Transfer Intentions	1.00	.24	.39	.33	.35	-.22	.40	.54	-.09	-.11	-.17
	Transfer Effort	.24	1.00	.58	.08	.25	.03	.07	.24	-.11	-.07	-.13
	Motivation to Transfer	.39	.58	1.00	.08	.33	-.00	.21	.28	-.09	-.10	-.18
	Performance Outcomes	.33	.08	.08	1.00	.33	.01	.08	.19	-.13	-.10	-.04
	Opportunity to use	.35	.25	.33	.33	1.00	-.28	.37	.40	.01	-.16	-.13
	Personal Capacity	-.22	.03	-.01	.01	-.28	1.00	-.18	-.15	.11	-.05	-.09
	Perceived Content Validity	.40	.07	.21	.08	.38	-.18	1.00	.62	-.08	-.12	-.15
	Transfer Design	.54	.24	.28	.19	.40	-.15	.62	1.00	-.04	-.27	-.33
	Gender	-.09	-.11	-.09	-.12	.01	.11	-.08	-.04	1.00	.08	.16
	Training Modality	-.11	-.07	-.10	-.10	-.16	-.05	-.12	-.27	.08	1.00	.83
Training Duration	-.17	-.13	-.18	-.04	-.13	-.09	-.15	-.33	.16	.83	1.00	
Sig. (1-tailed)	Training Transfer Intentions		.01	<.001	<.001	<.001	.01	<.001	<.001	.17	.14	.04
	Transfer Effort	.01		.00	.21	.00	.40	.23	.01	.119	.23	.09
	Motivation to Transfer	.00	.00		.22	.00	.47	.02	.00	.18	.15	.03
	Performance Outcomes	.00	.21	.22		.00	.48	.22	.03	.10	.15	.35
	Opportunity to use	.00	.00	.00	.00		.00	.00	.00	.48	.05	.09
	Personal Capacity	.01	.40	.47	.48	.00		.03	.06	.13	.31	.17
	Perceived Content Validity	.00	.23	.02	.22	.00	.03		.00	.19	.10	.06
	Transfer Design	.00	.01	.00	.03	.00	.06	.00		.36	.00	.00
	Gender	.17	.12	.18	.10	.47	.13	.19	.36		.21	.05
	Training Modality	.14	.23	.15	.15	.05	.31	.10	.00	.21		.00
Training Duration	.04	.09	.03	.35	.09	.17	.06	.00	.05	.00		

Table 3*Anova Analysis of Training Transfer Intentions*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.01	10	1.40	7.51	<.001
	Residual	18.10	97	.19		
	Total	32.11	107			

a. Dependent Variable: Training Transfer Intentions

b. Predictors: (Constant), 3-day = 0

1-day = 1, Performance Outcomes, Personal Capacity, Transfer Effort, Male= 0

Female = 1, Percieved Content Validity, Opportunity to use, Motivation to Transfer, Training

Design, In-Person =0

Virtual = 1

Table 4*Coefficients: Training Transfer Intentions*

Model		Unstandardized B	Coefficient Std.Error	Standardized Coefficients Beta	t	Sig.	Lower Bound	Upper Bound	Zero- order	Correlations Partial	Part	Tolerance	VIF
1	(Constant)	2.22	.66		3.38	.00	.92	3.53					
	Transfer Effort	-.01	.09	-.01	-.09	.93	-.18	.16	.24	-.01	-.00	.63	1.58
	Motivation to Transfer	.26	.10	.26	2.65	.01	.06	.45	.39	.26	.20	.61	1.64
	Performance Outcomes	.25	.08	.26	3.06	.00	.09	.41	.33	.30	.23	.82	1.22
	Opportunity to use	-.05	.13	-.04	-.38	.70	-.31	.21	.35	-.04	-.03	.62	1.61
	Personal Capacity	-.13	.07	-.16	-1.94	.06	-.26	.00	-.22	-.19	-.15	.84	1.19
	Perceived Content Validity	.08	.10	.08	.81	.42	-.12	.27	.40	.08	.06	.56	1.80
	Transfer Design	.41	.12	.37	3.36	.00	.17	.66	.54	.32	.26	.49	2.03
	Gender	.01	.10	.01	.07	.94	-.18	.20	-.09	.01	.01	.89	1.13
	Training Modality	.13	.15	.12	.84	.40	-.17	.43	-.11	.09	.06	.31	3.28
	Training Duration	-.11	.16	-.09	-.65	.52	-.43	.22	-.17	-.07	-.05	.28	3.59

Table 5*Residual Diagnostics of Training Transfer Intention*

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Transfer Effort	Motivation to Transfer	Performance Outcomes	Opportunity to Use	Personal Capacity	Perceived Content Validity	Transfer Design	Gender	Modality	Duration
1	1	9.44	1.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	1.01	3.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.09
	3	.29	5.74	.00	.00	.00	.00	.00	.00	.00	.00	.85	.01	
	4	.12	9.04	.00	.00	.00	.00	.00	.58	.00	.00	.00	.18	.14
	5	.10	9.92	.00	.00	.00	.00	.00	.21	.00	.00	.07	.69	.66
	6	.02	20.87	.00	.18	.07	.43	.00	.00	.00	.00	.00	.04	.04
	7	.02	22.42	.00	.09	.01	.27	.00	.04	.24	.03	.02	.01	.01
	8	.01	36.55	.01	.62	.67	.01	.02	.00	.00	.01	.05	.00	.00
	9	.01	39.97	.20	.02	.18	.27	.24	.00	.30	.01	.05	.00	.00
	10	.00	46.89	.00	.09	.07	.00	.15	.00	.40	.81	.01	.00	.03
	11	.00	57.52	.79	.00	.00	.01	.58	.17	.04	.11	.00	.00	.02

Table 6*Descriptive Statistics: Training Transfer Behaviors*

	Mean	Std. Deviation	N
Training Transfer Behaviors	5.52	.81	82
Transfer Effort	4.35	.65	82
Motivation to Transfer	4.41	.58	82
Performance Outcomes	3.64	.58	82
Opportunity to use	4.65	.39	82
Personal Capacity	1.89	.65	82
Perceived Content Validity	4.24	.61	82
Transfer Design	4.49	.49	82
Training Transfer Intentions	5.92	.53	82
Gender	.72	.45	82
Training Modality	.51	.50	82
Training Duration	.41	.50	82

Table 7

Pearson Correlation: Training Transfer Behaviors

		Training Transfer Intentions	Transfer Effort	Motivation to Transfer	Performance Outcomes	Opportunity to Use	Personal Capacity	Percieved Content Validity	Transfer Design	Training Transfer Intentions	Gender	Modality	Duration
Pearson Correlation	Training Transfer Behaviors	1.00	.13	.28	.13	.18	-.15	.48	.48	.65	-.15	.01	-.05
	Transfer Effort	.13	1.00	.63	.02	.23	.04	.08	.20	.17	-.14	-.01	-.05
	Motivation to Transfer	.28	.63	1.00	.33	.10	.04	.15	.30	.37	-.14	-.02	-.14
	Performance Outcomes	.13	.02	.04	1.00	.33	.10	.04	.15	.30	-.19	-.11	-.04
	Opportunity to use	.18	.23	.30	.33	1.00	-.12	.44	.44	.33	-.09	-.22	-.16
	Personal Capacity	-.15	.04	.07	.10	-.12	1.00	-.19	-.18	-.13	.15	-.02	-.05
	Perceived Content Validity	.48	.08	.19	.04	.45	-.19	1.00	.66	.41	-.09	-.17	-.22
	Transfer Design	.48	.20	.25	.15	.44	-.18	.66	1.00	.49	-.06	-.37	-.39
	Training Transfer Intentions	.65	.17	.37	.30	.33	-.13	.41	.49	1.00	-.12	-.09	-.13
	Gender	-.15	-.14	-.17	-.19	-.09	.15	-.09	-.06	-.12	1.00	.10	.20
Training Modality	.01	-.01	-.02	-.11	-.22	-.02	-.17	-.37	-.09	.10	1.00	.82	
Sig. (1-tailed)	Training Duration	-.05	-.05	-.14	-.04	-.16	-.05	-.22	-.39	-.13	.20	.82	1.00
	Training Transfer Intentions		.12	.01	.12	.05	.09	<.001	<.001	<.001	.09	.47	.33
	Transfer Effort	.12		.00	.45	.02	.38	.23	.04	.07	.10	.48	.31
	Motivation to Transfer	.01	.00		.35	.00	.28	.04	.01	.00	.11	.41	.10
	Performance Outcomes	.12	.45	.35		.00	.18	.36	.08	.00	.05	.16	.37
	Opportunity to use	.05	.02	.00	.00		.14	.00	.00	.00	.21	.03	.07
	Personal Capacity	.09	.38	.28	.18	.14		.05	.06	.12	.09	.43	.32
	Perceived Content Validity	.00	.23	.04	.36	.00	.05		.00	.00	.22	.06	.02
	Transfer Design	.00	.04	.01	.08	.00	.06	.00		.00	.31	.00	.00
	Training Transfer Intentions	.00	.07	.00	.00	.00	.12	.00	.00		.13	.22	.12
Gender	.09	.10	.11	.05	.21	.09	.22	.31	.13		.19	.040	
Training Modality	.47	.48	.41	.16	.03	.43	.06	.00	.22	.19		.000	
Training Duration	.33	.31	.10	.37	.07	.32	.02	.00	.12	.04	.000		

Table 8*Anova Analysis of Training Transfer Behaviors*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.14	11	2.56	7.10	<.001
	Residual	25.23	70	.36		
	Total	53.37	81			

a. Dependent Variable: Training Transfer Behaviors

b. Predictors: (Constant), 3-day = 0

1-day = 1, Performance Outcomes, Transfer Effort, Personal Capacity, Percieved Content Validity, Male= 0

Female = 1, Training Transfer Intentions, Opportunity to use, Motivation to Transfer, Training

Design, In-Person =0

Virtual = 1

Table 9*Coefficients of Training Transfer Behaviors*

Mode 1		Unstandardized B	Coefficient Std.Error	Standardized Coefficients Beta	t	Sig .	Lower Bound	Upper Bound	Zero- order	Correlations Partial	Part	Tolerance	VIF
1	(Constant)	-.42	1.10		-.38	.71	-2.60	1.77					
	Transfer Effort	-.02	.14	-.02	-.17	.87	-.30	.25	.13	-.02	-.01	.57	1.75
	Motivation to Transfer	.08	.16	.06	.49	.63	-.25	.41	.28	.06	.04	.49	2.05
	Performance Outcomes	-.03	.14	-.02	-.19	.85	-.30	.25	.13	-.02	-.02	.72	1.39
	Opportunity to use	-.33	.22	-.16	-1.55	.13	-.76	.10	.18	-.18	-.13	.62	1.62
	Personal Capacity	-.01	.11	-.00	-.05	.96	-.23	.22	-.15	-.01	-.00	.85	1.18
	Perceived Content Validity	.29	.16	.22	1.83	.07	-.03	.60	.48	.21	.15	.49	2.05
	Transfer Design	.34	.21	.21	1.62	.11	-.08	.77	.48	.19	.13	.41	2.45
	Training Transfer Intentions	.77	.16	.51	4.80	<.001	.45	1.09	.65	.50	.40	.60	1.66
	Gender	-.16	.16	-.09	-1.01	.32	-.48	.16	-.15	-.12	-.08	.84	1.19
	Training Modality	.11	.25	.07	.45	.66	-.38	.60	.01	.05	.04	.29	3.44
	Training Duration	.14	.26	.09	.56	.58	-.37	.65	-.05	.07	.05	.28	3.62