<u>INDIVIDUAL, ORGANIZATIONAL, AND TRAINING DESIGN INFLUENCES ON SUPERVISION STAFF'S KNOWLEDGE AND USE OF EVIDENCE-BASED PRACTICES</u>

by

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Individual, Organizational, and Training Design Influences on Supervision Staff's
Knowledge and Use of Evidence-Based Practices

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Doctor of Philosophy at George Mason University

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DEDICATION

This dissertation is dedicated to my incredible husband, Kyle, who supported me throughout this years-long endeavor. Thank you for supporting me through all of the challenges, and I'm so happy to have had you by my side to celebrate all the victories.

To Jennifer Lerch, for every car chat, Starbucks day, library session, and phone call. I have no doubt that without you, I'd have gone crazy a long, long, time ago, and without such great company.

And to all those who reminded me that "the best dissertation is a done dissertation". Finally, it's done!

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her intelligence or desire to continue learning. You are truly a motivation and an example for me in every aspect of my life. Kyle and Charlotte, you bring me so much happiness and balance in life, but most of all, you bring me an incredible perspective of what is truly important. Thank you!

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ABSTRACT

INDIVIDUAL, ORGANIZATIONAL, AND TRAINING DESIGN INFLUENCES ON SUPERVISION STAFF'S KNOWLEDGE AND USE OF EVIDENCE-BASED PRACTICES

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Staff training is an important aspect of ensuring that community corrections officers remain up-to-date on the most effective evidence-based practices (EBPs). Officers are required to complete roughly 20-40 hours of training annually. Research has identified a number of factors that influence the effectiveness of such trainings, including organizational factors (e.g., climate, culture), individual factors (e.g. motivation, prior knowledge), and characteristics of the training design (e.g. classroom, online, boosters). While these factors have been studied extensively in other disciplines, and in part within the field of community corrections, they have not been examined together to determine the relative influence of each on training outcomes for community corrections agencies. The current research fills this gap and presents outcomes of the effects of organizational, individual, and training design factors on probation officers' knowledge and self-reported use of EBPs post-training. Individuals' motivation to learn exerted the strongest influence

on officers' knowledge of skills post training. However, the district variable was also statistically significant, indicating a potential organizational influence that was not otherwise accounted for by the included organizational-level variables. Officer's self-reported use of skills was significantly associated with pre-training use of skills and perceived functionality of the web-based training platform.

CHAPTER ONE: INTRODUCTION

More than 7 million individuals are under some form of correctional control in the United States (Glaze & Herberman, 2013; PEW Center on the States, 2009), the majority of which (70%) are under community supervision (Maruschak & Bonczar, 2013). Improving community supervision is a major policy concern since nearly half of prison intakes are due to probation and parole revocations (Clear & Schrantz, 2011). State mandates such as California's Assembly Bill 109 (AB-109) to reduce the incarcerated population (Realignment, Cal. Assemb. B. 109; 2011) and federal programs such as the justice reinvestment initiative (JRI) place more demands on community supervision as part of a strategy to reduce the incarceration rate. A major concern is that community supervision does not hinder these efforts to reduce the incarcerated population with large numbers of probation and parole failures.

A long history of research on evidence-based practices (EBPs) provides guidance for agencies to implement supervision practices and programs to reduce recidivism among community corrections populations. Through the use of meta-analytic techniques, researchers have synthesized this work to gain an understanding of what works and what does not work in community corrections (Andrews et al., 1990; Cullen & Gendreau, 2000; Drake, Aos, & Miller, 2009; Smith, Gendreau, & Swartz, 2009). These analyses show that in general, community intervention programs are more effective than those

delivered in an institutional setting (Gendreau & Andrews, 1990; Landenberger & Lipsey, 2005) and that cognitive- and/or behaviorally-based interventions are most effective at reducing recidivism (Lipsey & Wilson, 1993; Wilson, Bouffard, & Mackenzie, 2005). Research also finds that practices which adhere to the principles of risk, need, and responsivity are more effective than those that do not adopt these principles (Andrews et al., 1990), and this is a cumulative effect – the more principles you adhere to, the more effective the treatment is at reducing recidivism (Lowenkamp, Latessa, & Smith, 2006). Despite evidence that EBPs reduce reoffending, widespread reductions in recidivism are not evident. Based on the 2005 cohort study of prison releases, the current recidivism rate in the U.S. continues to hover between 65% and 70% for 3-year rearrest (Durose, Cooper, & Snyder, 2014), the same as it was for the 1994 cohort (Langan & Levin, 2002). The persistence of this recidivism rate then begs the question, why are correctional interventions failing to produce the recidivism reductions that research tells us are possible? Lipsey et al.'s (2007) review of cognitive-behavioral based programming for offender populations helps shed some light on this subject. The authors found that effective implementation was one of the strongest moderators of the effectiveness of CBT (Lipsey, Landenberger, & Wilson, 2007).

The extant literature highlights two major issues regarding the implementation of EBPs in community supervision settings: 1) criminal justice agencies are not using enough EBPs, and 2) the use of EBPs lacks fidelity to generate the desired impact on reducing recidivism. Regarding the first issue, research indicates that only roughly one-third of EBPs are adopted (Friedmann, Taxman, & Henderson, 2007; Henderson,

Taxman, & Young, 2008; Young, Dembo, & Henderson, 2007). To the second point, research finds that among those EBPs that are adopted, fidelity is low (Lipsey, 2009; Lowenkamp et al., 2006). Recommendations to achieve desired recidivism reductions are thus bifurcated as well: to increase the number of EBPs that are actually adopted, and/or increase the fidelity of those that are adopted. The current research seeks to address these issues regarding the use of EBPs within community corrections agencies and examines individual, organizational, and training design factors that may influence the successful adoption of EBPs in a community corrections setting.

Traditionally, the process of adopting EBPs relies heavily upon training staff (Walters, Matson, Baer, & Ziedonis, 2005), but many factors can influence how effective training is at increasing knowledge of EBPs and the skills to use the EBPs in routine supervision. Researchers point to three general groups of factors that influence the effectiveness of training: individual characteristics of probation/parole staff, which include age, gender, self-efficacy, and motivation; the quality of training, including the training content, design, flexibility, and relevance to daily operations; and the willingness of organizations to foster a workflow that accommodates EBPs, such as by allowing officers time to practice new skills, providing encouragement for the use of new skills, and setting performance measures specifically tied to the use of EBPs (Baldwin & Ford, 1988; Noe, Wilk, Mullen, & Wanek, 1997; Taxman & Belenko, 2012).

Together, individual characteristics, training design, and organizational factors influence the knowledge learned in training, retention of information learned, and skills developed as a result of training programs. However, there is a lack of research

examining the influence of individual, organizational, and training design factors on the knowledge and skills of criminal justice personnel. Supervision administrators are thus faced with an insufficient use of EBPs among staff to achieve desired recidivism reduction outcomes, and little insight into how they can alter this reality. This study answers these important questions about the characteristics of probation/parole officer trainees, the quality of training programs, and the organizational factors that affect knowledge and skill enhancement among trained probation and parole staff.

In the field of probation and parole, the current trend is to train officers in a traditional classroom setting and then use various techniques to continue training outside of the classroom to build officers' skills. A recent movement is the use of audio and/or videotapes to determine whether staff acquired the desired skills (Bonta et al., 2011; Bonta, Bourgon, Rugge, Gress, & Gutierrez, 2013; Miller & Mount, 2001; Smith, Schweitzer, Labrecque, & Latessa, 2012). Another approach is to train supervisors to be coaches for their staff and then use in-person observations to focus on skill building (Maass, 2013). There is much yet to be learned about the methods and techniques to train staff, particularly given the recent focus on training probation staff to be direct service providers and moving away from the traditional brokerage model of supervision (Robinson et al., 2012; Robinson, VanBenschoten, Alexander, & Lowenkamp, 2011).

Development of staff skills is important to advance the use of research in criminal justice practices, and state and local criminal justice agencies, as well as the federal government, spend untold dollars each year on staff training. Much of this training, however, produces little increase in the use of evidence-based practices (Taxman &

Belenko, 2012; Taxman, Henderson, Young, & Farrell, 2014). Prior studies call for more research to understand the strategies and techniques to improve staff skills-training programs (Baer et al., 2007; Herschell, Kolko, Baumann, & Davis, 2010; Madson, Loignon, & Lane, 2009; Walters et al., 2005). One of the major areas that has yet to be addressed is the relative influence of different kinds of characteristics on training outcomes, specifically person, organization, and training design characteristics. This study aims to advance research on this understudied area in the field of criminal justice.

Because community corrections agencies work within very limited budgets to implement EBPs, it is important to focus on what factors have the biggest impact on improving training outcomes, including both knowledge of skills and use of skills. This necessitates a holistic approach, or a systems approach, that considers all of the major influences on training outcomes in a single model. Kozlowski & Salas (1997) call for an integration of organizational theory with evaluations of the effects of trainee and work environment on training outcomes in order to examine the influences of each through a systems perspective. Baldwin and Ford (1988) also emphasize the need for a comprehensive theoretical framework to consider influences on training outcomes. They provide such a framework to guide future research, but the full model remains quantitatively untested to date. This is possibly due to the comprehensive nature of the model, which, when operationalized, includes multiple independent and dependent variables. Noe, Wilk, Mullen, and Wanek (1997) further discuss the importance of including multiple independent variables in a single model to control for the relative

influence of each, but again, this model has yet to be tested within the field of corrections.

The purpose of the current research is to address this gap by testing a theoretically driven model of influences on training outcomes among a sample of probation officers. The goal is to identify which factor or factors are most influential in community supervision officer's knowledge and use of EBPs post training. Understanding which factors exert the strongest impacts on staff understanding and use of skills in the workplace will help improve the process of staff training, increase the implementation of evidence-based practices, reduce recidivism, increase public safety, and improve offender outcomes.

This dissertation is organized as follows: Chapter Two provides a review of the relevant literature regarding individual, organizational, and design characteristics and their influence on staff training. It also introduces the systems perspective and discusses its relevance as a framework to study influences on training outcomes. Chapter Three begins with an introduction of the conceptual model tested in this research. It then presents the research questions that guide this research and corresponding hypotheses tested. It also describes the study design, data collection procedures, and analysis. Chapter Four presents the results of this research and the outcomes of each hypothesis. Chapter Five contains conclusions based on the findings and a discussion of the implications of these results for future training initiatives within community corrections.

CHAPTER TWO: LITERATURE REVIEW

The relevant literature for this dissertation spans a number of disciplines, including organizational theory, corrections, human resource development, and others. In order to integrate this literature into a cohesive narrative, this chapter is organized as follows. It begins with the definition of an organizational system and an analysis of the type of system that best describes community corrections agencies. This is important as it frames our understanding of how changes (in the form of adoption of EBPs) take place within the organizations in question. The literature review is then organized into three subsections to examine each of the three types of factors (i.e., individual, organizational, and training design) that prior research indicates influence change, specifically change brought about by training. Within each subsection there is a table summarizing the relevant empirical literature to date. The final section of this chapter highlights the gaps in the extant literature and describes how this study fills those gaps and contributes to the ongoing narrative about adoption of new practices in organizational systems.

A Systems Approach to Understanding Organizations

A system is a collective of people who work together (either closely or loosely) in patterned activities to achieve specific goals. While this may seem a very broad definition it is because systems take many forms and act in many different ways to achieve their goals. A common term for a system is an organization or an agency. Katz and Kahn

(1966) assert that "all social systems, including organizations, consist of the patterned activities of a number of individuals" (Katz & Kahn, 1966, p. 409). Given this description, many organizations are easily identifiable, yet there are still others that are not so easily identified. This research is interested in understanding what influences training outcomes in organizations, but not just any organizations – community corrections agencies. In order to do this one must first understand the varied nature of organizations and organizational change, as training is a purposeful attempt to change the behaviors of individuals within an organization in a specific way. In discussing an organization in this context, it is helpful to remember that it is a system, so that we are certain to take into account all aspects of the system – including the people and the processes – versus simply the structure of the agency itself.

There are several types of systems, and research identifies three distinct theories regarding how they are structured and how they behave. These are: 1) organizations as open systems, 2) organizations as natural systems, and 3) organizations as rational systems (Scott & Davis, 2007). While the theories overlap in that all discuss systems as goal-driven entities comprised of individuals, they all differ in how goals are derived and achieved, and the extent to which individuals work together or separately in furtherance of those goals. Below is a closer look at each notion of a system to identify which is best suited to frame the discussion of organizational change within probation agencies. It is important to remember that these theories are not mutually exclusive, rather, any organization can at one time be considered an open, a natural, and/or a rational system. The goal here is to identify which systems' theory is best suited to provide a theoretical

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framework for understanding training and organizational change within a probation department. Some theories are better suited to this task than others.

The open systems theory views organizations as "congeries of interdependent flows and activities linking shifting coalitions of participants embedded in wider material-resource and institutional environments" (Scott & Davis, 2007, p. 32). This theory views organizations as loosely coupled and extremely reactive to the external environment in which they exist. One example of an organization acting as an open system is a political party, which is comprised of many members across the country who engage in different activities, but which are influenced by the actions of others in the collective. While the political party has clear goals (e.g., election of its members to office, the pursuit of its political agenda through the enactment of policies), individual members within the party are also acting in furtherance of their own personal goals that may coincide with or conflict with the party's goals. A defining characteristic of an open system is thus the dual source of goals; the goals of the organization as a whole, and the goals of its individual members (Katz & Kahn, 1966). A probation department has a clear goal of public safety, and its employees may have the same or other goals, such as making money or earning benefits like the pension that comes with a government job. Despite these potentially differing goals, however, the members of the probation department have little freedom to pursue activities beyond that which are allowed by the department in furtherance of any goals. In a truly open system, we would expect much more discretion in the hands of individual members to pursue their own goals to a greater

or lesser degree than those of the organization. In a probation department, however, individual goals are achieved only through the furtherance of the organization's goals.

A second characteristic of an open system is its relationship with the external environment. Open systems theory argues that organizations that are open systems are dependent upon the environment for survival (Katz & Kahn, 1966). While this is certainly true of a probation agency, which exists only insomuch as there is crime and a need to supervise offenders in the community, the probation agency is much less dependent on its environment than other organizations. Consider an organization such as an electronics store. It exists in response to supply and demand needs of the people it serves. As competitors emerge, or as demand for products dwindles, it is in jeopardy of losing business and shutting down. This type of organization is extremely dependent upon its environment for survival, and it must be able to adapt in the products it offers as well as how it conducts business to adequately compete with competitors who offer more desirable products through more convenient means (e.g. online shopping). Historically, probation departments have not been challenged with competition to provide the same service, nor have they had to contend with issues of supply and demand. From the late 1970s through the early 2000s the probation population in the US experienced steady growth (Maruschak & Bonczar, 2013). Despite declines in the probation population since 2009, with recent initiatives to reduce the size of prison populations the probation population is likely to once again experience a period of growth. Community corrections agencies do have to contend with shrinking budgets and fiscal austerity, however, this

does not challenge their very existence; rather it forces them to find ways to make the most of their limited budget.

Finally, open systems are characterized by the "loose coupling" of its members and their activities (Scott & Davis, 2007). Loose coupling refers to a disjointed association between members' activities. Using the political party example, the actions of a member running for local office in a town or state are only loosely related to the actions of another member in a different state. They may have overlapping views on certain issues; however, the election of one is not highly related to the election of the other. Probation agencies do not act as open systems to the extent that they are highly structured bureaucracies whose members' actions are prescribed by the agency so as to ensure the legitimacy of the agency as a whole. Members are organized in units and under supervisors and the actions of one member directly impact other members. For example, if the intake/assessment unit fails to complete assessments for new probationers, that probationer may not be able to be assigned to a supervision officer, or, if assigned, the supervision officer cannot adequately complete a case plan. In this sense, loose coupling would be detrimental to the operation of the probation agency, and is thus specifically discouraged through formal structure and policies. In this way we can see that while probation departments may have certain characteristics of an open system, they also have a prominent agency-driven goal, remain relatively stable within their external environments, and discourage discretion by proscribing members' actions through policy and structure. Thus, open systems theory does not seem best suited to provide a theoretical framework for understanding change in such an organization.

We turn next to the natural systems perspective, which views organizations as "collectives whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important resource" (Scott & Davis, 2007, p. 30). One example of a natural system that embodies this definition may be a newspaper. While it includes many different authors and contributors who have their own story they want told, they also recognize the value of operating together to get the newspaper published and disseminated to their target audience. As with the open system theory, we see again with natural systems the notion of multiple interests or goals. The same argument previously made about the goals of probation agencies and their members thus also applies here; while separate goals for the agency and its members may exist, the policies and structure of the agency limit and discourage the discretion of its' members such that the agency's goals are primary and outweigh any personal conflicting goals of its members.

The second part of the above definition of natural systems refers to the value of the organization as a resource to its members. There are several ways in which the probation department may serve as a resource to its members. The most obvious is as a source of income or stable retirement, but it may also serve as a source of satisfaction to those who enjoy the public service of increasing safety or improving the lives of the clients they work with. It therefore behooves staff members to remain in the collective to achieve these goals. However, the natural systems perspective implies that the collective exists only to the extent that its members recognize its value, and will cease to exist as a collective if that perceived value decreases. Such is not likely the case for probation

departments, which exist despite their members' perceptions of it as a resource to further

their own goals. Unlike a student association, for example, which may cease to exist if its

members perceive that it no longer benefits them personally, or if their goals can be

achieved without the collective, probation departments will continue to exist as long as

there are individuals who require community supervision. New members of the

organization will simply be recruited and hired to fill vacancies left by those who are able

to achieve their goals elsewhere. As with the open systems perspective, the natural

systems perspective does not provide a strong theoretical framework with which to guide

the examination of training within a probation organization. We move next to the third

and final systems theory, the rational systems perspective.

Probation Agencies as Rational Systems

According to the rational systems perspective, organizations are "collectives

oriented to the pursuit of relatively specific goals and exhibiting relatively highly

formalized social structures" (Scott & Davis, 2007, p. 29). Scott and Davis (2007) further

state that rational systems are characterized by the efficiency with which they achieve

specific predetermined goals. The very nature of rationality in this sense is to maximize

efficiency of goal attainment (Scott & Davis, 2007). The highly bureaucratic structure of

probation agencies promotes this type of rationality with separation of tasks, routinized

processes, and many formal policies to guide behaviors. To achieve the public safety

goals of probation, community supervision requires determining offenders' likelihood of

reoffending, or risk to the community. Probation departments therefore often have

policies for the assessment of offenders as well as for how often they should meet with

offenders of each assessed level of risk. They are also the liaison between the offender and the court, so they may have specific units for presentence investigations and intake to assist with the flow of information and ease offender transitions to supervision. Finally, probation agencies also have policies for when public safety is breached, or is in jeopardy of being breached by a probationer. Each of these policies and structures that make up the bureaucracy of a probation department exists in furtherance of the specific goals of community safety.

Scott and Davis (2007) also describe rational systems as highly formalized. They state that "a structure is formalized to the extent that the rules governing behavior are precisely and explicitly formulated and to the extent that roles and role relations are prescribed independently of the personal attributes and relations of individuals occupying positions in the structure" (Scott & Davis, 2007, p. 37). Probation agencies have very precise and explicit rules for all aspects of probation work, including interactions with offenders, the courts, colleagues, and others external to the agency. Roles are independently prescribed such that the role of an intake officer or a supervisor does not change depending on who fills the position.

Probation agencies, as rational systems, operate in such a way as to maximize efficiency. This is not to say, however, that every probation process is as efficient as it could be. As previously mentioned, adherence to the principles of Risk, Need, and Responsivity and use of cognitive-based techniques with probationers has the potential to reduce recidivism by 25% or more (Lipsey, Landenberger, & Wilson, 2007). Especially considering the high caseloads that many probation officers are faced with, any technique

that would reduce the size of the agency's clientele by 25% should most certainly be considered efficient. Yet probation officers have not traditionally been trained to use cognitive-behavioral techniques with the probationers on their caseload (Alexander et al., 2013). As truly rational systems, community corrections agencies have begun to change their operations to more effectively and more efficiently achieve their goals. But efforts to elicit change within such rigid structures are met with a number of challenges.

Organizational Change within a Rational System

Organizational change is a common and often necessary occurrence to ensure the survival of an agency in its environment (Hage, 1980). Organizations change in response to goals; either to achieve new goals or to better achieve existing goals (Hall & Tolbert, 2005). Probation agencies, like other organizations, are resistant to change for a number of reasons. First and foremost, as rational systems which are both highly bureaucratic and highly formalized, they are conservative and usually seek to preserve the status quo. Hall and Tolbert (2005) discuss the monetary investment in making the organization what it currently is (which was potentially for naught if changes are made), official constraints on behavior in the form of policies that would need to be altered and redistributed to staff, informal customs and socialization, and agreements with other agencies that have expectations about the organization and how it operates. Change requires attention to all of these factors, which can be a daunting undertaking. An organization thus requires a heavy push to counter all of the inherent resistance to change. The most common push is the threat of "death" or going out of business. But for public service jobs, such as probation, for which there is little threat of organizational death, there must be other

pressures that are strong enough to force the agency to change. Some of these pressures include competition, social trends, and politics (Robbins & Judge, 2012).

Organizational change also takes place as "sources of legitimation shift" (Hall & Tolbert, 2005, p. 163). In the field of criminal justice the current social and political trend is to 'get smart on crime' and to implement evidence-based practices (Alexander et al., 2013). For many probation agencies this necessitates a change in operations. Current research tells us probation agencies should have policies for sending offenders to treatment and creating case plans and the like, though this is not traditionally a goal of supervision agencies, so the organizations do not always have policies and practices for, or are not always structured to achieve these goals. This is where change becomes necessary, but also problematic given the very nature of the rational system. It is designed to accomplish very specific goals in its structure, training, and the culture of the agency. Changing the goals (such as when you are implementing EBPs) requires changing the very structure of the organization. For rational systems this is particularly difficult.

Thus, it is argued here that probation agencies are highly formalized rational systems. As such, there are certain expectations of functionality and efficiency that are challenged when the system implements change (such as when adopting a new EBP). Conversely, any training that takes place within the organization is also affected by the nature of the system; however, the system has by and large been neglected in training research to date (Kozlowski & Salas, 1997). Kozlowski and Salas (1997) integrate theories about training with theories of organizations as systems to fill this theoretical gap, which forces us to look at individuals within organizations, noting that both the

organization and its individual members influence change. Furthermore, their work suggests that the only way we can ensure that the desired organizational changes are made is by managing the influences of both individuals and the organization together as a system.

Changing roles, such as when you are implementing a new practice and agency goals change, is challenging in a highly formalized agency because it requires specification of how each role in an agency must change to adopt the new practice. If new practices are seen to be in conflict with existing roles this may increase resistance to change (Scott & Davis, 2007). Scott and Davis' (2007) claim that "formal structures are rendered independent of the participation of any particular individual" is challenged when a highly formalized agency is going through changes because each individual will respond differently to changing roles, either accepting or rejecting the new goals, or expressing resistance towards them. The experience of changing roles is thus different than starting with and being socialized into a predetermined role with predetermined expectations about that role.

Hall and Tollbert (2005) share these views, noting that the dynamic nature of both organizations and the individuals within those organizations are limited. These limitations may include resources, funding for trainings, policies, the organizational culture, and/or individual views, motivation, and education. Kozlowski and Salas (1997) stress the importance of organizational influences on training initiatives, including both tangible influences such as policies, procedures, and incentives, as well as intangible influences including leadership and climate. Both sets of authors acknowledge that

training does not happen in a vacuum, but rather within an organization, which has direct and indirect influences on training outcomes and organizational change. Rather than remaining at the whim of these influences, Kozlowski and Salas (1997) suggest that agencies consider implementing organizational interventions prior to, or simultaneous with, training interventions in order to create a context that is supportive of the desired changes, or they will not be sustained.

While Kozlowski and Salas (1997) offer a good recommendation considering the systems perspective, without knowing how much influence organizational and other factors exert on training outcomes, it may not be the best recommendation for agencies with only a limited capacity to make changes (i.e. limited resources to spend on training). Unfortunately, Kozlowski and Salas' (1997) theory of organizations as systems, and thus their recommendation for improving training outcomes, omits an important component of the system; the design of the training itself. Thus we are left wondering if the key to effective trainings is less about the organization and its members and more about the design of the training. Until we can answer this question, we remain unable to efficiently achieve EBP implementation goals.

Influential System Factors

The systems perspective identifies a number of important factors that can influence the ability of an organization to adopt an innovation. Broadly, these factors fall into three categories: individual characteristics, organizational factors, and training design/effectiveness (Baldwin & Ford, 1988; Kontoghiorghes, 2001). Individual characteristics include those elements such as demographics, education, tenure,

motivation, and attitudes that are unique to each person and may influence his/her

perceptions of training, participation in training, and job performance. Organizational

factors are those that influence an agency's environment, including culture, climate,

physical resources, supervisory support, and opportunity to use skills. Training design

and effectiveness refers to the structure of the training, such as whether it is classroom-

based or online, it includes additional elements such as coaching or refreshers, and

whether the content is evidence-based or technical in nature. The systems perspective

necessitates an understanding of each of these groups of factors on their own, but also as

they relate to and influence each other as part of the system.
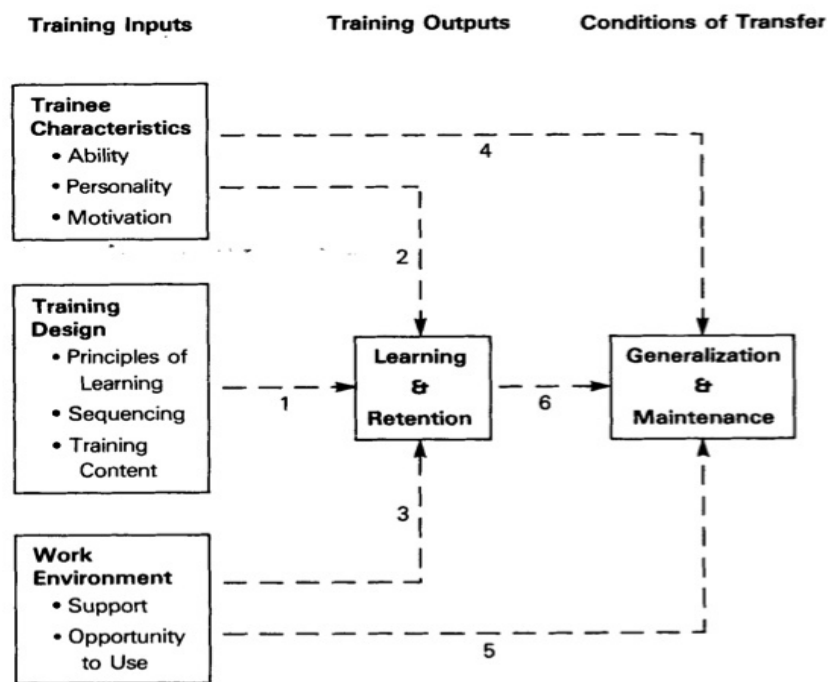
Figure 1 Baldwin and Ford's (1988) Technology Transfer Model

Baldwin and Ford (1988) proposed a theoretical model for examining the

technology transfer process within a systems' framework. Figure 1 depicts their model,

which includes all three of the aforementioned groups of system factors. It also includes

two types of outcomes, knowledge of skills (learning and retention) and using skills

(generalization and maintenance). As indicated by the various pathways between the

training inputs and the outcomes, Baldwin and Ford (1988) propose that there are not

only direct relationships between these variables, but also indirect relationships as well.

Individual Characteristics

Individual characteristics include demographics, knowledge, skills/abilities,

experiences, and work-related attitudes of the employees in an organization. Table 1

provides a summary of the empirical literature on the influence of individual

characteristics on training outcomes. Given that training is a person-centered activity, it is

critical to understand the nature of the influence of individual characteristics on training

outcomes. This may pose a challenge when it comes to demographic factors, as an

agency cannot change a person's age, race, or gender in hopes of improving training

outcomes, however, there are other considerations regarding demographics that warrant a

closer look at them as influential in training outcomes. Mathieu and Martineau (1993)

assert that demographics are actually proxy measures for shared experiences among

certain groups of people, such as women, or people of a certain age or race. For example,

older probation officers may be more likely to have been trained during a time when the

emphasis of probation was more about monitoring and revocations versus rehabilitation.

In that case, age may be a significant predictor of individuals' likelihood of adopting

EBPs because age is a proxy measure of the experience those officers shared in their prior trainings. Noe et al., (1997) express this opinion, stating that certain groups of individuals, as defined by demographics, may have different perceptions of their opportunities to develop new skills. This does not only mean individuals of certain ages, races, or genders, but also those with different levels of pre-training knowledge and skills/abilities.

Individuals' pre-training experiences are amenable to change despite demographic differences among staff. If demographics are thus a strong predictor of training outcomes, then administrators should consider these factors to gauge how to maximize staff experiences and perceptions, and design and frame the training accordingly. For example, Garavan, Carbery, O'Malley, and O'Donnell (2010) state that individual characteristics may be particularly relevant for certain training modalities rather than others depending on the degree of self-direction required to complete the training (Garavan, Carbery, O'Malley, & O'Donnell, 2010). Mathieu and Martineau (1993) state that men typically feel more favorable about computers, so they will likely respond better to an online training than women. In an agency with a mixed demographic, therefore, it may behoove administrators to offer multiple training designs (classroom an in-person), or to use a blended training design that combines computer-based instruction with in-person sessions such as boosters.

Table 1. Summary of Empirical Research on the Effects of Individual Factors on Training Outcomes

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Aarons, 2006	303 healthcare providers	Attitudes toward adoption of evidence-based practices	Education Job Tenure	-0.016 -0.161**
Baer, Wells, Rosengren, Hartzler, Beadnell, & Dunn, 2009	123	MI Spirit MI Reflection-to-Question Ratio	Prior Training Education Job Tenure Staff Adaptability (Individual Perceptions of Personal Psychological Climate) Prior Training Education Job Tenure	-0.04 -0.11 -0.05 -0.23* -0.08 -0.10 -0.15
Farrell, Young, & Taxman, 2011	332 probation officers and supervisors	Use of skills (Juvenile Service Oriented Practice Scales)	Special Unit	-0.171**

Garavan, Carbery, O'Malley, & O'Donnell, 2010	557 employees	Participation in Training (eLearning)	Demographics
			  Gender
			  Age
			  Social Class
			  Working Status
			  Education
			  Job Category
			  Tenure
			Motivation to Learn
			Self-Efficacy
				Pearson's r
				-0.060
				-0.084
				-0.233**
				-0.075
				-0.111*
				-0.181**
				-0.118**
				-0.102*
				-0.034

Kontoghiorghes, 2002	192 employees of an insurance company	Motivation to Learn Motivation to Transfer	Motivation to Transfer Motivation to Learn	-0.464** -0.464**

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Mathieu, Tannenbaum, & Salas, 1992	106 clerical and administrative assistant employees of a large state university in the Northeast who participated in human resource training sessions			Zero-order correlations
		Learning	Pre-training skills	-0.245*
			Education	-0.235*
			Job Involvement	-0.234*
		Reactions to Training	Motivation	-0.118
			Pre-training skills	-0.163*
			Education	-0.072
		Post-Training Skills (quality & quantity)	Job Involvement	.0.100
			Motivation	-0.427 **
			Pre-training skills	-0.574**
			Education	-0.031
			Job Involvement	-0.149
			Motivation	-0.056
Murphy, Rhodes, & Taxman, 2012				Cohen's d
		Attitudes about material incentives for probationers	Gender	0.47*
			Age	0.22
			Education	0.18
			Criminal Justice Focus	0.40*
			Social Work Focus	0.58
		Attitudes about social incentives for probationers	Gender	0.34
			Age	0.55*
			Education	0.41*
			Criminal Justice Focus	0.28
			Social Work Focus	0.25

* p < .05, ** p < .01, *** p < .001

There is some indication that age is negatively related to individuals' motivation to learn new skills, though the exact nature of this relationship is unclear (Goldstein and Ford, 2002). It could be that older individuals feel that they already have the knowledge they need to do their job, or that they have little interest in learning new ways to do their job since they plan to retire soon. It could instead signify a lack of self-efficacy, or the belief that they have the ability to learn new skills, especially those that require the use of a new technology. Rogers (1995) argues that it is not age that matters, but rather it is education that influences the likelihood of an individual to adopt a new innovation. His work on adoption of innovations shows a positive relationship between education level and the likelihood of adopting a new practice. The work of Knudsen, Ducharme, Roman, and Link (2005) supports this assertion, finding that substance abuse treatment counselors with a Bachelor's or Master's degree are more likely to understand the effectiveness of EBPs than those without a college degree. These findings can have mixed implications for probation offices, which are likely comprised of officers with varying levels of educational attainment. While administrators cannot alter the ages of their employees, they can alter hiring practices to hire officers with certain degrees. They can also introduce incentives for existing staff to seek advanced degrees, which in the long term may also improve training outcomes.

Other individual factors such as job satisfaction and organizational commitment also tend to have complicated relationships with training outcomes (Goldstein & Ford, 2001; Kontoghiorghes, 2002; Mathieu & Martineau, 1993). Individuals with high career aspirations and low job satisfaction are likely to display less motivation to learn new

skills in training since that training is likely to only teach them skills for the position they

currently have and are not happy with (Goldstein & Ford, 2001). Conversely, employees

with high commitment to the organization tend to show higher levels of motivation to

learn new skills (Kontoghiorghes, 2002). Mathieu and Martineau (1993), however, state

that job commitment may hinder training outcomes if there is a mismatch between the

training targets and employees' perceptions of what their job entails. If individuals

perceive a poor fit between the training and their current tasks (or even future

expectations of tasks), then they may exhibit strong commitment to the organization, but

will not demonstrate favorable training outcomes. It is thus important that staff

understand how the training fits with both current and future expectations of practice.

Interventions to improve individuals' commitment therefore may not be as important to

improve training outcomes as interventions to increase communication between

administrators and line staff.

Kozlowski and Salas (1997) contend that of the many individual factors,

motivation has been shown to have the most consistent positive influence on training

outcomes. Employee motivation adds a layer of complexity to understanding the impact

of individual factors on training outcomes. Research indicates that motivation, which

includes both one's motivation to learn new skills and motivation to use those skills on

the job, may play a particularly complex role in the relationship between individual

factors and training outcomes. One body of research examines the effects of individual

factors on employee motivation as an outcome (Kontoghiorghes, 2002, 2004), while

others examine the effects of motivation during training (Garavan et al., 2010) and on

training outcomes (Goldstein & Ford, 2002; Kozlowski & Salas, 1997; Mathieu & Martineau, 1993). This research consistently finds that individuals with higher levels of motivation to learn and self-efficacy perform better in training (Mathieu & Martineau, 1993) and have better training outcomes than those who are less motivated, especially for manual, web-based, and other self-directed trainings (Garavan et al., 2010; Mathieu & Martineau, 1993). This research may indicate that motivation could actually mediate the relationship between individual factors and learning/using skills. Treating motivation as a mediator may help explain mixed findings on the influence of certain individual factors such as job satisfaction and commitment on training outcomes, as their influence is likely altered by varied levels of individuals' motivation.

Garavan et al., (2010) examined the influence of individuals' motivation to learn on participation in training for a sample of over 1500 employees of 275 agencies. They found that employees who had higher motivation prior to the training were more likely to participate than those who were less motivated at the start, thus providing considerable support for the notion of motivation as an important mediator. Goldstein and Ford (2002) discuss the influence of motivation during and after training, and assert that learning during training enhances individuals' feelings of self-efficacy, which then increases their motivation and likelihood to use skills on the job post training. If motivation exerts as strong an influence as prior research suggests, then probation administrators may find it to be of great value to invest in pre-training motivation-building interventions to improve training outcomes. Understanding exactly what drives motivation is thus crucial in designing effective interventions to increase motivation.

There are a number of theories to inform our thinking about individual

motivation, including goal setting, expectancy, and equity or contract theories, as well as

some general theories of human behavior that may be applied to motivation, such as

social learning theory and reinforcement theory (Goldstein & Ford, 2002; Noe et al.,

1997). What all of these theories have in common is the notion that motivation stems

primarily from the expectation of a reward for engaging in a desired behavior.

Expectancy theory, one of the earliest theories of employee motivation, proposes three

reasons why individuals feel motivated: 1) they think they are able to learn the skills

being taught, 2) they think they need those skills to enhance their ability to do their job,

and 3) they think doing a better job will help them obtain positive outcomes (e.g., get a

raise) or avoid negative outcomes (e.g., getting fired) (Vroom, 1964). Based on this

theory, one way to influence individual motivation to learn skills in training and use them

after is for the organization to place an emphasis on the importance of in-service trainings

in policy and by using incentives during and after training to promote use of skills

(Simpson, 2002; Taxman & Belenko, 2012). Reward systems such as a skill-based pay

system built into the organizational structure will promote individuals learning and using

skills post-training (Baldwin & Magjuka, 1997; Mathieu & Martineau, 1993).

While individuals may be motivated by the idea of a reward for performing a

desired behavior, expectancy theory cautions us that their levels of motivation are first

contingent upon individuals' beliefs in their ability to learn the new skills being taught. If

they do not believe they have the ability to learn the skills, individuals may not be

motivated to even try. Appropriate pre-training knowledge, skills/abilities, and training

experience will thus lead to higher levels of motivation and training effectiveness because those individuals are "ready" for the training (Goldstein & Ford, 2002; Mathieu & Martineau, 1993). For example, in training new staff to use evidence-based practices in contacts with offenders, it is important that those staff feel that they have an adequate foundation for all practices they are expected to use. Simply training new staff how to enter information into a computer system is not likely to be enough for them to feel confident engaging in conversations with probationers. Officers who have the experience of having practiced engaging in conversations with probationers will likely feel more prepared for, and thus more motivated to use these practices with offenders. Mathieu and Martineau (1993) do warn, however, that while it may be intuitive that an individual with too little knowledge and ability will not do well in training, that the same is likely true for individuals with too much knowledge and ability, who may feel that the training is unnecessary or irrelevant. When considering training outcomes, then, it is important to consider individuals' education, ability, and prior experience and the influence each of these factors may have on participants' motivation.

The other two reasons why individuals feel motivated according to expectancy theory involve interactions between the individual and other training design and organizational factors. The belief that an individual needs the skills covered in a particular training to enhance their ability to do their job relates to both the design of the training – appropriateness for the particular audience, use of job specific examples during the training – as well as communication within the organization – how well administrators relate the training back to the organization's mission/goals and specific

employee tasks. The notion that doing a better job will help an individual either obtain

positive outcomes or avoid negative outcomes is directly related to the organization's

environment. Each of these relationships is examined in more detail in the next section.

While learning skills in training and using skills after training are both influenced

by individual motivation to transfer and self-efficacy (Garavan et al., 2010; Mathieu &

Martineau, 1993; Miller & Mount, 2001), research suggests that post-training use of

skills and sustainability are more related to organizational factors than individual factors

(Kontoghiorghes, 2004; Simpson, 2002; Welsh, Wanberg, Brown, & Simmering, 2003).

Furthermore, Kontoghiorghes (2004) argues that motivation to use skills in particular is

influenced more so by the climate of an organization than by individual factors. Broad

and Newstrom (1992) agree, asserting that motivation is perhaps the most difficult

individual factor to influence specifically because of its reliance on organizational

factors. Others also claim that organizational factors, specifically resources, climate, and

culture, exert a strong influence on post-training use of skills (Mathieu & Martineau,

1993), and call for future research to move beyond individual factors and to consider the

effects of organizational factors on training outcomes, stressing that consideration of only

one group of factors is insufficient to fully understand influences on learning and using

skills (Noe et al., 1997). The next section takes a closer look at these and other

organizational characteristics that may influence training outcomes.

Organizational Characteristics

Taxman and Belenko (2012) identify several organizational factors that influence

the adoption of evidence-based practices, including readiness for change, alignment of

values between the organization and the training/innovation, agency structure, professionalism, and staffing. Other organizational factors that can facilitate or impede adoption include the opportunity to use new learning on the job (Lim & Johnson, 2002; Mathieu & Martineau, 1993) and funding or resource constraints (Aarons, Wells, Zagursky, Fettes, & Palinkas, 2009; Mathieu & Martineau, 1993). Table 2 provides a summary of the empirical literature on the influence of organizational characteristics on training outcomes.

One organizational factor of considerable interest is the voluntariness of trainings. The influence of mandatory versus voluntary attendance at training has generated mixed results (Baldwin & Maguka, 1997; Mathieu & Martineau, 1993). While mandatory attendance can reinforce the importance of a particular training, it doesn't always ensure that individuals will learn anything, or use the skills they learn when back on the job. Requiring all employees to participate in a particular training may in fact have a direct negative impact on employees' participation because it forces employees to participate in something that they may not personally deem to be valuable. When training is voluntary, however, there is no guarantee that staff will attend, which can be problematic when considering trainings for agency-wide adoption of new practices. It should also be noted that not all those who volunteer for training will be avid participants. Some individuals may volunteer to attend training so that they can avoid doing other work (Baldwin & Maguka, 1997; Kanter, 1986). Prior research indicates that for eLearning programs in particular, voluntariness leads to poor participation rates and high rates of dropout (Garavan et al., 2010).

Table 2 Summary of Empirical Research on the Effects of Organizational Factors on Training Outcomes

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Aarons, 2006	303 healthcare providers	Attitudes toward adoption of evidence-based practices	Transformational Leadership Transactional Leadership	Pearson's r -0.288*** -0.264***
Baer, Wells, Rosengren, Hartzler, Beadnell, & Dunn, 2009		MI Spirit MI Reflection-to-Question Ratio	Climate – Steff Efficacy Climate – Organizational Autonomy Climate – Organizational Change Climate – Organizational Autonomy Climate – Organizational Change	-0.06 -0.00 -0.07 -0.52** -0.55**
Clarke, 2002	14 trainees of a UK social services agency (social workers)	Knowledge of Skills (Risk Assessment Skills) Use of Skills (case vignettes)	Supervisor Support Workload Workplace Reinforcement of Training	Minimal support from supervisors to implement skills learned in training. "Few supervisors either discussed the training with trainees before [attendance] or how they might implement it afterwards" (p.154). Heavy caseloads don't allow time to try out new skills. "The nature of workplace constraints meant implementing the training was prohibitive" (p. 152). "Few opportunities existed for reinforcement of the training back in the workplace" (p. 153).

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Cromwell & Kolb, 2004	63 front-line university supervisors 18 university managers	Training Transfer (use of knowledge/skills post-training)	Supportive Transfer Climate Supervisor Support Peer Support	-0.570*** -0.610*** -0.600***
Farrell, Young, & Taxman, 2011	393 probation officers and supervisors	Use of skills (Juvenile Service Oriented Practice Scales)	Cynicism for Change Climate Supervisory Leadership	-0.195*** -0.106* -0.162**
Garavan, Carbery, O'Malley, & O'Donnell, 2010	557 employees	Participation in Training (eLearning)	Situational Constraints (adequate equipment/supplies, authority to complete tasks, and enough time to complete job successfully)	Pearson's r -0.011
Kontoghiorghes, 2002	192 employees of an insurance company	Motivation to Transfer	Commitment to Organization Expectation to Use Skills	Pearson's r -0.403** -0.400**

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Kontoghiorghes, 2004	177 Information Technology Employees			r^2
		Motivation to Transfer	Positive Transfer Climate	-0.271
			Organizational Commitment	-0.443
		Training Transfer	Motivation to Learn	-0.469
			Positive Learning Transfer Climate	-0.245
			Organizational Commitment	-0.373
			High Performance Environment	-0.393
			Job Satisfaction	-0.416
			Risk-Taking Culture	-0.462
			Quality-Driven Culture	-0.477
			Motivation to Transfer	-0.490
Lim & Johnson, 2002	10 employees of Korean human resources development departments	Increased Learning Transfer	Opportunity to Use Skills on the Job	77.4% of respondents reported
		Decreased Learning Transfer	Lack of Opportunity to Use Skills on the Job	64.3%
			Skills are Unrelated to Job	15.0%
			Lack of Understanding	9.3%
			Planning for Future Use	6.9%
			Difficult to Apply Skills because of Organization	2.9%
			Lack of Equipment to Use	0.7%

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Mathieu, Tannenbaum, & Salas, 1992	106 clerical and administrative assistant employees of a large state university in the Northeast who participated in human resource training sessions	Learning	Situational Constraints (adequate equipment/supplies, authority to complete tasks, and enough time to complete job successfully)	Zero-order correlations -0.243*
		Reactions to Training	Situational Constraints	-0.012
		Post-Training Skills (quality & quantity)	Situational Constraints	-0.074

* p < .05, ** p < .01, *** p < .001

Administrators should keep several things in mind when contemplating the use of policies that require employees to complete a certain number of training hours, or practices such as using incentives. First, while requiring annual training may be a good organizational practice to increase training participation and use of skills, it is important that agencies consider the nature of trainings they accept toward required training hours, as trainings that differ substantively from the employee's tasks or role in the agency will likely not produce the same increase in use of EBPs as a more relevant training would. For example, if an agency gives training credits for CPR training they should not expect that training to increase use of core correctional practices as there is no overlap between CPR skills and evidence-based supervision practices. Likewise, while organizations that reward staff for completing training are likely to have employees who are more likely to use skills (Mathieu & Martineau, 1993), administrators must keep in mind that rewards in this sense refer to the addition of a positive element rather than avoidance of a negative action (e.g. getting fired). Baldwin and Magjuka (1997) argue that both the addition of a positive element as well as avoidance of a negative action will serve to maximize training success, however, the relative influence of each remains untested.

Another organizational factor that research shows to be particularly influential in training outcomes is organizational leaders' opinions of the importance of training (Baldwin & Ford, 1988; Garavan et al., 2010; Simpson, 2002). Broad and Newstrom (1992) state that managerial support is the number one influence on successful training outcomes, most importantly, using skills post training. The way managers and supervisors talk about and introduce training to their employees before training takes

place helps to shape employees' perceptions of the importance of the training both during and after the training process (Baldwin & Ford, 1988; Baldwin & Maguka, 1997). Taxman and Belenko (2012) indicate that informing staff of what the EBP is and why it is important prior to training can help staff to determine the value of an innovation, which in turn affects adoption of new practices. Establishing a leadership presence at the training can also help to reinforce the importance of training to the organization (Baldwin & Maguka, 1997; Lim & Johnson, 2002). It shows that the training is not only worth the time of the officers who are taking it, but also to agency administrators, and keeps administrators informed of exactly what the training covered and how.

Research further indicates that when leaders/supervisors talk about the training with employees after the training has ended, set expectations of how they want the skills learned in training implemented into existing practice, and express favorable attitudes towards the adoption of new practices, then employees are more likely to express favorable attitudes towards adopting new practices and integrating new skills into their day-to-day activities (Aarons, 2006). Other researchers argue that if managers do not reinforce the training on the job then no matter how good the training was it will not translate into using skills once the training is over (Broad & Newstrom, 1992). Among a sample of over 300 public sector mental health service providers, Aarons (2006) found that staff who felt that their leaders were more inspiring and motivating were also more likely to display positive attitudes about adopting evidence-based practices. Positive managerial presence at staff trainings can thus serve the dual purpose of reinforcing the importance of the training, but also informing supervisors about the nature of what skills

line staff learned so that they can help staff integrate those skills into their day-to-day tasks. Common methods for increasing managerial support include policies holding supervisors accountable for staff use of skills, training supervisors as coaches, and involving supervisors/managers in the training planning process (Broad & Newstrom, 1992).

In addition to directly impacting training outcomes, organizational factors also contribute to the organization's culture and climate, which research indicates are instrumental to learning and adopting new skills. Schein (2004) defines culture as a "pattern of shared basic assumptions learned by a group as it solves its problems of external adaptation and internal integration, which has worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (p. 18). In simpler terms, organizational culture is a set of shared norms, beliefs, and behavioral expectations that are passed on through socialization. Culture thus encompasses common organizational practices, norms, and ways of operating and performing certain tasks. Consider the use of risk assessment instruments as an example. While the use of risk assessments has become a relatively common practice within probation agencies, how exactly the assessment is used will be impacted greatly by the culture of each different agency. In one agency, the culture may result in significant numbers of overrides to risk scores for female offenders so that they appear to be higher risk than they actually are and can gain better access to services. In another agency, risk assessments may be completed solely by the probation officers based on probationer case files and with no input from the probationer. When

implementing a new practice, it is thus important to consider the influence of an agency's culture on how that practice will be adopted, as the same evidence-based practice may look different when implemented in agencies with different cultures.

Climate is slightly different than culture, and is "the collective perceptions of employees about their work environment" (Gayman & Bradley, 2012, p. 3). Climate may be considered the tone of an organization, which can range from supportive of adopting new skills to resistant to change. It is evaluated based on personal values and individual perceptions of what is important. Shared individual perceptions can then be combined to gain an understanding of an organization's climate as a whole. For example, an agency in which a majority of the staff perceive that they have a say in the changes their agency makes, and/or that they will be rewarded for trying newer, better ways of doing their job, will likely have a climate that is supportive of training. A cynical climate can develop, however, if a significant percentage of staff believe that changes never seem to stick, or that changing the way something is done is not important because the agency will adopt the latest trend every time a new political figure takes over. It is important to gauge the climate of an organization through employees' perceptions prior to training or adopting a new practice to determine if the climate will potentially help or hinder attempts at innovating.

When an organizational climate is supportive of the use of skills learned in training, it may be referred to as a "positive transfer climate" (Ruiller & Goldstein, 1993). A positive environment is best characterized by a consistent use of positive reinforcement, use of job aids that relate training materials to common work tasks,

opportunities to practice new skills, modeling desired behaviors by supervisors and other

staff, the use of refreshers or booster trainings, and reduced workload while

practicing/integrating new skills (Broad & Newstrom, 1992). In one study,

Kontoghiorghes (2004) found that the strongest predictor of individuals' motivation both

to learn and use skills was a "positive learning transfer climate," which is strongly tied to

organizational culture. Further research indicates that organizations with a positive

transfer climate are more likely to adopt and sustain innovations and new practices

learned in trainings (Baldwin & Ford, 1988; Cromwell & Kolb, 2004; Garavan et al.,

2010; Kontoghiorghes, 2001, 2004; Lim & Johnson, 2002; Miller & Mount, 2001;

Rouiller & Goldstein, 1993). For example, Clarke (2002) found that employees who

received more support post training were more likely to effectively administer risk

assessments as learned in training than those who received little to no support.

Furthermore, in the absence of a positive transfer climate, such as when

administrators fail to specify in advance the need or rationale for a training, fail to

reinforce successful completion of the training, or fail to provide employees with the

opportunity to use and practice new skills, a training will likely be ineffective at getting

staff to use new skills on the job (Mathieu & Martineau, 1993). In a small qualitative

exploratory analysis of the factors that influenced use of skills post training among

employees of a social service agency, employees stated a lack of time to practice skills

during and post training to be the strongest negative influence on their use of skills

(Clarke, 2002). Other organizational factors that are associated with impeding the use of

skills post training include heavy workloads, time pressures, lack of reinforcement of

training, and a lack of feedback from supervisors (Clarke, 2002), all of which are characteristic of agencies that lack a positive transfer environment.

Culture and climate of the organization both affect decisions about innovating or adopting new technologies and how well they are implemented, so it is important that interventions and services research include both. Researchers and agency administrators can test interventions designed to alter an agency's culture and/or climate to improve the implementation of training and use of skills. Hicks and Klimoski (1987) suggest that employee attitudes should be addressed prior to the introduction of training to staff so that the news that training is coming will be better received. Clarke (2002) mirrors this suggestion, stating that the ultimate goal of understanding the effects of organizational climate on training outcomes should be to enable administrators to alter the organizational environment prior to training to ensure positive training outcomes. Efforts to address culture and climate in this way may include conversations between staff and management about the agency's mission and goals, the purpose of certain practices and policies that are meant to support those goals, and how new initiatives fit into existing practice both in the short and long term. Baldwin and Ford (1988) further argue that differences in climate need to be examined across workgroups (e.g. special units, districts) within agencies as well as across organizations, noting that climate, and its effects, can vary drastically even within an organization.

Discussing the fit between new training or initiatives and existing practice with staff necessitates prior consideration of this fit by agency administrators. Research indicates that it is important for a training or innovation to fit into the existing

organizational structure and processes of an agency. As such, new technologies are frequently adapted to fit an established organizational culture (Hemmelgarn, Glisson, & James, 2006; Rogers, 1995). For agencies that already have a positive culture and climate (i.e. environments that are supportive of the adoption of new skills), it may be beneficial to adapt trainings so that their design is consistent with current agency norms to promote adoption of skills covered in a particular training. This includes making sure 1) the innovation has been tailored to fit the needs of the organization, 2) employees understand how the innovation should be integrated into existing practice and workload, and 3) there are enough resources to implement the innovation (Aarons et al., 2009; Damschroder et al., 2009; Lim & Johnson, 2002; Mathieu & Martineau, 1993; Taxman & Belenko, 2012). Fixsen and colleagues (2009), however, caution against the overuse of adaptations to evidence-based practices as it might lead to decreased fidelity of implementation by changing the EBP too much (Fixsen, Blasé, Naoom, and Wallace, 2009).

Agency administrators should consider existing policies that drive current practice and identify those policies which may conflict with the adoption of new practices (Rogers, Wellins, & Conner, 2002). For example, when training officers on the use of graduated sanctions with probationers on their caseload, it is important to first consider if the agency has any existing policies regarding when an officer must sanction and for what reasons (Rudes, 2012). This process may reveal that for high risk probationers there is a "one and done" policy which results in revocation of supervision for any infractions. Such a policy is potentially contradictory to the use of graduated sanctions, as it directs

officers who work with high-risk probationers to only use the most severe sanction, rather than gradually increasing sanction severity.

Funding and other resource constraints are arguably some of the most important organizational factors regarding their influence on training outcomes, particularly adopting new skills/practices. Aarons and colleagues (2009) surveyed over 30 officials from mental health organizations in a large western county and found that out of 14 factors thought to influence the adoption of innovations, stakeholders ranked funding as most important. Agencies require funding to pay for staff trainings and often to buy equipment to support staff use of skills (e.g. computers for risk and needs assessments and case management within probation offices). When considering implementing new EBPs, administrators will be looking for increased efficiency in the form of trainings that offer more bang for their buck. They will target those trainings and innovations that are high quality, low cost, and offer a promise of sustainability. There are a variety of training designs that may appeal to probation administrators in this regard. The following section discusses common training design features and their relationships with training outcomes.

Training Design Characteristics
The final category of factors that can influence the ability of an organization to adopt new practices focuses on training design. Table 3 provides a summary of the empirical literature on the influence of training design characteristics on training outcomes. Goldstein and Ford (2002) define design as "the development and arrangement of a set of activities so as to support the internal learning process of the trainees" (p. 88).

Training design includes the training content, quality of content, nature of learner support (e.g. coaching, refreshers), congruence between training examples and workplace activities, teaching of general principles that trainees can then apply to varied situations, and the modality through which the training is delivered (Baldwin & Ford, 1988; Garavan et al., 2010; Kontoghiorghes, 2001).

Researchers know more about certain design components than others. For example, research indicates that elements such as continued access to course materials, refresher/booster sessions, coaching, and feedback are all effective in sustaining technology transfer over time (Garavan et al., 2010; Miller & Mount, 2001; Taxman & Belenko, 2012; Taxman et al., 2014). Traditional training for probation and parole officers consists of classroom-based workshop-style seminars delivered over a one- to three-day period of time (Miller & Mount, 2001; Sholomskas et al., 2005; Walters, Matson, Baer, & Ziedonis, 2005). While one-shot training of this nature is the norm, evidence suggests that it is not effective for sustaining knowledge gain (Miller & Mount, 2001; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004a; Sholomskas et al., 2005). This type of training is also less effective in altering behavior because it doesn't carry over into the workplace (Miller & Mount, 2001). Trainees learn materials in the training setting under controlled conditions and are not able to implement the skills they learned in actual work situations.

One-shot training also creates a number of logistical issues, which presents challenges for both attendees and the agencies for which they work. These challenges include time away from work, costs associated with travel and the training itself, and

potential geographical constraints if the training is not offered locally. Traditionally-structured trainings are often time-intensive and costly for both individual attendees and the agencies they work for (Sholomskas et al., 2005), which provides an incentive to develop less costly and disruptive methods of delivering training.

Two of the most influential factors for sustaining the use of new practices in an organization are coaching and feedback. Coaching is an active and intentional process that is conducted by an experienced individual and as a support to a training initiative (Michigan's Integrated Behavior and Learning Support Initiative: MiBLSi, http://miblsi.cenmi.org/Coaching.aspx). It should be work-based, opportunistic, readily available, and reflective. Coaches are not simply supervisors; they are mentors and skill-builders who provide advice, encouragement, and opportunities to practice skills (Fixsen, Blase, Naoom, & Wallace, 2009). Ongoing coaching and consultation is one of Fixsen and colleagues' (2009) Core Implementation Components, which they state are crucial to the successful implementation of new practices.

The nature of coaching varies greatly from one study to the next in terms of who is selected to be a coach, how they analyze performance, how feedback is given, and how often coaching sessions take place (Baer et al., 2007). Coaches may be internal or external to the agency (Bonta et al., 2013; Fixsen, Blase, Naoom, & Wallace, 2009), may be peers (Alexander et al., 2013) or supervisors (Fixsen et al., 2009), may meet with staff at regular intervals or based on performance (Baer et al., 2007), and may conduct audio (Bonta et al., 2013), video (Miller et al., 2004a), or direct observations to rate use of skills

(Baer et al., 2007; Maass, 2013). Additionally, coaching sessions may be conducted in groups, individually, or a mix of both (Alexander et al., 2013).

Despite differences in how coaching may be implemented, the research on coaching overwhelmingly demonstrates that trainees are likely to learn and retain skills better when they are coached and/or given feedback post training (Garavan et al., 2010; Kontoghiorghes, 2001; Miller et al., 2004). Miller and colleagues (2004) found that coaching and feedback following training helped sustain knowledge gains several months post-training among a sample of counselors coached on the use of motivational interviewing techniques. In a review of training and fidelity monitoring-interventions in the field of addictions, Baer et al. (2007) found that ongoing coaching was linked to increased fidelity of therapeutic activities.

These findings are equally consistent among community corrections samples. Alexander et al. (2013) found both individual and group coaching sessions increased probation officers' understanding of and comfort using evidence-based practices in contacts with probationers. Bonta and colleagues (2013) also found that officers who received post-training clinical support in the form of monthly coaching sessions to provide refreshers and feedback on use of skills were more likely to use core evidence-based practices than officers who did not receive the same training and coaching. The overwhelming consistency of the research on the effectiveness of coaching demonstrates its necessity when designing trainings with the intent to increase trainees' use of skills.

Table 3 Summary of Empirical Research on the Effects of Training Design Factors on Training Outcomes

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Alexander, Palombo, Cameron, Wooten, White, Casey, & Bersch, 2013	13 probation officers	Use of Skills	Coaching (Individual and Group)	"Both individual and group coaching sessions… appear to be useful in enhancing skills" (p. 66).
Clarke, 2002	14 trainees of a UK social services agency (social workers)	Knowledge of Skills (Risk Assessment Skills)	Duration of the training	Two days was "barely sufficient to master the skills".
			Time to practice post-training	Limited ongoing practice undermined any skill acquisition from training.
		Use of Skills (case vignettes)	Time to use skills on job	Limited time with clients meant not enough time to use skills learned in training.
			Feedback	Heavy caseloads impeded use of skills. Minimal feedback on performance of new skills to reinforce use.
Garavan, Carbery, O'Malley, & O'Donnell, 2010	557 employees	Participation in Training (eLearning)	Support Design of Instruction Content Quality Learner Support, Feedback, and Recognition	-0.107* -0.065 -0.118* -0.162
Lowenkamp, Robinson, Koutsenok, Lowenkamp, & Pearl, 2012	63 county probation officers 86 federal probation officers	Understanding of Skills	Coaching	"Coaching sessions helped [participants] better understand how they could use the skills with clients and how they could use the skills as part of their job" (p. 38).

Study/Author	N/Unit of Analysis	Outcome(s)	Independent Variables	Correlation
Miller, Yahne, Moyers, Martinez, & Pirritano, 2004	140 licensed health professionals	Post-Training Understanding of Motivational Interviewing	Workshop Only Workshop and Feedback Workshop and Coaching Workshop, Feedback, and Coaching Self-Training	$F_{(1, 11)}$ 6.13* $F_{(1, 22)}$ 20.10*** $F_{(1, 27)}$ 42.78*** $F_{(1, 17)}$ 35.24*** $F_{(1, 22)}$ 2.49
Sholomskas, Syracuse-Siewert, Rounsaville, Ball, Nuro, & Carroll, 2005	78 substance abuse treatment clinicians	Use of CBT Skills	Manual Only Manual and Web Training Manual and Workshop Training and Supervision (coaching)	Effect Sizes (Cohen's d) 0.71 0.64 0.48 0.61
Taxman, Henderson, Young, & Farrell, 2012	231 Juvenile Probation Officers	Readiness to change	Coaching (social networking) Coaching (knowledge-building)	Intervention coefficient for slope = - 0.60, SE = 0.27, pseudo z =- 2.22, p = 0.026; post-training intervention coefficient for quadratic = 0.69, SE = 0.29, pseudo z = 2.36, p =0.018 Intervention coefficient for slope = - 0.01, SE = 0.15, pseudo z =- 0.03, ns; post-training intervention coefficient for quadratic = - 0.24, SE = 0.31, pseudo z = - 0.78, ns

* $p < .05$, ** $p < .01$, *** $p < .001$

One design element that has received considerably less attention, especially in the field of criminology, is the use of a web-based design for training programs to disseminate knowledge of evidence-based practices and increase use of skills. Web-based training, or eLearning, is "any type of learning situation in which instructional context is delivered through the use of computer networked technology, primarily over an intranet, or through the Internet, where and when required" (Bondarouk & Ruël, 2010). This ranges from a video of workshop training or slides posted online to interactive formats. Interactive eLearning can either be synchronous, where users log in at a designated time and interact with each other and/or an instructor (such as during a webinar), or asynchronous, where users access the training at different times and are self-paced (Bondarouk & Ruël, 2010; Welsh et al., 2003). Many organizations are making the switch to web-based trainings, including organizations in the fields of education and human resource development (Garavan et al., 2010). Government agencies, primarily the military, have increasingly begun to rely upon web-based training and simulations as well.

A number of benefits to utilizing a web-based or eLearning format for training delivery exist. These benefits include financial savings, reductions in lost time due to training absences, increased accessibility to training materials, consistency of instruction over multiple deliveries, and the ability to incorporate a variety of instructional strategies and media in one cohesive training (Gunasekaran, McNeil, & Shaul, 2002; Sholomskas et al., 2005). Training costs can be particularly extensive for agencies that wish to train their entire staff (Sholomskas et al., 2005). It is not feasible for such widespread training to

occur at one time, as it would interfere with operations of the entire agency. Instead, agencies are forced to have employees attend training in waves, which delays the system-wide uptake of new ideas and practices and introduces new issues related to the consistency of training over time. While agencies may spend similar amounts of money in development start-up costs for web-based training, once the curriculum is developed it can be used repeatedly with few resources needed to maintain it. Web-based trainings therefore save money on repeat trainings and trainings that are intended for widespread delivery, such as those for large organizations (Sholomskas et al., 2005).

With all of the practical benefits of providing training over the internet, it is not surprising that the use of web-based training programs continues to gain traction and spread to other fields. As this growth occurs it becomes all the more important to understand the implications of implementing new training designs, especially regarding the effectiveness of those designs. While the practical appeal of web-based training is clear, it may be less attractive of an option if it comes at the cost of diminished effectiveness.

Kulik & Kulik (1991) used meta-analytic techniques to examine web-based versus classroom-based learning among elementary, secondary, and college students. In general, the findings indicate a significant increase in post-test scores for web-based teaching over classroom-based teaching (ES = .31). Computer-based teaching was most effective for courses with shorter durations (4 weeks or less) (ES = .42) versus longer courses (ES = .26). When controlling for instructor effects, the authors found that the effect size for studies in which the same instructor delivered both the web-based and the

classroom-based instruction (ES = .25) was smaller than that for studies with different instructors for each modality (ES = .39). These findings indicate the potential influence of a factor other than training modality, such as instructor skill.

In a more recent meta-analysis of the effects of web-based versus classroom interventions for college students and employees, Sitzman and colleagues (2006) found that web-based instruction was more effective than classroom-based instruction when students were given more autonomy in web-based training, and when different instructional methods were used in the web-based versus classroom-based courses. Ultimately, however, when controlling for instructional methods, web-based instruction showed only a marginal increase in effectiveness of teaching general facts and principles over classroom-based instruction. These findings are consistent with other research that argues learners' engagement with eLearning is contingent upon the level of activity and interaction involved (Benson, 2004). Asynchronous training, while allowing users the autonomy to complete training at any time and at their own pace, involves less user interaction than webinar-style training designs, and may be insufficient for training transfer (Bondarouk & Ruël, 2010). Rather, the most effective web-based trainings appear to be those which most closely resemble classroom-based instruction and offer an opportunity for trainees to practice skills (Goldstein & Ford, 2001).

Mathieu and Martineau (1993) caution against "uniform training programs" that are not easily adaptable to individuals from different units because it will likely decrease their motivation to both learn and use skills if they don't see how it directly applies to them. In that regard, Goldstein and Ford (2001) assert that web-based training may be

more effective because it can be individually tailored in ways a lecture cannot. For example, individuals can set their own pace during an online training and skip or reread certain materials depending on their level of understanding. In typical classroom trainings, however, the instructor must teach to the average student, which may be more or less instruction than some students actually need. Clark (1983, 1994) argues that the modality of training (web-based versus classroom-based) may not be as influential as the general design of a training. This sentiment is shared by others who argue that web-based training is not necessarily better than classroom-based instruction, and for either modality the effectiveness of the training relies more so upon its development (Bondarouk & Ruël, 2010).

Designing trainings that are identical in every way but their delivery mode in order to empirically test this assumption can be quite challenging and is often not practical outside the research world. Often companies have invested in eLearning as part of a general training update. In that case the training is not intended to be the same as it was previously; the intent is to switch the modality while updating and improving the training content as well (Gunesakeran et al., 2002). This is a practical limitation that may explain why there are so few comparison studies of web-based versus classroom-based instruction.

Compared to other disciplines, most notably human resource development, there is a lack of literature studying eLearning models used in criminal justice and substance abuse treatment settings, with two exceptions. Yarcheck, Gavazzi, & Dascoli (2003) studied web-based delivery of accountability-based sanctions for juvenile probation

officers. Officers were assigned to either manual-only training (available online) or a

web-based companion training with videos, case vignettes, and sample instruments.

Findings indicated no significant differences in change in knowledge from pretest to

posttest for either of the training groups. Sholomskas et al. (2005) studied training for

Cognitive Behavioral Therapy (CBT) with a sample of substance abuse treatment

clinicians. They compared three training modalities: 1) manual-only training, 2) manual

plus 3-day workshop training, and 3) manual plus web-based training. They found

marginal but non-significant improvement in knowledge of CBT for the manual-only

group. Web-based training showed significant improvement over the manual-only

training, and the workshop training group showed the most significant improvement in

knowledge (Sholomskas et al., 2005). Ultimately, the authors concluded that the web-

based training offered a feasible alternative to seminar style training; although it was not

as effective, it was less expensive and was a viable option for those clinicians who could

not attend the in-person training (Sholomskas et al., 2005).

Summary

Prior research clearly shows that individual, organizational, and training design

characteristics can each have a significant impact on employees' knowledge gained

during training and their use of skills post training. A number of researchers further agree

that positive training outcomes are a result of a combination of individual, organizational,

and design characteristics (Baldwin & Ford, 1988; Clarke, 2002; Goldstein & Ford, 2001;

Kontoghiorghes, 2001; Noe, Wilk, Mullen, & Wanek, 1997; Welsh et al., 2003) without

truly understanding how these factors affect each other. Altering or influencing any of the

aforementioned characteristics will likely affect training outcomes; however, prior research fails to shed light on the relative impact of each of these types of factors.

Baldwin and Ford (1988) provide a theoretical framework for the examination of training effectiveness that takes into account individual, organizational, and training design characteristics in a single model. This framework provides a solid foundation for examining the relative influence of each source of influence on training outcomes. They also offer some guidance as to how one might operationalize measures in each of these areas; however, they do not provide an empirical test of their framework. Instead, they call for future research to further identify and operationalize variables that significantly impact training outcomes, either positively or negatively. Since Baldwin and Ford published their theoretical framework in 1988, other researchers have tested it either as a whole or in part, and with various methodologies.

In one of the earliest studies drawing upon Baldwin and Ford's (1988) theoretical framework, Mathieu, Tannenbaum, and Salas (1992) examined the effects of all three groups of factors on training outcomes in a sample of 140 university employees who attended training on proofreading skills. Their model was also one of the earliest to included individual motivation as a mediator of the effects of individual characteristics on training outcomes and showed that motivation was an important mediator of the influences of individual characteristics on learning outcomes (Mathieu, Tannenbaum, & Salas, 1992). They did not, however, examine the direct effects of each category of factors on training outcomes.

A few years later, Tracey, Tannenbaum, and Kavanagh (1995) studied the direct and indirect influence of organizational characteristics on post-training use of skills among over 500 supermarket store managers. They hypothesized that organizational climate and culture would not only have a direct impact on use of skills, but also that they would moderate the relationship between knowledge gained in training and post-training use of skills. Their results indicate that organizational factors exert strong direct impacts on post-training use of skills (Tracey, Tannenbaum, & Kavanagh, 1995). While this is an important finding in support of the Baldwin and Ford (1988) theoretical framework, it does not account for the influence of training design factors.

Most recently, Clarke (2002) tested Baldwin and Ford's (1988) framework in its entirety among a sample of social workers and found the strongest support for the influence of work environment factors on employees' use of skills. Clarke (2002) also found that organizational climate appeared to mediate the effects of other factors on training outcomes. The strength and exact nature of these relationships, however, remains unknown, as the study was qualitative and small in size (n=14). To date, there remains no quantitative test of Baldwin and Ford's (1988) full theoretical model in any discipline. Such an empirical examination would be a significant and long overdue contribution to the literature. This dissertation begins to address this gap.

Probation administrators are left with little guidance as to which factors they should focus on to exert the strongest influences on training outcomes. Should they focus on increasing individual officer's motivation? Or should they focus more on the culture and climate of their agency to make it more favorable for using evidence-based skills?

Perhaps it matters less who is trained and in what environment, than how the training itself is structured. It is critical to examine the adoption of EBPs from a systems perspective to adequately capture the relative impact of each of these influences and determine which are most influential to training outcomes, including officers' knowledge and use of evidence-based skills. This will allow probation administrators to focus their efforts on those areas that exert the most influence in order to get the most out of training and fully implement EBPs.

CHAPTER THREE: METHODOLOGY

This study draws upon Baldwin and Ford's (1988) theoretical model of the technology transfer process. Baldwin and Ford's (1988) model proposes an examination of the effects of three types of independent variables (i.e., trainee characteristics, training design, and work environment) on two levels of dependent variables (i.e., learning and retention, and generalization and maintenance). Their (1988) model considers not only the direct effects of each type of factor on each dependent variable, but it also considers the indirect effects of learning and retention on the generalization (i.e., use) and maintenance of what is learned in training.

The current research offers a partial examination of Baldwin and Ford's (1988) model among adult probation officers in the United States. It examines the impact of three types of independent variables (as shown in Figure 2) on two outcomes: supervision staff's knowledge of EBPs and self-reported use of EBP skills. To that end, a series of instruments were administered to a sample of probation officers in a large Mid-Atlantic state prior to and after their participation in a skills training program. This chapter describes the processes used for data collection as well as the methodological decisions made during the study. It also includes detailed descriptions of the data collection instruments and the processes used to validate them when applicable.

Individual Characteristics

- Demographics (age, race, gender, education)
- Knowledge/Use of EBPs
- Attitudes toward EBPs
- Motivation to Learn
- Motivation to Use Skills

Training Design

- Perceptions of eLearning
- Perceptions of Coaching
- Content Quality
- Support & Feedback

Organizational Characteristics

- Climate
- Culture
- Organizational Functioning
- District

Learning
Knowledge of Skills

Behavior Change
Use of Skills

Figure 2 Conceptual Model

Research Questions and Hypotheses

Previous research has examined either the effects of one factor, such as organizational characteristics, on training outcomes, or at most has considered the relationships between two types of characteristics (e.g., individual and organizational characteristics). The current project addresses this gap in research by examining the relative impact of individual, organizational, and training design (e.g., eLearning vs. classroom) characteristics in a single model as outlined in the research questions below. Table 4 provides a detailed list of each research question and the corresponding hypotheses.

Question (Q) 1: What is the impact of individual officer characteristics (i.e., demographics, attitudes toward evidence-based practices, prior knowledge and ability, motivation) on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills (e.g., risk/needs assessment, case planning) post training as part of routine contacts with probationers?

Question (Q) 2: What is the impact of organizational characteristics (i.e., climate/culture, cynicism, and organizational functioning) on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills (e.g., risk/needs assessment, case planning) post training as part of routine contacts with probationers?

Question (Q) 3: What is the impact of training design characteristics (i.e., perceptions of eLearning, training modality preference, perceptions of coaching, and perceptions of support/feedback) on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills (e.g., risk/needs assessment, case planning) post training as part of routine contacts with probationers?

Question (Q) 4: Which group of characteristics (individual, organizational, or design) exerts the strongest influence on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills (e.g., risk/needs assessment, case planning) post training during contacts with probationers?

Table 4 Research Questions and Hypotheses

Hypotheses for Knowledge Outcome	Hypothesis for Use of Skills Outcome
Q1: What is the impact of individual officer characteristics on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills post training during contacts with probationers?	
Positive relationship between baseline knowledge and post-training knowledge of EBPs.	Positive relationship between baseline knowledge and post-training use of skills.
Positive relationship between baseline self-reported ability to use EBPs and post-training knowledge of EBPs.	Positive relationship between baseline self-reported ability to use EBPs and post-training use of EBPs.
Positive relationship between attitudes towards EBPs and post-training knowledge of EBPs.	Positive relationship between attitudes towards EBPs and post-training use of EBPs.

Positive relationship between motivation to learn and post-training knowledge of EBPs.	Positive relationship between motivation to learn and post-training use of EBPs.
Positive relationship between motivation to use skills and post-training knowledge of EBPs.	Positive relationship between motivation to use skills and post-training use of EBPs.
Q2: What is the impact of organizational characteristics on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills post training during contacts with probationers?	
Positive relationship between culture/climate supportive of change and post-training knowledge of EBPs.	Positive relationship between culture/climate supportive of change and post-training use of EBPs.
Negative relationship between cynicism and post-training knowledge of EBPs.	Negative relationship between cynicism and post-training use of EBPs.
Positive relationship between organizational functioning and post-training knowledge of EBPs.	Positive relationship between organizational functioning and post-training use of EBPs.
Q3: What is the impact of training design characteristics on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills post training during contacts with probationers?	
Positive correlation between positive perception of eLearning and post-training knowledge.	No correlation between positive perception of eLearning and post-training use of skills.
Positive correlation between perceptions of coaching and post-training knowledge.	Positive correlation between perceptions of coaching and post-training use of skills.
Positive correlation between training content quality and post-training knowledge of EBPs.	No correlation between training content quality and post-training use of EBPs.
Positive correlation between level of interaction with eLearning and post-training knowledge of EBPs.	Positive correlation between level of interaction with eLearning and post-training use of EBPs.
Positive correlation between perceived flexibility of eLearning program and post-training knowledge of EBPs.	No correlation between perceived flexibility of eLearning program and post-training use of EBPs.

Positive correlation between training support/feedback and post-training knowledge of EBPs.	Positive correlation between training support/feedback and post-training use of EBPs.
Q4: Which group of characteristics exerts the strongest influence on staff's knowledge of evidence-based practices and self-reported use of evidence-based supervision skills post training during contacts with probationers?	
As a group, organizational factors will exert the strongest influence on post-training knowledge of EBPs.	As a group, organizational factors will exert the strongest influence on post-training use of EBPs.
As separate items, pre-training knowledge of EBPs will demonstrate the strongest association with post-training knowledge of EBPs.	As separate items, pre-training use of EBPs will demonstrate the strongest association with post-training use of EBPs.

Study Design

This study uses a multisite pre-post design to examine the influence of individual, organizational, and training design characteristics on supervision officers' knowledge and use of core correctional practices after training on evidence-based supervision practices. Data for the independent variables was collected through an organizational survey and pre-test administered at baseline. Officers then participated in a five-month online training program; the Skills for Offender Assessment and Responsivity in New Goals (SOARING) training. After completion of the training program, data for the dependent variables was collected using the post-tests from the training system and a follow-up organizational survey. Figure 3 (below) contains a detailed depiction of the study flow.

Prior research often includes a control group to isolate training effects, however, that was not possible in this case for several reasons. First, given the relatively small size

of each probation district included in this sample, it would have been challenging to have a control group within each district that would not be influenced by other officers in the district who were in the experimental group. Second, training officers all at one time in each district was a major priority of the agency, so delaying access to the training for the sake of an experimental design was not a viable option. Furthermore, the agency had adopted this particular training in part due to its ability to train large numbers of officers simultaneously, and thereby remedy inconsistencies in access to prior training that may exist in each district. Finally, each district is unique in its combination of size, location, officer composition, and prior access to training, so finding matched districts from among the group of non-participating districts to serve as comparison groups was not feasible. The current research is a correlational study that does not seek to examine the effectiveness of a training, but rather to identify which factors are most dominant in explaining officers' knowledge and use of skills. As such, this research did not include comparison or control groups for each participating district. The following section details the procedures that were used to conduct each element of the research.

	Month 1	Month 2	Months 3-4	Month 5	Months 5-9	Month 10
	Baseline Survey & Pretest		**Officer Training***		**Post-Test**	**Follow-up Survey**

Individual Items
- Baseline knowledge
- Self-Reported Use of Skills
- Attitudes towards EBPs
- Motivation to Learn and Use Skills

Controls
- Demographics
- Tenure
- Unit
- District/Region

Design Items
- Preference for eLearning/ classroom training
- Perceptions of Coaching

Organizational Items
- Climate
- Culture
- Org. Functioning

Choose coaches and coaching groups
Introduce project to coaches
Open eLearning to coaches

Coaches' Training

Open eLearning to line staff

eLearning

Outcome 1 Lesson Post-tests (completed at the end of each lesson)

Outcome 2
- Self-Reported Use of Skills

Controls
- Transferred during study

Design Items
- Content Quality
- Support & Feedback

*No research activities occurring during officer training.

Figure 3 Study Design

Study Sites

This research took place in nine probation districts in a large mid-Atlantic state and includes a convenience sample of 139 officers. The probation districts were selected for inclusion by Department of Corrections (DOC) administrators based on location so as to include an equal number of districts from each region of the state. Three probation districts were excluded from consideration for inclusion as they had already received the SOARING training. The following districts were selected for inclusion: District A (n = 31), District B (n = 17), District C (n = 13), District D (n = 11), District E (n = 21), District F (n = 13), District G (n = 5), District H (n = 16), and District I (n=12).

All officers at each district who might potentially carry a caseload were eligible for inclusion regardless of their rank, including probation Chiefs. As such, the starting sample for this research was 236 officers across nine districts. However, a number of officers were excluded for a variety of reasons throughout the study period. Figure 3 displays the consort chart detailing the flow of probation officers retained in the sample through each phase of the study design. Administrative staff and treatment personnel at each site were excluded from participation as they were not required by the DOC to complete the eLearning training program[1]. Staff turnover is common within the DOC, however, it is most often due to internal promotions and transfers. Given this ongoing movement, several approaches were used to retain as many individuals in the study as possible. First, since all levels of officers within participating districts were included in this research, officers who were promoted internally within a district remained included

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[1] The starting N of 236 does not include administrative staff or treatment personnel.

in the study. Secondly, officers who transferred to another participating study site during

the study period were also kept in the study, though their district designation was updated

to reflect their new district (n=3). If an officer transferred within DOC to an

administrative position or to a non-study district (n=8), or if an officer left DOC entirely

(n=9) before completing the eLearning training, they were excluded from the sample as

there was not enough information recorded for them to calculate the outcomes. New hires

in each of the districts were also eligible for inclusion in the study so long as they had

time to complete the training before the deadline set for all staff (April 30, 2016). Anyone

hired after that point was still required to complete the training, however, they were given

an alternate deadline for completion and were not included in this research.

Enrollment	Officers Enrolled in eLearning Training (n = 236)	

| Baseline & Pretest | Completed within first week............177
Completed within two weeks...........198
Completed within three weeks.........202
Completed within one month............208
Completed within two months.........214
Completed before eLearning.........222 | Did not complete (n = 13) |

| eLearning | Completed eLearning Training (n = 183) | Did not complete (n = 39)
Left DOC before completion.....................9
Transferred to non-participating site...........8
Eligible but did not complete.....................22 |

| Follow-Up Survey | Completed Follow-Up Survey (n = 170) | Did not complete (n = 13) |

| Analysis | Included in Analyses (n = 139, 129*) | Did not complete survey in its entirety (n = 31) |

*N=129 for self-reported use of skills due to people not responding to that portion of the survey.

Figure 4 Sample Consort Chart

Intervention Procedures

This research took place during one wave of an ongoing training initiative at the DOC. Certain aspects of that training are relevant to this research, though they were not directly a part of the study procedures. This section discusses two aspects of the training procedures (referred to here as intervention procedures) that took place during the study period but that are not included as research procedures.

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Coaches' Training

Supervisors were required to attend one of two DOC-led trainings to be certified as coaches to act as subject matter experts, mentors, and fidelity monitors within their respective districts during implementation of the SOARING eLearning. These trainings took place prior to line staff being granted access to the eLearning so that the supervisors would have an opportunity to complete the eLearning and in-person trainings before they would need to coach others on the training materials. Two separate coaches' trainings were held to accommodate the number of staff to be trained and potential scheduling conflicts. Supervisors who were unable to attend their scheduled training had the option to attend the other session. The trainings were identical in format and content to ensure that all supervisors were adequately trained as coaches regardless of which training they attended. During the in-person training, supervisors were trained on all aspects of coaching, including how to grade officers' advanced eLearning quizzes using a standardized grading rubric and how to answer any questions officers might have about the training content.

eLearning Training (SOARING)

Supervisors from each agency were given access to complete the eLearning program prior to line staff at each site. The Skills for Offender Assessment and Responsivity in New Goals (SOARING) eLearning training curriculum covers five areas of EBPs: risk-need-responsivity, engagement and motivation, case planning, problem solving, and desistance. The web-based training consisted of approximately 20 hours of self-led training on the SOARING eLearning system, including audio enhancements, video demonstrations, real-time feedback, and case vignettes. The eLearning contained

basic, intermediate, and advanced lessons within each module with a total of five

modules. Supervisors had five weeks to complete the eLearning modules, which included

passing all lesson quizzes with a score of 80% or better. Approximately 97% of the

coaches (56 of 58) completed the eLearning within the five-week period. Below is a brief

description of the content covered in each module.

Risk, Need, Responsivity. Research indicates that correctional programming with

a rehabilitative focus is more effective than supervision only in reducing the risk of

offender recidivism (Caudy, Tang, Ainsworth, Lerch, & Taxman, 2013; Lipsey & Cullen,

2007). Furthermore, programming that adheres to the principles of Risk, Need, and

Responsivity (RNR) will result in larger recidivism reductions than general rehabilitative

programs (Lowenkamp & Latessa, 2005; Smith, Gendreau, & Swartz, 2009). The focus

of the Risk, Need, and Responsivity module of SOARING is to teach officers the RNR

principles and help them to use information regarding offenders' risk, needs, stabilizers,

and destabilizers to inform treatment placement and referrals.

Motivation and Offender Engagement. There are a number of techniques that

can be used to increase offender motivation to change and treatment engagement.

Building engagement and motivation to change helps offenders stay in programming

longer, which improves their chances of successfully completing treatment. The

Motivation and Offender Engagement module teaches officers techniques for increasing

motivation to change among offenders on their caseload, and for recognizing and

increasing offenders' levels of engagement in treatment and programming. Skills learned

in this module include the use of a non-confrontational approach when working with

offenders, identifying and responding to offender ambivalence, and techniques for rolling with resistance.

Case Planning. Case planning is an integral part of the supervision process. An offender's case plan drives their treatment placement and referrals for services. Creating a case plan to address offenders' criminogenic needs is critical to achieving responsivity and approving offender outcomes. In the Case Planning module, officers learn how to use information from offenders' risk and needs assessments, as well as their interests and strengths, to create comprehensive case plans that serve as maps to identify and address needs and build on existing stabilizing factors. Emphasis is placed on the importance of including special conditions, supervision, and treatment, as well as encouraging the offender to participate in creating their plan.

Problem Solving. Problem solving is a complex skill that is often taken for granted. It includes identifying a problem, assessing one's current circumstances, identifying possible options and solutions, analyzing solutions, selecting a strategy for resolving the problem, and creating an action plan to implement the strategy. The Problem Solving module of the SOARING training teaches officers how to help offenders identify and solve their own problems relating to their criminal involvement. The focus is on defining realistic and manageable solutions that offenders can achieve within the context of real world challenges and triggers.

Desistance. Desistance is the process by which an offender stops engaging in criminal behavior for an extended period of time. This involves a simultaneous identification of factors that contribute to offending behavior and factors that reduce

offending behavior. The Desistance module teaches officers how to help offenders

identify and avoid factors that contribute to crime through the use of internal and external

controls while replacing those factors with positive influences to promote continued

avoidance of crime. The ultimate goal is for offenders to learn how to break from their

offending past and remain on a path of positive change and crime-free behavior.

Once the coaches completed the coaches' training and eLearning, they hosted a

kick-off meeting at their district to introduce line staff to the training program. At the end

of the kick-off, the line staff were given access to the eLearning training and deadlines

for completing each module (one module per month for five months). At the conclusion

of each eLearning lesson, officers completed a quiz that was either auto-graded by the

eLearning system (basic and intermediate lessons), or manually graded by their coach

(advanced lessons). Like supervisors, line staff had to achieve a minimum score of 80%

on each quiz in order for it to be considered "complete." While officers had an unlimited

number of attempts at each quiz, after three failures to achieve 80%, their coach was

notified through a system-generated email. A total of 76.7% (181 of 236) of the

participants completed the eLearning training program by the designated deadline.

Nineteen additional participants partially completed the eLearning and either completed

all of the basic and intermediate quizzes (but not the advanced quizzes), or completed all

quizzes in a subject area.

Research Procedures

The procedures specific to this research began with a survey of all of the eligible

officers in each participating agency prior to any participants having access to the

training program. In survey research, it is critical to ensure the highest possible response rates to reduce selection bias and other forms of bias due to lack of representativeness of the population. However, low response rates for survey research are a common problem for social scientists across disciplines, particularly those who use web-based surveys (Nulty, 2008; Shih & Fan, 2009). Prior research indicates that survey participation rates can be increased by pre-contacts (i.e., contacts with participants prior to dissemination of the survey), contacts post dissemination with reminders and links to the survey, and personalized contacts (Cook, Heath, & Thompson, 2000).

Baseline Survey

Before sending out the baseline survey, informational meetings were hosted by the researcher via webinar with the Chiefs (CPOs), Deputies (DCPOs), and Senior Probation Officers (SPOs) at each district to explain the procedures and general nature of this research. At that time, it was explained to each district that there would be two surveys as a part of this research, when the surveys would be sent out, and how. Each Chief was asked to email their staff to let them know 1) that there would be two surveys, one before the eLearning and one after, 2) what day the initial survey would be sent out, 3) that the survey would come from sainswo1@gmu.edu and not anyone at DOC, 4) that all responses would be accessible only by the researcher (and no one within their agency, and 5) that the surveys would ask for their name only for the purpose of matching their baseline information (e.g., pretest) with follow-up information (e.g., lesson quiz scores). Staff were instructed to add sainswo1@gmu.edu as a trusted email address and save it for the duration of the study to ensure receipt and in case they had any questions. Sample

email text containing the aforementioned information was provided to each Chief to ensure they shared all of the pertinent information with their staff.

Results of prior research indicate that surveys conducted by research institutions have better response rates than those conducted by non-research institutions (Cook et al., 2000). Based on this information and previous experience administering surveys to DOC staff, it was reiterated to all respondents in the email including the survey link that the survey was being sent not only from a non-DOC account, but more specifically that it was sent directly from the researcher. The surveys were administered online via Qualtrics2 software to all eligible probation officers (n=236). All participants received an email inviting them to participate in the baseline survey and were given two months to complete the survey. Seventy-five percent of the respondents (177 of 236) completed the survey within the first week. Reminder emails were sent weekly to all participants who had not yet completed the survey starting at the end of the first week. In addition to these reminders the Chiefs and DCPOs at each site were asked to remind staff about the survey at any and all meetings, and weekly response rates were sent to each Chief for their district. By the end of the second month, 83.9% (198 of 236) of the respondents had completed the survey.

The week before the SOARING eLearning training was opened to line staff and 14 weeks after the survey was initially sent, all participants who had yet to complete the survey were emailed to offer them alternative methods for completing it. These methods

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2 The survey was originally sent to officers via QuestionPro survey software, however, officers experienced difficulty completing the survey with this software and reported that it kicked them out prior to completion. In response, I switched to using Qualtrics survey software. Officers who were unable to finish the survey and pretest in QuestionPro were able to pick up where the left off in Qualtrics.

included: 1) completing the survey over the phone with the researcher like an interview, 2) completing the survey electronically in a word document and emailing it back to the researcher, or 3) asking the participant to complete just the pretest portion of the survey. At this time, an additional eight respondents completed the survey, one over the phone, two via email in a word document, and the rest online through the survey platform. By the start of the eLearning training program, only 13 respondents had neither completed nor opted out of the survey.

The baseline survey measured several key constructs for this research including officers' prior knowledge and use of skills, general attitudes towards the use of evidence-based practices, and perceptions of eLearning and classroom training modalities. A complete list of the items included in the baseline survey can be found in Appendix A.

Follow-Up Survey

After staff completed the eLearning training, officers were given a post-training survey to assess their self-reported use of skills, perceptions of the eLearning quality, and perceptions of training support and feedback they received during the training (see Appendix A). As with the baseline survey, in order to promote high response rates, prior to the administration of the follow-up survey the Chief probation officers from each district were reminded of the date the survey would be sent out, how much time officers had to complete the survey, and that responses would not be accessible by any DOC staff. Officers were given one month to complete the follow-up survey. Thirty-three percent of the respondents (61 of 183) completed the survey within the first week. Reminder emails were sent weekly to all participants who had not yet completed the survey starting at the

end of the first week. In addition to these reminders the Chiefs at each site were also

asked to remind staff about the survey at all staff meetings, and the Chiefs were once

again provided with weekly response rates for their district. By the end of the month,

92.9% (170 of 183) of the respondents had completed the survey.

Key Variables

The variables included in this research were selected based on prior research on

technology transfer and organizational change. Variables that have previously been

shown in empirical work to be predictors of training outcomes were included in this

research. However, some of the prior research is dated (over 20 years old), and used non-

criminal justice agency samples. As a result, the expected impact of these variables on

this research was different than that of prior research. The variables included in this

research, and descriptions of how they were specified, are described below.

Control Variables

Demographics. Demographic variables included self-reported measures of age,

race, and gender. Age was a scale variable that was measured in years based on officers'

self-reported age at baseline. Race was a categorical measure of officers' self-reported

race and ethnicity (i.e. White, Black, Hispanic, Indian, and Asian). Gender was a

dichotomous variable for male and female.

Education. Measured as a categorical variable indicating individuals' highest

academic degree received, response options for the education variable included high

school diploma, GED, associate's degree, bachelor's degree, and graduate degree

(masters or PhD).

District. The nine probation districts participating in this study fell within three regions, spanned both urban and rural locations, and were of different sizes. In order to account for potential differences in training outcomes due to these variations, District was included as a nominal variable indicating the district in which each officer works.

Individual Factors

Baseline knowledge of EBPs. Pre-training knowledge has been identified by the extant literature as a significant predictor of how much an individual learns in training and their use of skills post-training, with higher post-training knowledge and performance among those with higher pre-training knowledge (Mathieu et al., 1992). At the time of this study, the Department of Corrections was in the midst of a multi-year effort to increase their use of evidence-based supervision practices. As such, each probation district had been exposed to a number of different training initiatives which varied between and within districts based on access to training and timelines for training roll-outs. Prior training topics included motivational interviewing, COMPAS[3] assessment, EPICS[4], and case planning, to name a few. The SOARING training program that officers completed as a part of this study included some overlapping concepts with the aforementioned trainings, as well as new information. Assessing officers' prior knowledge of evidence-based supervision practices served to help understand what

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[3] The Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) assessment is a validated risk and needs assessment instrument used by probation officers to make determinations regarding offender supervision levels and treatment placements (for more information, visit: http://www.northpointeinc.com/risk-needs-assessment).

[4] The Effective Practices in Community Supervision (EPICS) model is an evidence-based supervision model employed by community corrections agencies to integrate the principles of risk, need, and responsivity into practice (for more information, visit: https://www.uc.edu/corrections/services/trainings/effective_practices_in_community_supervision.html).

participating officers had previously been exposed to, as well as to assess the impact of that prior knowledge on their post-training knowledge.

Pre-training knowledge of EBPs was measured with the 60-item SOARING pretest which included multiple-choice and true/false questions regarding individuals' knowledge of skills in the five areas of evidence-based practices included in the SOARING curriculum. The pretest included questions from each area of EBP (i.e., RNR, engagement and motivation, case planning, problem solving, and desistance). Pretest scores for each officer were calculated by averaging the graded responses within each core area and then adding the scores across areas to create an overall measure of pre-training knowledge.

Baseline self-reported use of EBPs. Individuals' pre-training use of skills was also included in this research as prior research indicates it can be an important indicator of post-training use of skills (Baer et al., 2007; Mathieu et al., 1992). Those who are already using EBPs prior to training are more likely to continue using them after the training, however, the extent to which skills are used and the quality of use may vary depending on other factors such as organizational culture/climate and individuals' motivation. Measuring officers' use of skills at baseline helps to disentangle their individual ability to use skills from other organizational factors that may influence whether or not they exercise their ability.

Self-reported use of EBPs was a 45-item self-report measure of individuals' use of skills relating to working relationship, COMPAS assessment, case planning, case plan-driven supervision, and intervening with problem behaviors. The questions included

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Likert-type responses ranging from 1 (never) to 5 (always) to indicate the extent to which respondents reported using skills in each subject area when applicable in contacts with probationers. Individuals' responses were averaged within each skill area to create a composite score for the use of each skill. Composite scores were then added together to create an overall measure of pre-training use of skills.

Attitudes toward EBPs. It is essential that community supervision officers stay current on their use of evidence-based practices in order to elicit the greatest possible recidivism reductions among offenders. However, not all officers are open to trying new things, even if the new practices are supported by research. This scale examines officers' general attitudes toward the use of evidence-based practices to assess the extent to which they feel it is important to use EBPs. Officers with positive attitudes toward the use of EBPs are usually more inclined to use them as part of their job, while those who place little value on using best practices are less inclined to do so (Aarons, 2006). Attitudes towards EBPs were measured at baseline to examine of the influence of officers' baseline attitudes towards EBPs on their post-training knowledge and self-reported use of skills.

The Evidence-Based Practices Attitudes Scale (EBPAS) was a 15-item scale measuring respondents' attitudes toward the adoption of evidence-based practices (Aarons, McDonald, Sheehan, & Walrath-Greene, 2007)[5]. The EBPAS included four subscales. The first two measured attitudes towards using EBPs when it is required (requirement subscale) and when it is intuitively appealing (appeal subscale). The third

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[5] This scale is intended to be a 16-item scale, however, when importing these questions into Qualtrics one of the items from the Appeal subscale was inadvertently dropped from the survey. As a result, this subscale only consists of 3 of the intended 4 items.

subscale measured participants' general openness to trying new practices (openness subscale). The fourth subscale assessed the extent to which participants feel that research-based practices are less important than practical experience or "clinical" expertise (divergence subscale, reverse coded). All items were measured on a 5-point Likert-type scale ranging from 1 (not at all) to 5 (very great extent) to indicate the extent to which participants agreed with each statement about their feelings towards the use of evidence-based practices (Aarons et al., 2007).

Motivation to learn and motivation to use skills. Individuals' motivation is one of the strongest predictors in prior literature of both learning during training and using skills learned during training when back on the job (Kontoghiorghes, 2001; Kontoghiorghes, 2002). Consequently, this research examined both types of motivation – motivation to learn and motivation to transfer skills – to understand the influence of each on training outcomes. Motivation was a 12-item scale adapted from Kontoghiorghes' (2004) measures of individuals' motivation. It was comprised of two subscales, motivation to learn during training, and motivation to transfer items learned in training back one's job. Scale responses ranged from 1 (strongly disagree) to 5 (strongly agree).

Organizational Factors

Organizational factors have been shown to be some of the strongest predictors of training outcomes (Baer et al., 2009; Farrell, Young, & Taxman, 2011; Kontoghiorghes, 2001; Kontoghiorghes, 2002; J. E. Mathieu et al., 1992). This research examined the influence of organizational culture, climate, and functioning on probation officers' knowledge and use of evidence-based practices. Unlike prior research, this study assessed

the relative influence of organizational factors compared to individual and training design factors.

Organizational culture and climate. Organizational culture reflects the way things are done in an agency, including formal trainings and informal socialization processes, while organizational climate reflects the tone of an organization, or officers' perceptions about the environment in which they work. While there are theoretical differences between culture and climate, and very real differences between the two among those who study these concepts, it was not assumed for this research that probation officers would perceive a difference between the two. For this research, culture and climate were measured in a single scale that included questions about communication practices, performance expectations, the value placed on training and skills development, and the degree to which staff are encouraged to take risks and try new things. Officers who perceive their organization to have open communication and be supportive of training and trying new practices will likely be more inclined to try out new skills learned in the SOARING training. However, training efforts in agencies in which officers express cynicism about change, or feelings that change is not possible or worth the effort, are likely to result in little use of skills among officers. Furthermore, a negative culture/climate may also stifle knowledge gains among staff who feel that training is perfunctory and not likely to elicit changes in day-to-day operations.

For the purpose of this research, organizational culture/climate was a 25-item measure of officers' perceptions of their organization, including three subscales measuring perceptions of the agency's openness to innovation, ability to make changes,

and communication among staff. Scale items ranged from 1 (strongly disagree) to 5 (strongly agree). This scale was taken from prior research (Lehman, Greener, & Simpson, 2002; Taxman, Young, Wiersema, Rhodes, & Mitchell, 2007), however, the subscales were reanalyzed for this research (see section IV-b, below).

Organizational functioning. Organizational functioning refers to the tangible resources an agency has at its disposal, including staff, physical facilities, funding for services, training opportunities, and staff expertise. An organization's ability to implement new practices is directly tied to the resources available to support the adoption of new skills. Prior research indicates that resource constraints such as these are some of the most influential organizational factors on staff's adoption of new skills (Aarons, Wells, Zagursky, Fettes, & Palinkas, 2009).

Organizational Functioning was a 24-item measure of officers' perceptions of the extent to which their organization is functioning appropriately. The scale ranges from 1 (strongly disagree) to 5 (strongly agree) and includes five subscales measuring staffing and retention; funding for programs and services (programs); training for staff (training); physical facilities, including computers and IT support; and staff expertise. The items in this measure were pulled from prior research and adapted for this sample. The organizational functioning measure originally included eight subscales measuring staffing, retention, funding, training, physical facilities, computers and information technology, systems integration, and community support. These scales, however, were created over a decade prior to the start of this research, and validated nearly as long ago (Lehman et al., 2002; Taxman et al., 2007). Given advancements in information

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technology and dissemination of research on evidence-based practices, it was likely that individuals' expectations of their work environment and organizational functioning might be considerably different today than ten years ago. While the individual questions in these measures were still very applicable, conceptualization of the latent constructs underlying this scale had likely changed. Accordingly, I conducted a factor analysis to determine if the original subscales were reliable with this sample (see section IV-b, below for the full analysis).

Training Design Factors

Perceptions of eLearning. Garavan and colleagues (2010) identified a number of factors related to online learning platforms that can affect training participants' perceptions of online training programs. In addition to participants' general feelings towards eLearning, these factors include the quality of the content, quality of the instruction, level of support provided, and the level, type, and quality of the feedback provided. It is likely that individuals' preconceived notions of eLearning, including its usefulness and appropriateness as a training modality for evidence-based supervision practices, will influence their participation and performance in the training program.

Perceptions of eLearning was a 12-item scale of officers' perceptions of and preference for eLearning as a training modality. It had two subscales measuring officers' preference for a particular training modality over the other (i.e., classroom training preference subscale and eLearning preference subscale). This scale was created specifically for this research and had not previously been validated.

Training Quality. eLearning content quality was measured with five scales gauging respondents' perceptions of the quality of the SOARING eLearning training. The scales measured organization of content, functionality, duration, relevance of the training, and pace. Responses were on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). These measures were adapted from Garavan et al., (2010) and were developed specifically for this research; they had not been validated previously.

Support and feedback. The training support and feedback scale included five questions that were administered post-training to gauge participants' perceptions of the importance of different support and feedback mechanisms within the SOARING eLearning program. These mechanisms included email communications with coaches, face-to-face meetings with coaches, email communications with the site administrator, and feedback on quizzes. Responses were indicated on a scale from 1 (not at all important) to 10 (extremely important). This measure was developed specifically for this research and had not been previously validated.

Perceptions of Coaching. Another significant design element of the SOARING training program was the use of internal coaches at each site to provide support and feedback to officers throughout the training. Previous research shows the use of coaches to be an effective mechanism to support skill development within an organization (Alexander et al., 2013; Baer et al., 2007; Miller & Mount, 2001), however, the effects of coaching on individuals' use of EBPs may vary depending on how useful they believe coaching to be. As part of the SOARING training, coaches guided staff through the eLearning, answered questions, graded eLearning quizzes, and provided feedback on

officers' progress. Perceptions of coaching was measured with an 18-item scale of

officers' beliefs about the general utility of coaching that was administered to staff in the

baseline survey. This measure was revised from Maass (2013) for use in this research.

Dependent Variables
    Knowledge of EBPs. Officer's post-training knowledge of evidence-based

practices was assessed using the quizzes officers completed after each lesson of the

eLearning training. There were a total of seventeen quizzes, three in each subject area,

with two additional lessons and quizzes in the RNR module. Knowledge was measured

using a composite score of all of an officer's initial quiz scores by subject area (e.g., their

initial basic, intermediate, and advanced quiz scores). The initial scores were used

because the graded quizzes that were given back to the officers contained the correct

answers for the basic and intermediate questions. Additionally, and as previously

mentioned, officers were required to achieve a score of 80% or better on their quizzes in

order to get institutional credit for completing the eLearning. Officers were thus allowed

to retake the quiz as many times as was necessary to achieve a passing score. Therefore,

the initial quizzes best reflect officers' actual knowledge of skills post training and were

free from test-retest effects (with the exception of any effects from the pretest).

    Self-Reported Use of EBPs. Individuals' post-training self-reported use of

evidence-based practices was measured with the same 45-item instrument used to assess

officers' baseline use of skills. It covered individuals' use of skills relating to working

relationship, COMPAS assessment, case planning, case plan-driven supervision, and

intervening with problem behaviors. The scale used Likert-type responses ranging from 1

(never) to 5 (always) to indicate the extent to which respondents reported using skills in each subject area when applicable in contacts with probationers. Individuals' self-ratings were averaged to create a composite use of skills rating within each skill area.

Analyses

Cleaning and Combining Data Sets

The data for this research was collected through two waves of surveys and the SOARING eLearning program. As a result, it was necessary to clean and combine the data from each source into a master data file before it could be analyzed. The data from the baseline and follow-up organizational surveys were downloaded from the Qualtrics website as a .csv file, which could then be imported into either SPSS or Stata as needed. Stata software has an advanced level of functionality that allowed for cleaning and isolating the study sample in a way that SPSS was not able to. The eLearning data (i.e., post-tests) was collected via the Moodle platform that houses the SOARING training program. This data was downloaded from Moodle and saved as .xlsx[6] files which were then imported into SPSS for cleaning and to combine them into a single data set. Once all data was downloaded from its respective locations and cleaned, all information that could be used to identify individual respondents was removed from each data and replaced with a unique identifier for each individual. The data was then analyzed as described below.

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[6] I saved these as .xlsx files rather than .csv files in order to preserve the date fields as they were saved in the Moodle platform. Moodle saves dates as mm/dd/yyyy hh:mm, which is not a recognized format to import into SPSS. However, when saved as a .xlsx file, SPSS recognizes the date field and converts it appropriately.

Validity of Survey Scales

       This research relied upon the use of some preexisting survey scales to gauge

probation officers' baseline knowledge of EBPs, attitudes towards EBPs, and motivation.

The alphas for each of these scales for the current sample, as well as the original alphas

for each scale, are reported in Table 5. Though the organizational functioning and climate

and culture scales had both been previously validated by prior research, it was important

to revalidate those measures with the current sample. Additionally, several other

measures were created solely for the purpose of this research. These scales included the

perceptions of eLearning, eLearning content quality, training support and feedback, and

perceptions of coaching scales. Each of these scales was developed by the researcher

specifically for use in this dissertation. The eLearning content quality and training

support and feedback scales were derived from Garavan and colleague's (2010) work

examining the instructional design of various eLearning programs completed by

employees in 275 Irish organizations.

       Factor analyses were conducted using SPSS for each of the scales that required

either an initial validation or revalidation for this sample in accordance with

recommended practice (Field, 2013). To do this, Principal Axis Factoring was used with

either a Varimax or Oblimin rotation. The primary motivation for conducting a factor

analysis of the climate and culture variables was to determine if a distinction should be

made between the two sets of variables or if they held together reliably as a single scale.

The original organizational culture and climate measure was validated as a single scale,

and included seven subscales assessing future goals, performance, training and skills,

openness and innovation, risk taking, communication, and cynicism (Lehman, Greener,

& Simpson, 2002; Taxman et al., 2007). The factor analysis conducted in this research for these items using a Varimax rotation indicated a total of three scales; communication, innovative environment, and cynicism. The cynicism scale was the only scale that remained intact from the Taxman, Young, Wiersema, Rhodes, and Mitchell (2007) version. The communication scale included the original communication items about formal and informal communication networks as well as staff comfort with promoting new ideas and discussing mistakes or work-related problems. The innovative environment scale included items relating to the shared vision of the organization as well as items regarding use of best practices and performance expectations.

Table 5 Prior and Current Reliabilities of Existing Survey Scales

Scale	# of Items	Prior Alpha	Current Alpha (n = 139)
EBPAS (requirements)[a]	4	.90	.95
EBPAS (appeal)[a]	3	.80	.85
EBPAS (openness)[a]	4	.78	.91
EBPAS (divergence)[a]	4	.59	.69
Motivation to Learn[b]	3	.88	.75
Motivation to Transfer[b]	3	.89	.80

[a] (Aarons, 2004)7 (n = 322)

[b] (Kontoghiorghes, 2013)

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7 Viglione (2015) used the EBPAS on a sample of probation officers from the same agency as that used in this dissertation. The alphas for each of the scales from her work are as follows: appeal (α = .89), requirements (α = .98), openness (α = .91), and divergence (α = .58).

While the original subscales of the organizational functioning measure included separate scales for staffing and retention, for this research, the staffing and retention scales loaded as a single factor when analyzed using a Varimax rotation. The original funding subscale remained intact, but to it was added an additional item indicating social and political support for programming. This likely reflects the fact that DOC is a state funded agency and funding for certain programs is directly tied to political support for that program/initiative.

The notion of adequacy of physical facilities, as suspected, was different than that of prior validations. For this data, the physical facilities scale included the original items regarding physical space, but also included items regarding ability to run necessary services and having sufficient computer support and access to offender records. The remainder of the computers and information technology questions, which were about comfort using computers and having the necessary computer skills to complete common job tasks, loaded with similar training items. Finally, the systems integration variables loaded on a single factor with the remainder of the original training items. Together, these questions became the perceptions of staff expertise scale.

In order to determine the construct validity of the new scales developed for this research, a factor analysis was conducted on all of the variables within each scale using SPSS. Varimax rotation was used for the training quality, support and feedback, and perceptions of coaching scales, however, Oblimin rotation was used for the perceptions of eLearning scale because it was believed that the underlying factors for this scale were

likely to be correlated.[8] For each set of variables, the factor selections were first made

based on Eigenvalues, with values over 1.0 suggesting unique factors. The fit of each

scale was then tested based on the rotated factor loadings with different numbers of

factors to determine how many factors were appropriate statistically and theoretically.

Table 6 Reliabilities of New and Revised Survey Scales

Scale	# of Items	Cronbach's Alpha
Climate/Culture (innovative environment)	11	.91
Climate/Culture (cynicism)	5	.92
Climate/Culture (communication)	8	.94
Org. Functioning (staffing & retention)	5	.59
Org. Functioning (programs)	4	.59
Org. Functioning (training)	5	.72
Org. Functioning (physical space & IT)	7	.84
Org. Functioning (staff expertise)	4	.80
Perceptions of eLearning (eLearn preference)	6	.86
Perceptions of eLearning (classroom preference)	6	.69
Training Quality (Functionality)	8	.92
Training Quality (Organization)	3	.89
Training Quality (Relevance)	4	.86
Training Quality (Duration)	6	.79
Training Quality (Pace)	3	.81
Support & Feedback	5	.84
Perceptions of Coaching	18	.91

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[8] The correlation between the two factors was .473, p< .001.

The reliability of each of the subscales was run to determine the alpha for each scale as well as to examine the correlations of each item with the scale, and the alpha of the scale with each item deleted. This information, along with the factor loadings for each item from the factor analysis, was used to remove any items that loaded poorly or were negatively correlated with the scale. The alphas for each of the final scales are reported in Table 6. A composite score was then created by taking the mean for each scale and each scale was checked for skewedness. None of the composite scores were skewed.

The SOARING pretest was developed prior to this research, but was revised for this sample. To revalidate the pretest for this sample, the reliability of the questions within each subject area was run to examine the item total correlations. While it is not appropriate to treat the pretest as a scale and analyze the factor loadings (i.e., knowledge of one concept in a particular subject does not necessarily directly relate to knowledge of another concept in the same subject), the correlations between each question and the total scale are indicative of how well each question measures the underlying construct. As such, the questions from each subject area of the pretest that were negatively correlated with the total scale were removed from the scale. This resulted in the removal of seven items from the original 60-item pretest for a final 53-item measure of pre-training knowledge of skills.

The Self-Reported Use of Skills measure was derived from the supervision skills observation form already in use by DOC. In order to ensure the face validity of each of the Self-Reported Use of Skills scales, subject matter experts within DOC who had already completed the eLearning training were consulted. The experts were asked to read

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the description of each skill and independently categorize each item into one of five

categories based on what they thought the content of the question was about. These

categories included Working Relationship, COMPAS Assessment, Case Planning, Case

Plan-Driven Supervision, and Intervening with Problem Behaviors. The officers were

then also asked to provide any suggestions for rewording of items where applicable. The

results of this exercise were used to determine the domains in which to place each item to

create subscales. If at least two of the three subject matter experts agreed upon the

placement of an item in a particular skill area, the item was placed in that area. For skills

on which there was no agreement (5 of 45 items), the skill was placed in the area in

which it had originally been conceptualized. For each of these five items, one of the

officers had also chosen the originally conceptualized skill area. The full list of skills is

located in Appendix B.

Analysis in the Context of a System
      In order to answer the research questions for this research in light of the system's

approach, it was necessary to conduct an omnibus test including all potentially influential

variables from each of the key areas of influence (i.e., individual, organizational, and

training design) as well as demographic factors. At the same time, it was necessary to

take into account the within-groups correlations of each of the two groups of dependent

variables included in this research (i.e., knowledge of skills and self-reported use of

skills). To that end, this research used multivariate analysis of covariance (MANCOVA)

models in Stata software to determine which factor(s) exert the strongest influence on

post-training knowledge and use of EBPs. MANCOVA allows for the inclusion of a

number of different independent and dependent variables in a single model, so long as there are enough cases included to ensure adequate statistical power to detect an effect if one exists. It is also designed to account for possible correlations between the multiple dependent variables, as is likely the case for this data. This research also used analysis of covariance (ANCOVA) models to further examine the relative influence of each significant independent variable (as identified in the MANCOVA models) on each specific dependent variable. Subsequent analyses and results are reported in Chapter 4.

Furthermore, it was necessary to examine the possible influence of coaching groups that were included in the SOARING training design. The basic and intermediate SOARING eLearning quizzes consisted of multiple choice and true-false questions that were automatically graded by the SOARING system. All advanced quizzes, however, were graded by the coaches within each district. The knowledge of EBPs dependent variable for this study was a composite score of all the quizzes within each training subject, which includes basic, intermediate, and advanced quizzes. While the coaches were all given a rubric to guide their grading of the advanced quizzes, and were all required to participate in practice grading sessions during the coaches' training they attended at the start of the study, it was still possible that there might have been differences in grades due to which coach graded a quiz (e.g., if one coach was stricter or more lenient than another). To examine if such differences existed, this research also included a multilevel analysis of the data. The details and results of this analysis are included in the subsequent chapter.

CHAPTER FOUR: RESULTS

Participants

As indicated in the previous chapter, a total of 170 probation officers completed the baseline and follow-up surveys for this study, as well as the eLearning training program. The final sample included in this dissertation study, however, consisted of 139 probation officers from nine probation districts for the knowledge of skills outcomes, and 129 officers for the self-reported use of skills outcomes due to individuals failing to respond to certain sections of the survey necessary to calculate the dependent variables (see consort chart on page 66).

A comparison of the starting sample of 170 eligible officers who completed the study and the final analyses samples indicated significant differences between several of the independent variables, including participants' baseline knowledge of EBPs scores, perceptions of staff's expertise, and perceptions of eLearning training support (see Table 7). There was a statistically significant difference between participants' pre-training knowledge of EBPs scores from the knowledge of skills analysis sample ($\bar{x}$=3.197, N=139) and those who did not complete the eLearning and thus did not have this outcome (N=31) such that participants included in the analysis sample had significantly higher pre-training knowledge of EBPs than the individuals excluded from the analysis (t=2.101, p=0.037). Statistically significant differences also emerged between the self-reported use of skills (N=129) analysis sample and those who were excluded for lack of data on this outcome (N=41). Participants' perceptions of staff expertise were significantly higher for the analysis sample ($\bar{x}$ =3.841) than the excluded sample

($\bar{x}$=3.613, t=2.140, p=.0034). Alternatively, participants' perceptions of the training

support and feedback variables were significantly lower for the analysis sample

($\bar{x}$ =0.952) than the excluded sample ($\bar{x}$=1.070, t=2.712, p=.0007). The two groups did

not significantly differ based on any of the demographic variables such as race or gender,

nor were they more likely to be from one district than another.

The differences between the analyses samples and the excluded samples may

indicate a trend for individuals who had more difficulty with the training materials to

drop out of the study, or at least not complete it by the given deadline. It is likely that

these individuals had less knowledge of the materials at the outset, and perhaps gave

higher ratings of support and feedback because they required more help with the

materials than their peers who were able to complete it on time.

Table 7 Significant Differences between Eligible and Analysis Samples

Variable	Dropped Cases Mean (N)*	Analysis Sample Mean (N)	t	p
Pretest	2.912 (N=31)	3.197 (N=139)	2.101	0.037
Org. Func. (staff expert.)	3.613 (N=36)	3.841 (N=129)	2.140	0.034
Training Support & Feedback	1.070 (N=39)	0.952 (N=129)	2.712	0.007

*Ns varied based on missing values.

Descriptive Statistics

The descriptive statistics presented in this chapter (Table 8) reflect the larger

analysis sample (N=139). The majority of the participants were white (63.5%) and female

(67.6%), with an average age of 42. The highest degree obtained for most was a

bachelor's degree (72.9%), though a substantial number had a master's degree (23.5%).

Table 8 Demographic Characteristics (n=139)		
	n	% or M (SD)
Age		41.85 (9.146)
18-35	036	25.9
36-49	076	54.7
50+	027	19.4
Race		
White	194	67.6
Black	042	30.2
Other	003	02.2
Gender		
Male	044	31.7
Female	195	68.3
Education		
Bachelors	103	74.1
Masters	036	25.9
District		
District A	031	22.3
District B	017	12.2
District C	013	09.4
District D	011	07.9
District E	021	15.1
District F	013	09.4
District G	005	03.6
District H	016	11.5
District I	012	08.6

Descriptive statistics for the sample for each independent variable are reported in Table 9. On average, officers were familiar with roughly 60% of the core EBPs across topics and reported moderate-to-frequent use of EBPs. As a group, respondents felt positively towards using EBPs and were moderately motivated both to learn new practices in training and to use those skills when back on the job. Participants felt on average that there was moderate communication in their organization, and perceived their organization as relatively innovative. However, there were also elevated ratings of cynicism about participants' abilities to make changes within their organization. Officers' perceptions of organizational functioning varied depending on domain of functioning. On average, respondents indicated that they had adequate access to training opportunities. Respondents also perceived higher levels of staff expertise within their district. However, officers felt that there was not adequate funding for implementing programs and services, nor was there adequate staffing or retention of staff within their organization.

Table 9 Independent Variables (N = 139)

	M (SD)
Individual Factors	
Knowledge of EBPs	03.20 (0.607)
Use of Skills (Self-Reported)	15.67 (2.152)
EBPAS (Appeal)	04.08 (0.698)
EBPAS (Openness)	03.80 (0.745)
EBPAS (Requirement)	04.17 (0.798)
EBPAS (Divergence)	04.01 (0.549)
Motivation to Learn	03.99 (0.544)
Motivation to Use Skills	03.98 (0.558)

Table 9 Independent Variables (continued)

	M (SD)
Organizational Factors	
Climate/Culture (communication)	03.33 (0.923)
Climate/Culture (cynicism)	03.72 (0.889)
Climate/Culture (innovative environment)	03.65 (0.659)
Org. Functioning (physical facilities)	03.30 (0.715)
Org. Functioning (staffing & retention)	02.33 (0.673)
Org. Functioning (training)	03.69 (0.519)
Org. Functioning (funding)	02.72 (0.582)
Org. Functioning (staff expertise)	03.82 (0.545)
Design Factors	
eLearning Preference	02.30 (0.589)
Classroom Preference	02.89 (0.657)
Training Quality (functionality)	03.65 (0.528)
Training Quality (organization)	03.74 (0.515)
Training Quality (relevance)	03.45 (0.550)
Training Quality (duration)	02.83 (0.800)
Training Quality (pace)	03.25 (0.835)
Training Support and Feedback	00.96 (0.240)
Perceptions of Coaching	03.74 (0.557)

Regarding training design, the respondents as a whole expressed slight dislike for eLearning as a training modality. Officers felt relatively neutral about classroom training. When rating the actual SOARING training, officers felt, on average, that it had good functionality, was well organized, and was relevant to the work they do. And while they felt that the pace of the training (i.e., how much time they were given to complete each module) was adequate, officers felt that the training as a whole was too long in duration. Officer perceptions about coaching in general were favorable, however, for the eLearning

portion of the SOARING training implementation in particular, respondents felt that they

did not receive enough support and feedback from coaches.

Table 10 Dependent Variables

	n	M (SD)	Range
Knowledge of EBPs			
Risk, Need, and Responsivity	139	83.87 (7.849)	61.74 – 100.00
Engagement and Motivation	139	83.83 (7.810)	59.18 – 199.12
Case Planning	139	89.20 (8.973)	40.00 – 100.00
Problem Solving	139	82.61 (9.712)	55.71 – 100.00
Desistance	139	85.23 (7.49)	65.07 – 100.00
Self-Reported Use of EBPs			
Working Relationship	129	2.85 (0.490)	1.00 – 4.20
COMPAS Assessment	129	3.39 (0.668)	1.00 – 4.78
Case Planning	129	3.04 (0.537)	1.00 – 4.30
Case Plan-Driven Supervision	129	3.02 (0.560)	1.00 – 4.67
Intervening with Problem Behaviors	129	3.10 (0.533)	1.00 – 4.10

Descriptive statistics for the dependent variables are reported in Table 10.

Officer's knowledge of EBPs displayed the largest range in the Case Planning domain,

with scores ranging from 40% to 100%, while other categories of knowledge had a

smaller range. This was also the domain in which the officers had the highest average

knowledge of skills post training (89.2%). Officers' scores were least variable in the

Desistance domain, ranging from a low of 65% to a high of 100%.

Officers' self-reported use of skills scores could have ranged from one to five in

each skill area, though none of the officers' actual self-reported scores reflected the best

possible use of skills (no one gave themselves "5" ratings for any skill area). For each

skill area, some officers reported the lowest possible rating of their skills use. The highest

average score among the skill areas was for the COMPAS Assessment skills (3.39), and

the lowest average score was for the Working Relationship skills (2.85). Officers also

reported greater use of Intervening with Problem Behaviors ($\bar{x}$=3.10).

Correlations

The bivariate correlations between each of the independent and dependent

variables are reported in Tables 11 and 12. The most consistent and robust correlations

between variables were among the pre-training knowledge of skills and pre-training use

of skills. There were also significant negative correlations between race and education

and most of the knowledge of EBPs scores such that non-whites and individuals with

masters' degrees (versus those with bachelors' degrees) were associated with lower

baseline knowledge of EBPs. As suspected, there were strong, significant correlations

between the dependent variables both within outcome area and across both areas of

outcomes. The VIF values for all of the independent variables were examined to be sure

that multicollinearity was not an issue. None of the variables had a VIF value over 1.0, so

all were retained in subsequent analyses.

Table 11 Bivariate Correlations between Independent Variables and Knowledge of EBPs

	Knowledge Content Areas				
	RNR	EM	CP	PS	D
Control Variables					
Age	-.017	-.305**	-.122	-.056	-.069
Race	-.251**	-.223**	-.226**	-.241**	-.142
Gender	.157	.182*	.258**	.144	.124
Education	-.231**	-.225**	-.218**	-.187*	-.061
District	.017	.062	-.033	-.006	.009
Individual Factors					
Pre-training Knowledge	.328**	.311**	.386**	.422**	.249**
Pre-Training Use of Skills	-.072	.087	.022	-.084	-.007
EBPAS (Appeal)	.101	.160	.202*	.186*	.151
EBPAS (Openness)	.046	.183*	.144	.032	.120
EBPAS (Requirement)	.076	.069	.155	.124	.015
EBPAS (Divergence)	-.181*	-.074	-.120	-.027	-.101
Motivation to Learn	.067	.220**	.114	.009	.058
Motivation to Use Skills	-.012	.082	.091	.027	.033
Organizational Factors					
Climate/Culture (communication)	-.171*	.105	.157	.128	.139
Climate/Culture (cynicism)	.197*	.057	.197*	.164	.112
Climate/Culture (innov. environment)	.127	.169*	.141	.117	.123
Org. Functioning (physical facilities)	.032	-.023	-.026	-.126	.050
Org. Functioning (staffing & retention)	.060	-.019	-.160	-.088	.065
Org. Functioning (training)	.017	-.015	-.021	-.129	.009
Org. Functioning (funding)	.163	-.023	.042	.061	-.026
Org. Functioning (staff expertise)	.005	.060	.013	.072	.080

Table 11 Bivariate Correlations between Independent Variables and Knowledge of EBPs (continued)

	Knowledge of EBPs				
	RNR	EM	CP	PS	D
Design Factors					
eLearning Preference	.078	.013	.026	.096	.044
Classroom Preference	.067	.056	.106	.110	.146
Training Quality (functionality)	.089	.212*	.213*	.205*	.114
Training Quality (organization)	.102	.142	.149	.120	.094
Training Quality (relevance)	-.005	.058	.146	.093	.004
Training Quality (duration)	.071	-.041	.038	.067	-.100
Training Quality (pace)	.058	.102	.089	.042	.032
Training Support and Feedback	-.109	-.031	-.084	-.047	-.100
Perceptions of Coaching	.031	.017	-.097	-.022	.043

RNR – Risk, Need, Responsivity; EM – Engagement and Motivation; CP – Case Planning; PS – Problem Solving; D – Desistance

*p < .01, ** p < .001

Table 12 Bivariate Correlations between Independent Variables and Self-Reported Use of Skills

	Use of EBPs Content Areas				
	WR	COMP	CP	CPDS	IP
Control Variables					
Age	-.062	-.007	-.033	-.038	-.043
Race	.047	.059	.025	-.099	.030
Gender	-.074	-.017	-.066	.014	.080
Education	.163	.046	.111	.144	.119
District	-.004	.060	.090	.040	.048
Individual Factors					
Pre-training Knowledge	-.261**	-.053	-.062	-.003	-.141
Pre-Training Use of Skills	.485**	.512**	.410**	.376**	.450**
EBPAS (Appeal)	.038	.204*	.148	.128	.169*
EBPAS (Openness)	.025	.161	.077	-.022	.140
EBPAS (Requirement)	-.044	.083	-.066	-.027	.081
EBPAS (Divergence)	.129	-.031	.038	-.003	.025
Motivation to Learn	.075	.175*	.175*	.057	.122
Motivation to Use Skills	.117	.202*	.191*	.086	.139
Organizational Factors					
Climate/Culture (communication)	.135	.093	.119	.086	.105
Climate/Culture (cynicism)	-.030	-.038	.008	-.021	.019
Climate/Culture (innov. environment)	.103	.139	.142	.098	.191*
Org. Functioning (physical facilities)	.180*	.240**	.176*	.181*	.242**
Org. Functioning (staffing & retention)	.145	.072	.080	.097	.109
Org. Functioning (training)	.082	.120	.110	.051	.150
Org. Functioning (funding)	.199*	.166	.135	.143	.184*
Org. Functioning (staff expertise)	.073	.141	.195*	.093	.196*

Table 12 Bivariate Correlations between Independent Variables and Self-Reported Use of Skills (continued)

	Use of EBPs Content Areas				
	WR	COMP	CP	CPDS	IP
Design Factors					
eLearning Preference	-.022	-.026	.108	.023	-.067
Classroom Preference	-.008	.099	.150	.026	.054
Training Quality (functionality)	-.117	.026	-.005	.017	.090
Training Quality (organization)	.026	.073	.063	.180*	.103
Training Quality (relevance)	.120	.071	.071	.172*	.142
Training Quality (duration)	.048	-.074	-.137	-.030	.040
Training Quality (pace)	.270**	.135	.149	.155	.175*
Training Support and Feedback	.105	.183*	-.048	.027	.201*
Perceptions of Coaching	.023	.070	.097	.019	.138

WR – Working Relationship; COMP – COMPAS Assessment; CP – Case Planning; CPDS – Case Plan-Driven Supervision; IP – Intervening with Problem Behaviors

*p < .01, ** p < .001

Table 13 Bivariate Correlations Between Dependent Variables

	Knowledge of EBPs					Self-Reported Use of EBPs				
	RNR	EM	CP	PS	D	WR	COMP	CP	CPDS	IP
Knowledge of EBPs										
RNR	1.000	.320**	.291**	.300**	.226**	-.048	-.053	.027	-.023	.044
Engagement & Motivation	---	1.000	.473**	.410**	.425**	-.010	-.119	.089	.132	.122
Case Planning	---	---	1.000	.569**	.331**	-.138	-.079	-.027	-.061	-.032
Problem Solving	---	---	---	1.000	.375**	-.185*	-.063	-.077	-.086	-.043
Desistance	---	---	---	---	1.000	-.073	-.062	.144	.085	.029
Self-Reported Use of EBPs										
Working Relationship Skills	---	---	---	---	---	1.000	-.502**	.628**	.610**	.634**
COMPAS Skills	---	---	---	---	---	---	1.000	.552**	.564**	.662**
Case Planning Skills	---	---	---	---	---	---	---	1.000	.621**	.646**
Case Plan-Driven Sup. Skills	---	---	---	---	---	---	---	---	1.000	.712**
Intervening w/Problem Behavior Skills	---	---	---	---	---	---	---	---	---	1.000

RNR – Risk, Need, Responsivity; EM – Engagement and Motivation; CP – Case Planning; PS – Problem Solving; D – Desistance

WR – Working Relationship; COMP – COMPAS Assessment; CP – Case Planning; CPDS – Case Plan-Driven Supervision; IP – Intervening with Problem Behaviors

*p < .01, ** p < .001

MANCOVA

  A multivariate analysis of covariance (MANCOVA) procedure was performed to examine the effects of the independent variables on each group of dependent variables. MANCOVA was selected because a multivariate test takes into account correlation among dependent variables (see Table 13). As post-training knowledge and post-training use of skills are theoretically separate outcomes, separate models were run for each group of outcomes. In each model, each group of independent variables (individual, organizational, and training design) was entered into the analysis incrementally in order to determine the additive effects of each group of variables. This process also provides a comparison to models used in prior research that only includes one or two of the theoretically relevant groups of factors. This comparison, and resulting changes in significance of variables from one model to the next, provide an excellent example of the necessity of the systems approach. Tables 14 and 15 contain the results of the MANCOVAs for each group of dependent variables. The F statistic reported for each variable was calculated based on Roy's Largest Root, which has the most power when working with small sample sizes such as this (Field, 2013b).

Table 14 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs

	Model 1 (n=139)			Model 2 (n=139)			Model 3 (n=139)		
	DF	F	p	DF	F	p	DF	F	p
Model	21	6.84	<.0001	29	4.95	<.0001	38	3.86	<.0001
Control Variables									
Age	1	1.81	.1156	1	1.52	.1896	1	1.58	.1718
Race	2	2.71	.0238	2	2.21	.0582	2	1.80	.1210
Gender	1	1.36	.2429	1	1.85	.1095	1	1.51	.1942
Education	1	0.32	.8984	1	0.52	.7575	1	0.44	.8221
District	8	4.89	<.0001	8	3.95	.0004	8	3.67	.0009
Individual Factors									
Pre-training Knowledge	1	3.68	.0040	1	3.26	.0089	1	2.36	.0458
Pre-Training Self-Reported Use of Skills	1	0.21	.9585	1	0.14	.9821	1	0.14	.9824
EBPAS Appeal	1	1.18	.3235	1	1.18	.3244	1	1.08	.3756
EBPAS Openness	1	0.58	.7170	1	0.77	.5728	1	0.99	.4272
EBPAS Divergence	1	0.82	.5411	1	0.93	.4669	1	0.65	.6611
EBPAS Requirements	1	1.34	.2523	1	1.33	.2570	1	1.17	.3280
Motivation to Learn	1	3.51	.0055	1	3.83	.0031	1	3.80	.0035
Motivation to Use Skills	1	1.91	.0988	1	2.06	.0759	1	1.87	.1061
Organizational Factors									
Climate/Culture (comm.)				1	0.35	.8814	1	0.38	.8594
Climate/Culture (cynicism)				1	0.98	.4330	1	0.95	.4537
Climate/Culture (innov. environ.)				1	1.00	.4198	1	0.79	.5588
Org. Func. (physical fac.)				1	0.65	.6612	1	0.56	.7269
Org. Func. (staffing)				1	1.09	.3703	1	0.98	.4361
Org. Func. (training)				1	0.82	.5364	1	0.69	.6311
Org. Func. (funding)				1	0.80	.5545	1	0.41	.8420
Org. Func. (staff expert.)				1	0.13	.9855	1	0.15	.9804

Table 14 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs (continued)

	Model 1 (n=139)			Model 2 (n=139)			Model 3 (n=139)		
	DF	F	*p*	DF	F	*p*	DF	F	*p*
Model	21	6.84	<.0001	29	4.95	<.0001	38	3.86	<.0001
Design Factors									
eLearning Preference							1	0.88	.4967
Classroom Preference							1	1.18	.3252
Perceptions of Coaching							1	1.33	.2561
Training Qual. (functionality)							1	0.34	.8868
Training Qual. (organization)							1	0.33	.8926
Training Qual. (relevance)							1	0.48	.7940
Training Qual. (Duration)							1	1.33	.2572
Training Qual. (Pace)							1	0.24	.9417
Support & Feedback							1	0.11	.9893

Table 15 Effects of Individual, Organizational, and Training Design Factors on Use of EBPs

	Model 1 (n=129)			Model 2 (n=129)			Model 3 (n=129)		
	DF	F	*p*	DF	F	*P*	DF	F	*p*
Model	22	3.42	<.0001	30	2.75	<.0001	38	2.73	<.0001
Control Variables									
Age	1	0.47	.7949	1	0.55	.7378	1	0.29	.9160
Race	2	1.10	.3661	2	1.27	.2826	2	1.26	.2907
Gender	1	0.24	.9430	1	0.23	.9496	1	0.28	.9211
Education	1	2.37	.0442	1	2.53	.0339	1	2.03	.0822
District	8	2.10	.0425	8	1.70	.1073	8	1.66	.1196
Individual Factors									
Pre-training Knowledge	1	2.96	.0156	1	3.09	.0125	1	2.32	.0498
Pre-Training Self-Reported Use of Skills	1	6.98	<.0001	1	5.53	.0002	1	5.42	.0002
EBPAS Appeal	1	0.58	.7126	1	0.51	.7685	1	0.44	.8230
EBPAS Openness	1	1.83	.1141	1	2.06	.0767	1	2.19	.0625
EBPAS Divergence	1	0.56	.7328	1	0.69	.6333	1	0.85	.5198
EBPAS Requirements	1	0.32	.9018	1	0.49	.7853	1	0.40	.8463
Motivation to Learn	1	0.44	.8189	1	0.32	.9015	1	0.38	.8630
Motivation to Use Skills	1	0.98	.4328	1	0.80	.5529	1	0.78	.5639
Organizational Factors									
Climate/Culture (comm.)				1	1.04	.4015	1	1.53	.1887
Climate/Culture (cynicism)				1	0.24	.9437	1	0.32	.8977
Climate/Culture (innov. environ.)				1	0.46	.8045	1	0.63	.6809
Org. Func. (physical fac.)				1	0.62	.6855	1	1.31	.2694
Org. Func. (staffing)				1	0.78	.5659	1	0.91	.4791
Org. Func. (training)				1	0.40	.8463	1	1.03	.4047
Org. Func. (funding)				1	0.84	.5247	1	0.97	.4415
Org. Func. (staff expert.)				1	0.28	.9241	1	0.13	.9857

Table 15 Effects of Individual, Organizational, and Training Design Factors on Use of EBPs (continued)

	Model 1 (n=129)			Model 2 (n=129)			Model 3 (n=129)		
	DF	F	p	DF	F	P	DF	F	p
Model	22	3.42	<.0001	30	2.75	<.0001	38	2.73	<.0001
Design Factors									
eLearning Preference							1	0.62	.6864
Classroom Preference							1	0.96	.4458
Perceptions of Coaching							1	0.78	.5698
Training Qual. (functionality)							1	3.01	.0150
Training Qual. (organization)							1	1.19	.3233
Training Qual. (relevance)							1	0.89	.4945
Training Qual. (Duration)							1	1.36	.2486
Training Qual. (Pace)							1	1.40	.2334
Support & Feedback							1	1.28	.2821

All of the models for both sets of independent variables are statistically significant at the .01 level. In the full model for the eLearning outcomes, the independent variables explain 39% of the variance for the RNR outcome, 48% of the variance for the Motivation and Engagement outcome, 53% of the variance for the Case Planning outcome, 39% of the variance for the Problem Solving outcome, and 35% of the variance for the Desistance outcome. In the full model for the self-reported use of skills outcomes, the independent variables explain 54% of the variance for the Working Relationship skills outcome, 45% of the variance for the COMPAS Assessment skills outcome, 42% of the variance for the Case Planning Skills outcome, 44% of the variance for the Case Plan-Driven Supervision skills outcome, and 43% of the variance for the Intervening with Problem Behaviors skills outcome.

Knowledge of EBPs

District, pre-training knowledge, and motivation to learn were all statistically significantly associated with an individual's knowledge of EBPs post training. Furthermore, each of those factors remained statistically significant across all three of the incremental models. None of the organizational or training design factors were statistically significantly associated with the knowledge of EBPs outcomes. While these findings seem to indicate that individual variables most predominantly explain differences in training outcomes, the significance of the district control variable is indicative of a potential organizational-level effect.

When looking across models, one can see that individuals' race also was significantly associated with post-training knowledge of EBPs, but only in the model that

looked just at individual factors. Once the organizational factors are also included in the model, this relationship is no longer significant. This change in significance across models as different independent variables are added highlights the importance of including all aspects of the system so as not to inadvertently misattribute influence to a variable due to the exclusion of others from the model.

Self-Reported Use of EBPs

Two independent variables were statistically significantly associated with individuals' self-reported use of EBPs, pre-training knowledge and pre-training self-reported use of skills. Though district was a significant factor in the first model, which included only individual and control factors, when taking into account the organizational factors, it was no longer statistically significant. Similarly, individuals' education was significant in the first two models, but was no longer statistically significant when taking into account the training design factors. Pre-training knowledge and pre-training self-reported use of EBPs were the only factors that remained significant across all of the models. One training design factor was also statistically significantly associated with post-training self-reported use of skills in the final model; perceived training functionality (e.g., it was free of typos and errors, the font was an appropriate size, it was easy to navigate). None of the organizational factors were statistically significantly associated with individuals' self-reported use of EBPs post training in any of the models.

ANCOVA

A series of ANCOVA analyses were conducted to further examine the nature of the effects obtained from the MANCOVA models. The information presented in Tables

16 and 17 reflects the standardized coefficients from the regression analyses based on the

ANCOVA model for each dependent variable. Looking at the variables that were

significant in the MANCOVA models for each group of dependent variables, we can start

to see a clearer picture of the magnitude and direction of relationships between the

variables.

Table 16 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs

	RNR		Engagement & Motivation		Case Planning	
	β	CI	β	CI	β	CI
Control Variables						
Age	.06	-.113, .221	-.22	-.337, -.038	-.11	-.275, .067
Race						
African American	-.18	-7.080, 1.039	-.24	-7.686, -.430	-.23	-8.599, -.295
Other	-.05	-14.080, 8.182	-.09	-14.883, 5.010	-.10	-17.352, 5.416
Gender (female)	.19	-.249, 6.707	.00	-3.033, 3.183	.15	-.590, 6.524
Education (masters)	-.09	-4.910, 1.690	-.06	-4.076, 1.822	.01	-3.222, 3.528
District						
D-13	-.02	-6.492, 5.336	-.08	-7.200, 3.369	-.18	-11.054, 1.043
D-19	-.04	-6.921, 4.892	.09	-2.806, 7.750	.03	-5.078, 7.004
D-22	-.22	-12.992, .234	-.22	-12.321, -.502	-.18	-12.765, .762
D-23	-.07	-6.774, 3.709	-.23	-9.659, -.291	-.26	-11.914, -1.192
D-25	.15	-2.434, 10.381	.05	-4.507, 6.944	.06	-4.576, 8.531
D-26	.08	-5.354, 12.085	.03	-6.719, 8.864	.05	-6.359, 11.476
D-30	-.04	-6.647, 4.954	-.02	-5.483, 4.561	-.08	-7.921, 3.575
D-43	.02	-6.128, 7.474	-.04	-7.183, 4.972	-.03	-8.046, 5.866
Individual Factors						
Pre-training Knowledge	.20	-.286, 5.430	.21	.174, 5.281	.21	.163, 6.008
Pre-Training Self-Reported Use of Skills	-.02	-.969, .796	-.04	-.924, .653	-.02	-.971, .834
EBPAS Appeal	-.20	-5.592, .985	-.21	-5.240, .637	-.14	-5.211, 1.516
EBPAS Openness	-.02	-3.211, 2.877	.13	-1.375, 4.065	.11	-1.750, 4.477
EBPAS Divergence	-.05	-3.033, 1.953	.06	-1.602, 2.854	.02	-2.352, 2.748
EBPAS Requirements	.07	-1.735, 3.016	.15	-.664, 3.581	.21	-.118, 4.740
Motivation to Learn	.40	.613, 10.836	.60	4.009, 13.143	.05	-4.401, 6.053
Motivation to Use Skills	-.26	-8.722, 1.395	-.44	-10.646, -1.606	.05	-4.339, 6.009

Table 16 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs (continued)

	RNR		Engagement & Motivation		Case Planning	
	β	CI	β	CI	β	CI
Organizational Factors						
Climate/Culture (comm.)	.23	-1.956, 5.892	.08	-2.841, 4.172	.18	-2.232, 5.795
Climate/Culture (cynicism)	.04	-2.726, 3.377	-.30	-5.354, .099	.07	-2.384, 3.858
Climate/Culture (innov. environ.)	-.12	-6.556, 3.651	.27	-1.360, 7.760	-.14	-7.131, 3.308
Org. Func. (physical fac.)	.14	-2.422, 5.573	-.09	-4.538, 2.606	-.03	-4.493, 3.683
Org. Func. (staffing)	-.05	-3.291, 2.065	.01	-2.234, 2.552	-.21	-5.601, -.123
Org. Func. (training)	-.18	-8.273, 2.698	.02	-4.581, 5.222	-.03	-6.051, 5.170
Org. Func. (funding)	.11	-1.428, 4.430	-.01	-2.735, 2.499	.05	-2.293, 3.698
Org. Func. (staff expert.)	-.09	-5.064, 2.480	-.04	-4.002, 2.739	.03	-3.286, 4.430
Design Factors						
eLearning Preference	.10	-1.850, 4.508	.01	-2.671, 3.010	-.16	-5.749, .753
Classroom Preference	-.03	-3.339, 2.695	.08	-1.694, 3.698	.21	-.275, 5.897
Perceptions of Coaching	.13	-1.696, 5.453	-.03	-3.600, 2.788	-.27	-7.977, -.665
Training Qual. (functionality)	.02	-4.137, 4.694	.13	-1.999, 5.892	.08	-3.199, 5.833
Training Qual. (organization)	.07	-3.758, 5.789	.02	-3.914, 4.617	-.00	-4.917, 4.847
Training Qual. (relevance)	-.22	-7.599, 1.212	-.06	-4.809, 3.064	-.01	-4.654, 4.357
Training Qual. (Duration)	.07	-1.726, 3.161	-.16	-3.751, .616	-.09	-3.498, 1.500
Training Qual. (Pace)	-.07	-2.887, 1.623	-.09	-2.816, 1.215	-.03	-2.625, 1.988
Support & Feedback	-.02	-7.654, 6.294	.05	-4.506, 7.958	.02	-6.306, 7.959

Table 16 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs (continued)

	Problem Solving		Desistance	
	β	CI	β	CI
Control Variables				
Age	-.05	-.262, .149	-.05	-.262, .149
Race				
African American	-.14	-7.845, 2.136	-.14	-7.845, 2.136
Other	-.00	-13.929, 13.437	-.00	-13.929, 13.437
Gender (female)	.06	-3.025, 5.526	.06	-3.025, 5.526
Education (masters)	-.06	-5.514, 2.600	-.06	-5.514, 2.600
District				
D-13	.00	-7.134, 7.406	.00	-7.134, 7.406
D-19	-.04	-8.531, 5.991	-.04	-8.531, 5.991
D-22	-.11	-12.028, 4.230	-.11	-12.028, 4.230
D-23	-.12	-9.679, 3.208	-.12	-9.679, 3.208
D-25	.04	-6.462, 9.292	.04	-6.462, 9.292
D-26	.13	-4.186, 17.252	.13	-4.186, 17.252
D-30	-.05	-8.307, 5.511	-.05	-8.307, 5.511
D-43	-.00	-8.484, 8.237	-.00	-8.484, 8.237
Individual Factors				
Pre-training Knowledge	.28	1.032, 8.058	.28	1.032, 8.058
Pre-Training Self-Reported Use of Skills	-.08	-1.426, .744	-.08	-1.426, .744
EBPAS Appeal	.01	-3.846, 4.239	.01	-3.846, 4.239
EBPAS Openness	-.12	-5.310, 2.174	-.12	-5.310, 2.174
EBPAS Divergence	.17	-.688, 5.442	.17	-.688, 5.442
EBPAS Requirements	.19	-.602, 5.238	.19	-.602, 5.238
Motivation to Learn	.14	-3.870, 8.696	.14	-3.870, 8.696
Motivation to Use Skills	.00	-6.177, 6.260	.00	-6.177, 6.260

Table 16 Effects of Individual, Organizational, and Training Design Factors on Knowledge of EBPs (continued)

	Problem Solving		Desistance	
	β	CI	β	CI
Organizational Factors				
Climate/Culture (comm.)	.11	-3.655, 5.993	.17	-2.489, 5.304
Climate/Culture (cynicism)	.00	-3.714, 3.788	-.15	-4.287, 1.774
Climate/Culture (innov. environ.)	.03	-5.828, 6.719	-.05	-5.592, 4.544
Org. Func. (physical fac.)	.01	-4.809, 5.019	.22	-1.715, 6.225
Org. Func. (staffing)	-.07	-4.339, 2.246	.02	-2.386, 2.934
Org. Func. (training)	-.27	-11.851, 1.636	-.07	-6.474, 4.422
Org. Func. (funding)	.09	-2.022, 5.178	-.03	-3.344, 2.474
Org. Func. (staff expert.)	.01	-4.457, 4.817	.02	-3.485, 4.007
Design Factors				
eLearning Preference	-.03	-4.403, 3.412	-.14	-4.877, 1.437
Classroom Preference	.12	-1.932, 5.486	.26	-.075, 5.917
Perceptions of Coaching	-.09	-5.881, 2.908	-.00	-3.606, 3.494
Training Qual. (functionality)	.13	-3.019, 7.837	-.02	-4.622, 4.148
Training Qual. (organization)	-.08	-7.294, 4.442	.15	-2.524, 6.957
Training Qual. (relevance)	-.04	-6.187, 4.644	-.11	-5.887, 2.863
Training Qual. (Duration)	.05	-2.428, 3.580	-.25	-4.780, .073
Training Qual. (Pace)	-.10	-3.597, 1.589	-.04	-2.625, 1.855
Support & Feedback	.03	-7.324, 9.821	-.02	-7.574, 6.277

Knowledge of EBPs

The results of the ANCOVA models indicate that officers at districts located in the Eastern region had significantly lower knowledge of case planning and officers at districts in the Eastern and Western regions had significantly lower knowledge of Engagement and Motivation. As previously stated, this is possibly indicative of an organizational level effect. Pre-training knowledge and motivation to learn were both significantly associated with post-training knowledge of EBPs such that individuals who performed better on the pretest performed significantly better on the post-training quizzes for the engagement and motivation, case planning, and problem solving content areas. Further, individuals who reported higher levels of motivation to learn had significantly higher scores in the risk-need-responsivity and engagement and motivation content areas. The coefficients for the motivation factor were the highest of any in the model (.60 for the engagement and motivation knowledge content area, and .40 for the RNR content area), indicating that individuals' motivation to learn new skills during training is the strongest indicator of individuals' post-training knowledge of EBPs.

Self-Reported Use of EBPs

As previously stated, of the individual factors, both pre-training knowledge of and self-reported use of EBPs were statistically significantly associated with self-reported use of EBPs post training. Officers who had higher pre-training self-reported use of skills also reported better use of skills post training in every skill area. However, officers who performed better on the pretest indicated significantly lower self-reported use of working relationship skills post-training. The perceived functionality of the training was also statistically negatively associated with self-reported use of working relationship skills and

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case plan-driven supervision skills post training, indicating that individuals who felt that the eLearning training functioned well reported less use of these skills after the training. Ultimately, the coefficients for the pre-training self-reported use of skills factor were the highest of any in the model, indicating it as the strongest predictor of individuals' post-training use of EBPs.

Table 17 Effects of Individual, Organizational, and Training Design Factors on Self-Reported Use of EBPs

	Working Relationship		COMPAS Assessment		Case Planning	
	β	CI	β	CI	β	CI
Control Variables						
Age	-.02	-.010, .008	.04	-.011, .016	-.02	-.012, .010
Race						
African American	-.15	-.387, .067	.01	-.310, .349	-.09	-.385, .174
Other	-.07	-.836, .375	-.07	-1.503, .711	-.01	-.796, .720
Gender (female)	.08	-.108, .280	.03	-.242, .325	.03	-.198, .275
Education (masters)	.03	-.150, 217	.07	-.164, .382	.07	-.141, .315
District						
D-13	-.19	-.619, .050	-.06	-.592, .369	-.03	-.465, .363
D-19	-.08	-.457, .197	.11	-.224, .734	.02	-.365, .439
D-22	-.09	-.524, .219	.01	-.516, .568	-.08	-.610, .301
D-23	-.05	-.354, .221	-.08	-.572, .279	.04	-.303, .418
D-25	-.09	-.504, .221	.13	-.237, .805	.06	-.345, .554
D-26	-.20	-.987, -.023	.01	-.655, .759	-.08	-.830, .355
D-30	-.08	-.425, .190	.04	-.387, .573	.00	-.377, .387
D-43	-.12	-.612, -182	-.04	-.654, .449	-.01	-.496, .443
Individual Factors						
Pre-training Knowledge	-.22	-.336, -.022	-.02	-.256, .207	-.13	-.308, .080
Pre-Training Self-Reported Use of Skills	.55	.072, .177	.43	.061, .205	.39	.036, .161
EBPAS Appeal	.18	-.056, .308	.20	-.083, .472	.23	-.044, .405
EBPAS Openness	-.23	-.315, .019	-.09	-.330, .165	-.30	-.422, -.006
EBPAS Divergence	.17	-.022, .256	-.02	-.227, .184	.13	-.071, .274
EBPAS Requirements	-.14	-.217, .047	-.09	-.267, .123	-.20	-.292, .030
Motivation to Learn	-.14	-.402, .155	-.14	-.591, .248	.06	-.285, .409
Motivation to Use Skills	.20	-.103, .454	.17	-.215, .609	.09	-.253, .434

Table 17 Effects of Individual, Organizational, and Training Design Factors on Self-Reported Use of EBPs (continued)

	Working Relationship		COMPAS Assessment		Case Planning	
	β	CI	β	CI	β	CI
Organizational Factors						
Climate/Culture (comm.)	.48	.039, .473	.25	-.143, .500	.24	-.126, .410
Climate/Culture (cynicism)	-.06	-.200, .134	-.18	-.387, .113	-.04	-.229, .184
Climate/Culture (innov. environ.)	-.28	-.496, .078	-.18	-.600, .233	-.10	-.426, .270
Org. Func. (physical fac.)	-.32	-.450, .002	.00	-.325, .327	-.21	-.434, .116
Org. Func. (staffing)	-.14	-.252, .051	-.14	-.362, .078	-.10	-.260, .106
Org. Func. (training)	.29	-.038, .576	.10	-.326, .578	.21	-.163, .591
Org. Func. (funding)	.14	-.049, .282	.17	-.048, .430	.14	-.076, .342
Org. Func. (staff expert.)	-.01	-.239, .223	.04	-.259, .357	.07	-.207, .359
Design Factors						
eLearning Preference	.02	-.151, .193	-.04	-.297, .218	.13	-.094, .336
Classroom Preference	-.06	-.212, .120	.10	-.149, .347	.11	-.119, .293
Perceptions of Coaching	.18	-.040, .352	.04	-.238, .341	.18	-.069, .418
Training Qual. (functionality)	-.41	-.621, -.136	-.06	-.440, .279	-.21	-.515, .090
Training Qual. (organization)	.11	-.148, .369	.16	-.194, .607	.19	-.127, .524
Training Qual. (relevance)	.20	-.063, .431	.00	-.363, .378	.06	-.240, .361
Training Qual. (Duration)	-.01	-.145, .128	-.22	-.385, .011	-.15	-.266, .069
Training Qual. (Pace)	.26	.031, .276	.01	-.176, .193	.05	-.122, .185
Support & Feedback	.09	-.204, .576	.23	.082, 1.237	-.01	-.507, .441

Table 17 Effects of Individual, Organizational, and Training Design Factors on Self-Reported Use of EBPs (continued)

	Case Plan-Driven Supervision		Intervening with Problem Behaviors	
	β	CI	β	CI
Control Variables				
Age	.01	-.011, .015	.05	-.009, .014
Race				
African American	-.22	-.556, .041	-.11	-.408, .150
Other	-.12	-1.227, .317	-.12	-1.191, .320
Gender (female)	.05	-.175, .306	.10	-.122, .351
Education (masters)	.14	-.058, .406	.11	-.090, .368
District				
D-13	-.10	-.598, .245	-.02	-.458, .373
D-19	-.01	-.428, .390	.08	-.259, .539
D-22	-.15	-.764, .165	-.06	-.585, .323
D-23	-.02	-.399, .335	.01	-.337, .371
D-25	-.11	-.663, .253	-.06	-.549, .337
D-26	-.01	-.627, .581	.02	-.544, .633
D-30	.09	-.234, .545	.07	-.265, .493
D-43	-.18	-.831, .125	-.08	-.620, .314
Individual Factors				
Pre-training Knowledge	-.00	-.198, .197	-.17	-.345, .043
Pre-Training Self-Reported Use of Skills	.41	.044, .171	.39	.035, .161
EBPAS Appeal	.24	-.035, .422	.17	-.093, .354
EBPAS Openness	-.34	-.466, -.043	-.10	-.274, .136
EBPAS Divergence	.05	-.134, .217	.12	-.081, .266
EBPAS Requirements	-.16	-.278, .050	-.16	-.268, .055
Motivation to Learn	-.05	-.407, .300	-.06	-.417, .296
Motivation to Use Skills	.03	-.323, .377	-.05	-.403, .305

Table 17 Effects of Individual, Organizational, and Training Design Factors on Self-Reported Use of EBPs (continued)

	Case Plan-Driven Supervision		Intervening with Problem Behaviors	
	β	CI	β	CI
Organizational Factors				
Climate/Culture (comm.)	.15	-.181, .366	.13	-.194, .339
Climate/Culture (cynicism)	.00	-.209, .211	-.06	-.243, .174
Climate/Culture (innov. environ.)	-.14	-.476, .233	-.00	-.347, .346
Org. Func. (physical fac.)	.00	-.277, .284	.02	-.253, .286
Org. Func. (staffing)	-.02	-.202, .170	-.06	-.234, .131
Org. Func. (training)	.13	-.247, .522	.08	-.296, .453
Org. Func. (funding)	.17	-.046, .380	.15	-.066, .349
Org. Func. (staff expert.)	-.01	-.299, .278	.08	-.199, .362
Design Factors				
eLearning Preference	-.02	-.238, .201	-.01	-.229, .208
Classroom Preference	-.01	-.215, .205	.02	-.196, .232
Perceptions of Coaching	.17	-.075, .420	.19	-.062, .425
Training Qual. (functionality)	-.33	-.655, -.040	-.05	-.343, .253
Training Qual. (organization)	.34	.036, .700	.11	-.210, .435
Training Qual. (relevance)	.24	-.067, .545	.08	-.225, .375
Training Qual. (Duration)	-.23	-.329, .013	-.08	-.221, .110
Training Qual. (Pace)	.08	-.103, .210	.07	-.113, .199
Support & Feedback	.04	-.393, .572	.15	-.137, .809

Influence of Coaches

To assess if there was a significant influence of coaches, and the extent to which that influence might exist, multilevel random effects models were run subsequent to the MANCOVA models to account for the fact that participants were nested within coaching groups. The district variable was also included in this analysis to account for nesting of officers within their respective probation district and for the fact that coaches at some districts chose to grade the advanced quizzes as a group.

Table 18 Influence of Coach and District on eLearning Quiz Scores

Outcome	χ^2	p
RNR	0.00	1.000
Engagement & Motivation	2.31	0.316
Case Planning	3.57	0.168
Problem Solving	0.00	1.000
Desistance	0.03	0.983

The results of the multilevel models are reported in Table 18. The chi square test conducted for this model examined potential differences in each eLearning outcome area based on district. None of the chi squares for any of the outcomes were significant, indicating that there were no significant differences in the outcomes based on district. This is interpreted as neither coach nor district having a significant impact on the participants' quiz scores. Additionally, the regression coefficients from the multilevel model were compared to those obtained from the ANCOVA models to check for consistency. These coefficients were quite similar, providing further support for the

conclusion that neither coaching group nor district significantly influenced the officers'

quiz scores.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Discussion

The purpose of this study was to examine the impact of individual, organizational, and training design factors on probation officers' knowledge and use of skills after completing a training on evidence-based practices. It is the first study to include all three types of factors in a single study. Ultimately, the study was designed to answer the question of which variables mattered the most in the desired outcomes explaining officers' knowledge and use of skills. The theoretical framework driving this research was created by Baldwin and Ford (1988) to highlight factors important in the technology transfer model. This model has not been empirically tested in its entirety, with prior studies examining each system domain, or at most two domains in a single model, which has to date limited the understanding of technology transfer.

This study includes a number of individual, organizational, and training design variables in a single model to examine their effects on officers' knowledge and use of skills as part of a rational system. The current research is an empirical examination of the direct effects of Baldwin and Ford's (1988) model but it does not measure any indirect effects or potential moderators (see Figure 5). It represents an important first step in scientifically examining which factors are important in explaining training outcomes within the context of a rational system. As a first step, the study makes a number of contributions, and illustrates measurement issues that need further exploration through research. These issues are discussed below, along with a number of avenues for future research.
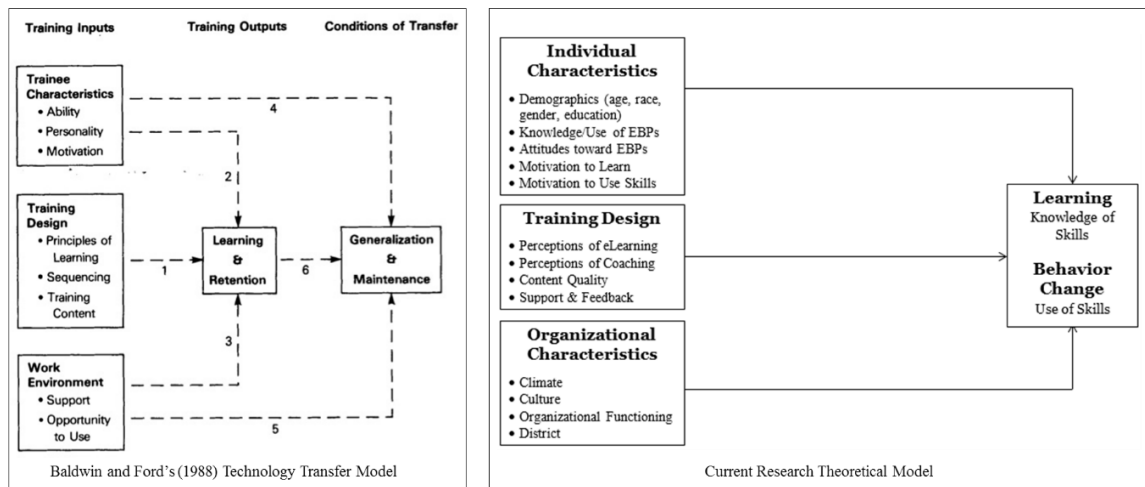
Figure 5 Theoretical Models

Contributions to the Literature

This study emerges from the extant research which is interdisciplinary, spanning a range of fields including corrections, human resource development, adult education, and organizational psychology. Each field provides a contribution to the theoretical framework tested here. The corrections literature highlights the importance of organization factors, primarily organizational culture and climate, on individuals' training performance (Farrell, Young, & Taxman, 2011; Taxman & Belenko, 2012). The human resource development and organizational psychology literature highlights the importance of individuals' motivation both to learn skills in training and use those skills post training (Kontoghiorghes, 2004). Other disciplines illustrate the importance of training modality

on learning outcomes (Garavan, Carbery, O'Malley, & O'Donnell, 2010; Miller &

Mount, 2001). The systems framework marries these disparate perspectives and asserts

that both the organization and its individual members influence training outcomes

through how they react to different training initiatives and changing roles within the

organization (Kozlowski & Salas, 2014; Scott & Davis, 2007). Just as this research stems

from each of the aforementioned fields, so too does it offer contributions back to each.

The contributions to the individual-level, organizational-level, and training design

domains are discussed below.

Individual-Level Contributions

The fields of human resource development and organizational psychology have

long acknowledged the role of individual factors in the workplace and in the change

process. Individual factors refer to characteristics of trainees that are measured at the

officer level. They include demographics, prior knowledge and ability, attitudes toward

use of evidence-based practices, motivation to learn and use skills, and other officer-level

traits. The majority of prior research focuses on education, age, and gender as possible

individual-level demographic variables that influence training outcomes, however, the

results show mixed effects of these variables. In some studies, education demonstrates a

significant influence on training outcomes (Garavan et al., 2010; Mathieu et al., 1992),

and in other studies it does not (Aarons, 2006; Baer et al., 2009; Murphy et al., 2012).

Similarly, gender appears to be a significant factor in some research but not in others

(Garavan et al., 2010; Murphy et al., 2012).

This trend persists for other individual level factors as well, including prior

training (Baer et al., 2009; Mathieu et al., 1992), job tenure (Aarons, 2006; Baer et al.,

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2009; Garavan et al., 2010), being part of a special unit (Farrell et al., 2011; Garavan et al., 2010), and motivation (Garavan et al., 2010; Kontoghiorghes, 2002; Mathieu et al., 1993). This study included many of these individual-level variables (age, gender, education, prior training, and motivation), and found that only motivation was significantly associated with learning outcomes. There is still a degree of uncertainty regarding if these are the best indicators of individual-level predictors of post-training outcomes as the theoretical underpinnings regarding the influence of some of these variables has changed significantly over time. For example, exposure to technology, specifically computers, was once significantly related to gender, which led to males performing better when using web-based training platforms (Garavan et al., 2010). Presently, however, there are few differences in exposure to computers by different genders, especially in the workplace, and as the current research indicates, this may result in a diminished impact of gender on web-based training outcomes. Significant impacts of other individual factors do still persist, as indicated by this research, and there are still a number of individual factors that were significant in prior research that were not included in this study due to measurement constraints (see limitations, below).

The results of this research indicate that of the individual factors included in the models, motivation to learn exerted the strongest influence on officers' post-training knowledge of evidence-based practices ($\beta = .60$, p=.004). This is consistent with Kozlowski and Salas (1997), who emphasized that motivation is malleable and should be addressed prior to training to ensure optimal training outcomes, however, the role of motivation is still unclear. While a number of researchers have consistently shown that

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motivation is a significant influence on training outcomes (Goldstein & Ford, 2002; Kozlowski & Salas, 1997; Mathieu & Martineau, 1993), others have indicated that it may actually act more as a mediator of organizational factors (Kontoghiorghes, 2002, 2004; Garavan et al., 2010). The current research did not examine any indirect or interaction effects, so it cannot shed light on the potentially complex role that individuals' motivation plays in the training process. Future research in this area is necessary to further assess these effects.

Given the present findings regarding motivation, however, some considerations are offered. While appropriate for human resource development and organizational psychology contexts, these considerations may be of value to those in the fields of organizational change and general technology transfer. Acknowledging the influence of motivation, either directly or indirectly, on training outcomes, it may be beneficial to consider strategies to increase officers' motivation to learn prior to training in order to increase trainees' skills acquired during training. Ensuring that individuals are open to change is one part of this process, however, Vroom (1964) states that motivation is tied to how much an individual believes 1) they have the ability to learn the information being taught, 2) they need the skills being taught to enhance their ability to do their job, and 3) doing a better job will help them obtain positive outcomes or avoid negative outcomes. As demonstrated by prior research, individuals' motivation is primarily derived from the expectation that they will be rewarded either intrinsically or externally for engaging in a desired behavior; that is, learning EBPs as taught in training. By increasing the perceived

rewards of learning the information, it may be possible to increase individuals' actual motivation to learn.

The results of this research regarding individuals' motivation have implications for the field of workforce development. One aspect of this is the further development of the existing workforce. To increase motivation, employers may consider utilizing a strategy that community corrections officers already use with their clients. This involves a strengths-based approach to build an individual's belief they can learn something by highlighting other areas in which they have already shown they can learn (Clark, 1998; Lowenkamp, Robinson, & Lowenkamp, 2010). Using this strategy, supervisors can talk to staff prior to the start of training on a new skill to remind them of prior training successes. By highlighting the commonalities between the two training processes, the supervisor then relates the successful outcome of the prior training to the potential for a successful outcome of the upcoming training. This builds officers' self-efficacy by capitalizing on their existing strengths.

Another way to influence individual motivation to learn skills in training and use them in practice in routine activities, is for the organization to place an emphasis on the importance of in-service trainings in policy and in practice and by using incentives during and after training to promote use of skills (Simpson, 2002; Taxman & Belenko, 2012). Reward systems such as a skill-based pay system built into the organizational structure will promote individuals learning and using skills post-training (Baldwin & Magjuka, 1997; Mathieu & Martineau, 1993).

Administrators may also find value in creating a social learning environment for employees within the probation office. This environment was discussed at length by Taxman (2008) in the context of proactive community supervision, and although originally applied to foster learning among probationers about their own risks and needs, the model is also easily applied to the probation officers who are quite adept at creating such a climate for their clients. The idea of the social learning environment is to promote face-to-face interactions paired with motivational strategies to assess individuals' progress toward goals and promote achievement of those goals (Taxman, 2008). In the context of this study, the social learning environment would empower officers to understand their own levels of motivation to learn best practices, and to actively work towards achieving goals developed by the officers in accordance with agency expectations. The organization plays an important role in creating this environment by reinforcing goal attainment, resolving discrepancies between the promoted agency goals and existing policies, and providing constant feedback to officers to help them track and manage their progress.

Another aspect of workforce development includes consideration of certain factors to hire new employees who embody specific desirable traits that are likely to influence how that employee does his or her job. Given the results of this research, employers may want to consider hiring staff with greater levels of motivation. This would not only contribute to the efforts underway to increase motivation among existing staff, but it would also save resources used in that effort as well. Given the current measures for individuals' motivation, which consist of just three questions each to gauge

individuals' motivation to learn and motivation to use skills (Kontoghiorghes, 2002),

evaluating job candidates' motivation during interviews requires minimal alteration to

this process with the potential for significant gains.

Organizational-Level Contributions

Much of the knowledge about organizational influences on training outcomes

stems from the corrections literature. Organizational variables refer to constructs present

and measured at the agency level, including climate, culture, organizational functioning,

peer support, supervisor support, leadership style, workload, and tenure of supervisor.

These constructs have been measured in a number of ways by prior literature, often with

overlapping definitions. For example, peer and supervisor support are sometimes

measured as separate factors (Cromwell & Kolb, 2004), and at other times are included in

measures of climate and culture as separate subscales. Additionally, as was the case in

this research, climate and culture may not be considered two separate constructs.

Similar to the research on individual factors, prior research on the influence of

organizational factors has had mixed results. Certain factors such as leadership style and

supervisor support have consistently demonstrated a significant influence on training

outcomes (Aarons, 2006; Clarke, 2002; Cromwell & Kolb, 2004; Farrell, Young, &

Taxman, 2011), however this is potentially impacted by the tenure of supervisors. This

may be especially true in an agency such as the one included in this research, which

experiences a significant amount of turnover on a regular basis. Other organizational

factors such as climate/culture and workload have demonstrated varied significance over

time (Baer et al., 2009; Clarke, 2002; Farrell et al., 2011; Kontoghiorghes, 2004). It is

possible that variations in the significance of these organizational-level variables may be due to how they are measured and/or which combination of variables is included in statistical models. This will require further exploration to understand.

This dissertation did not find any of the included organizational factors to have a statistically significant influence on officers' training outcomes in the final models. However, district, which was included as a control variable indicating which of the nine probation districts officers work in, was statistically significant. Its significance indicates that there may be an organizational influence on officers training outcomes, but that influence was not captured by the organizational variables included in this research. In other words, district may be measuring some organizational factors that were not included, such as workload size, history of the agency, demands on the agency from stakeholders, and so on. There is more to explore to understand organizational factors. For instance, initially this study planned to include a measure of workload/caseload, however, the survey responses to this open-ended question were largely invalid (e.g., responses of "too many" rather than providing a number of cases). As such, the caseload variable was not included in this research.

The measurement of the culture/climate variable may have posed a particular problem. As previously stated, the culture/climate measure was created several decades ago, in another setting, and was subsequently revalidated for use in the current research. Indeed, the factor analysis of this construct conducted for this research identified different subscales than the original scale. As discussed in the methods section of this dissertation, this change likely reflects the changing role and prevalence of technology

(specifically computers) in the workplace over time. It is possible, however, that a revalidation of the scale was insufficient to capture the changes in conceptualization of workplace climate and culture. Future research should seek other measures of climate and culture, or perhaps even develop new measures of these constructs for use specifically within highly formalized, bureaucratic agencies such as those included in this research.

Training Design Contributions

The final group of factors examined in this research was training design factors, which include training platform (i.e., classroom, web-based, or manual), duration, feedback, quality, and use of coaching. Prior research indicates that all of these factors are important, however, much of that research was qualitative in nature and thus is not able to statistically determine the relative significance level of each factor, but rather only participants' perceptions of relative significance (Alexander et al., 2013; Clarke, 2002; Lowenkamp et al., 2012). Many of the training design variables were studied without inclusion of other important system factors at the organizational or individual level. Through its use of the systems perspective, the current study advances the training design research by including these variables in the same model as individual and organizational factors for the first time. This is a significant first step that should be replicated in future research.

The results of this research regarding training design factors indicate that perceived functionality of the training demonstrated a statistically significant influence on officers' use of skills post training. Specifically, officers who gave lower ratings for the eLearning functionality reported significantly better use of skills in both the working relationship and case plan-driven supervision domains than those who reported higher

ratings of functionality. As perceptions of training functionality and self-reported use of

EBPs were measured simultaneously in the follow up survey, it is not possible to state

with certainty that the functionality of the training impacts how well an individual is able

to use skills after the training. It is possible that individuals who reported better use of

skills after the training were simply more critical of the training itself because of their

increased abilities. These individuals may have gotten less out of the training and were

perhaps more frustrated with the quality than other users. Whether perceptions of

functionality have a negative impact on use of skills, or ability to use skills impacts

perceptions of functionality is thus impossible to conclude from this data. Future research

might seek to further parse out the nature of the relationship between these two variables.

Nevertheless, this research indicates that officers are sensitive to the functionality of

eLearning training in terms of its legibility and navigability.

The current research offers several contributions to the training design literature,

including an examination of the use of eLearning among those with preferences for and

against it. Prior research has examined the relative effectiveness of eLearning training

compared to manual-based and traditional classroom training. Results of that research

indicate that both classroom and eLearning training programs result in significantly

higher post-training outcomes than manual-based training, with no significant differences

between the eLearning and classroom modalities (Garavan et al., 2010; Miller et al.,

2004; Sholomskas et al., 2005). The current research did not seek to compare the

effectiveness of the two modalities, but rather to examine the possible influence of

participants' preference for one modality over the other on training outcomes when

required to complete a web-based training. The results of this research indicated no significant differences in training outcomes for individuals who preferred eLearning versus those who preferred classroom training. These findings provide initial support for the use of web-based training as a viable option for training delivery for probation organizations.

Systems Framework Contributions

It is asserted in this research that community corrections agencies are rational systems characterized by formal, bureaucratic structures, with high efficiency goal attainment. Other characteristics of rational systems include separation of tasks, routinized processes, and a plethora of formal policies to guide behaviors. The community corrections districts included in this research embody these features, as do other community corrections agencies across the country. And while the agency studied here is certainly unique, it is also likely very similar to other agencies that can be considered rational systems, including other justice agencies such as police departments and correctional institutions, as well as non-justice agencies such as hospitals and institutions of higher education. This is an important consideration because the results of this research are likely also applicable to other rational systems that engage in widespread training processes.

One example of the applicability of this research for other agencies involves police agencies across the United States, which have come under increasing scrutiny in recent years for officers' use of force practices (Sekhon, 2017). As a result, there has been an increased focus on content and delivery of use of force trainings in police agencies, which has shown that the content and duration of such trainings varies greatly

(Reaves, 2016). The findings of this research offer some avenues of consideration for these rational systems engaging in training. One consideration is the use of eLearning to deliver training to police officers. Some agencies already use computer-based simulations for use of force trainings (James, Klinger, and Vila, 2014), and most police departments give employees access to computers for report writing, so it is not a big leap for most departments to provide web-based training. This not only increases the cost efficiency of training, but it also addresses the consistency of content issue that has drawn recent attention. Another consideration is the complicated nature of the technology transfer process within a rational bureaucratic system. Future research, including that taking place within police agencies, other justice organizations, and other rigid bureaucratic agencies, should include measures reflecting all aspects of the system to further advance the understanding of the technology transfer process.

The systems approach and the general theoretical framework used in this research are applicable to studying organizational change and technology transfer more broadly. Natural and open systems are structured and operate differently than rational systems, however, they are still comprised of individuals within organizations who react to changing environments. This dissertation examined technology transfer within a rational system, but organizational change and technology transfer are also common to natural and open systems. The current research provides support for Baldwin and Ford's (1988) theoretical model for studying these processes regardless of what setting it takes place in, and the systems perspective in general offers a solid theoretical framework for future research.

Limitations

Some of the limitations of this study are mentioned above, including the exclusion of data from ongoing coaching sessions due to constraints on time and budget. This research would benefit from the inclusion of subsequent waves of follow-up data, which was not available at the time. This study period concluded at the end of the SOARING eLearning training, which focused largely on building a foundational knowledge base for EBPs. The ongoing skills coaching aspect of the SOARING training focuses more on skill development, however, that part of the training was not included in this research. As such, it is not appropriate to use this research to draw conclusions about the effectiveness of the SOARING training as a whole.

Furthermore, given the timing of measurement of both dependent variables (immediately at the conclusion of the training program), neither offers a true follow-up measure of officers' knowledge or use of skills. It is possible that the findings of this research might have been different if it had used a follow up period after completion of the training to measure outcomes. Prior research on the sustainability of concepts learned in training indicates that knowledge and use of skills is often highest immediately after training, and individuals' maintenance of outcomes diminishes over time (Baldwin & Ford, 1988; Miller & Mount, 2001; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004b; Sholomskas et al., 2005). The literature on sustainability of training outcomes to date has also not been conducted with consideration of the systems perspective and points to a variety of possibly influential factors from among the three relevant system areas (individual, organizational, and training design). Inclusion of a true follow-up measure in

the current research would have allowed for a better examination of actual transfer of skills, and begin to shed light on the maintenance of skills over time.

Another limitation of this study is that it partially relied on officers' self-reported use of skills, and might have found different results if use of skills was measured objectively by an independent rater. When using a self-reported measure such as this, there is often some question whether the measure is capturing intent to use versus actual use of skills. At the baseline of this study, a subset of officers was observed in their use of skills by coaches who were trained raters. A comparison of the self-reported use of skills measured at baseline to the observed use of skills of the same officers at baseline indicated that officers tended to slightly overestimate their use of skills. Officers' self-reported scores were on average .6 points (12%) higher than scores given by the trained raters. Future research should account for such differences by including independent observations of officers' use of skills conducted by trained observers with demonstrated inter-rater reliability. Furthermore, the results of this research are based on measurements of officers' knowledge and use of skills after this training in particular. This research needs to be replicated in order to confidently generalize these findings to other training experiences.

The systems perspective takes into account a variety of influences on training outcomes, which results in the inclusion of a number of different independent variables in the models for this research. To ensure enough statistical power to detect an effect of those independent variables if one exists, it is important to have a large enough sample size to account for the number of independent variables included. The current research

had a sample size of 129 - 139 probation officers and included five dependent variables for each outcome construct. Due to the limited sample size, it was not possible to include every potentially relevant factor from each area of influence within the system that has been identified by prior research. Additionally, as previously discussed, some factors that were intended to be included could not be given limitations with how they were measured (e.g., caseload, special unit). Ultimately this may have had a significant impact on the findings of this research by inadvertently excluding some factors that may be highly influential within the system.

The nature of the sample itself may have also had an impact on the outcomes of this research. As previously mentioned, the final analysis sample (N=139) was statistically significantly different than the larger sample of officers who completed the eLearning (N=170). Officers in the excluded cases had lower pretest scores and lower perceptions of staff expertise, but reported higher levels of support during the training. that they did not finish. Though these officers did not have a significantly different level of motivation, their lower pre-training skill level may be an indication of lower self-efficacy, which is related to motivation (Vroom, 1964). It is also possible that these differences indicate that officers who knew the least about the training concepts going into the training were for some reason less likely to finish the training, despite feeling that they had adequate support and feedback throughout the process. This may indicate an issue with the training design, or it may be that these individuals simply needed longer to complete the training. A longer follow-up period would have been necessary to determine if this was simply a slow adopter group or if they are perhaps more resistant to change

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than their coworkers. Without this information, the known differences between the completers and non-completers remains a limitation of this study that may have impacted the results in an unknown way.

Future Research

As the first empirical test of Baldwin and Ford's (1988) technology transfer model to include all three areas of influence included in the systems framework, this dissertation offers a significant contribution to the field. However, it is only an initial step in the testing of the full technology transfer model since it primarily focuses on examining the direct effects proposed by Baldwin and Ford (1988). Future research should seek to replicate this work within various types of agencies and systems. It should also include analyses of both the direct and indirect relationships within the technology transfer process to further parse out the nuances of this complicated process.

Future testing of Baldwin and Ford's (1988) theoretical model will be a critical addition to the general training research. It is not enough to only consider the individual completing a training and the training itself as was often done in prior research. To fully understand the effectiveness of a training, one must consider all aspects of the environment within which it takes place. This includes the organization as well as its individual members and the training or technology that is being adopted. In the future, there should be a more intentional interdisciplinary focus to blend the training and organizational change fields. This will yield a more comprehensive understanding of both fields and will add to the continued theoretical development of both as well.

This study included a number of variables that were created specifically for this dissertation. Factor analyses were conducted on all of these measures to determine the reliability of each, and to remove any weak items. The results of this research indicate, however, that it is possible that some of these measures, while statistically reliable, are not significant predictors of training outcomes. Future research should evaluate these scales using principal components analyses to determine if any of the subscales can be removed. This would allow for the inclusion of different measures, specifically those which prior research has indicated are significant but which were not able to be included in the present study.

There are other areas of measurement which would expand our understanding of technology transfer. Specifically, future research should focus on the development of new organizational measures for organizational functioning, culture, and climate. The present research attempted to refine existing measures of each, and did in fact succeed in creating reliable measures, however, it remains apparent that substantial changes have taken place in organizations over time, and these changes need to be taken into account. Perhaps the most prominent change is the proliferation of technology in the workplace. Coupled with that is the disconnect between the quality of technology available to personal users versus that available in many government agencies. This has likely had a significant influence on employees' expectations of technological capabilities as part of the general functioning of an organization.

The climate and culture of probation agencies have likely undergone substantial change over the past several decades. The current research demonstrated that probation

officers in the agencies studied did not perceive a measurable difference between climate and culture, despite the fact that these are two theoretically different constructs (Schein, 1990). Again, though the present research successfully revalidated existing climate and culture measures to create updated, reliable scales from the items included in the original measures, it did not add any new items to the measures or significantly reduce the existing number of items. Future research needs to address this gap in order to adequately measure organizational culture and climate. This is especially pertinent to research conducted within bureaucratic agencies, which have general cultures and climates, but may have subcultures as well. These may be found within the existing organizational structure and chain of command, or they may exist more informally. Similarly, such subcultures may be either intentionally created and promulgated, or they may operate in a more sporadic and unintentional way. Future research, particularly qualitative research, is necessary to better understand this and other key organizational constructs.

A social learning environment could be easily created within a probation office. Traditionally, such an environment was proposed as part of evidence based practices for working with probationers under the proactive community supervision model (Taxman, 2008). This environment has since been mirrored to promote positive change among probation staff and currently exists within the SOARING training design with that goal. Future research should examine the creation and use of a general learning environment within probation agencies as a mechanism for increasing officers' motivation to learn prior to training.

Conclusions

The purpose of this research was to examine the relative influence of individual, organizational, and training design factors on probation officers' knowledge and use of EBPs after a training on best practices to determine which factor or group of factors exerts the most influence on training outcomes. This research indicates that individuals' motivation to learn exerts the strongest impact on individuals' knowledge of EBPs at the conclusion of training, and that a mix of individual and training design factors have the strongest effect on individuals' self-reported use of EBPs at the conclusion of training.

As was evident in the included analyses, there were differences in the factors that were significant in the univariate models compared to the multivariate models. Some factors, such as perceptions of coaching (knowledge outcomes) and perceived communication within the organization (use of skills outcomes), were no longer statistically significant when accounting for additional covariates as in the holistic model. The stepped MANCOVA models demonstrated the complicated nature of the relationships between these factors, as some items that were significant in one iteration were no longer significant in the full model. These results highlight the need to examine implementation among individuals in organizations, acknowledging the system and the effects of that system on its individuals, the organization as a collective, and outcomes of the change process (Baldwin & Ford, 1988; Noe et al., 1997). If as researchers and implementation scientists we continue to examine the system only in part, we run the risk of overstating or underestimating implementation successes and failures or attributing these to the wrong factors. It is thus imperative that assessments of implementation and

training within organizations consider all aspects of the system in a holistic analysis as was done in this analysis.

Given the prevalence and strength of organizational factors as influences on training outcomes in prior research, the lack of significant influence these factors played in the current research was quite surprising. As previously mentioned, the current research represents the first instance in which the influence of organizational factors was considered in the same model as individual and training design factors within the field of community corrections research. This is a more theoretically-driven approach because the holistic model takes into account the myriad of factors which simultaneously impact training outcomes in community corrections organizations. Failing to account for entire groups of these factors, as prior research has done, can lead to an overestimate of the importance of certain factors and an under estimate of others. As the current research is the first of its kind, the findings here should not be used to dismiss the importance of organizational influences on training outcomes, but rather should lend support for use of the holistic model in future research.

This research supports the systems perspective as a valid framework within which to study organizational change, especially as it relates to skill development and the knowledge transfer process. While the research answered some questions about influences on training outcomes, it raised additional questions and suggests a much more nuanced relationship between system variables than tested in this model. This is consistent with the complexity evident in Baldwin and Ford's (1988) model, and provides

the impetus for continued empirical testing of their framework to understand technology

transfer.

Officer Pretest & Post-test

1. Static Risk is based on historical elements of an individual's criminal history and can only increase over time.
    1. True
    2. False

2. Which of the following is true about Static Risk factors?
    1. They are static and don't change.
    2. They are based on past behavior.
    3. They help to predict an offender's potential to reoffend.
    4. All of the above.

3. When assessing Static Risk, all criminal history factors are weighed equally.
    1. True
    2. False

4. Criminal history, number of times on probation, and current age are examples of Static Risk factors.
    1. True
    2. False

5. Which of the following items are Static Risk factors?
    1. Criminal history, number of times on probation, and current age.
    2. Age at first arrest, number of prior arrests, and severity of current arrest.
    3. Number of times on probation, number of probation violations, and number of prior arrests.
    4. Type of criminal history, number of probation revocations, and drug use.

6. Which of the following items is NOT a Static Risk factor?
   1. Substance abuse
   2. Number of prior arrests
   3. Age at time of first arrest
   4. Number of times on probation

7. Criminogenic Need is a component of Risk
   1. True
   2. False

8. Criminogenic Needs...
   1. include historical factors such as age at first arrest.
   2. tend to increase the likelihood that an offender will reoffend.
   3. cannot change over time.

9. Which of the following is NOT a Criminogenic Need?
   1. Criminal peers
   2. Substance abuse
   3. Dysfunctional family
   4. History of criminal behavior

10. Self-control is unrelated to Risk.
    1. True
    2. False

11. Associating with friends who participate in criminal behavior is an example of a Criminogenic Need.
    1. True
    2. False

12. The Need Principle states that interventions should target _____ related to criminal behavior.
    1. Criminogenic needs
    2. Static risk
    3. Antisocial behaviors
    4. All of the above

13. Responsivity is unrelated to the concepts of Risk and Need.
    1. True
    2. False

14. Responsivity involves consideration of which of the following factors?
    1. Age at first arrest
    2. Substance use
    3. Literacy
    4. All of the above

15. Which of the following is true about Static Risk factors?
    1. They are Static and don't change.
    2. They are based on past behavior.
    3. They help to predict an offender's potential to reoffend.
    4. All of the above.

16. The effects of Stabilizers are the same for everyone.
    1. True
    2. False

17. Destabilizers are factors that make it easier for an offender to focus and benefit from treatment programming and controls.
    1. True
    2. False

18. Mental health history is a...
    1. destabilizing factor.
    2. static risk factor.
    3. stabilizing factor
    4. None of the above.

19. Drug abuse...
    1. is a Static Risk factor.
    2. is the same as drug dependence.
    3. negatively influences a person's ability to make good decisions.
    4. All of the above.

20. Frequency of alcohol use is the only important factor in determining whether a person has alcohol dependence.
    1. True
    2. False

21. Which of the following is NOT related to an offenders Motivation to Change?
    1. Completion of probation
    2. Criminal history
    3. Recidivism
    4. Participation in treatment

22. Treatment Readiness can only increase over time.
    1. True
    2. False

23. An Ambivalent offender only has negative perceptions of treatment.
    1. True
    2. False

24. Which of the following is NOT a principle of Motivational Interviewing?
    1. Treatment Readiness and Motivation to Change are not offender traits.
    2. It is the probation officers job to articulate and resolve the offender's ambivalence.
    3. Direct persuasion is not an effective method for resolving ambivalence.
    4. Trust between the offender and the criminal justice staff is an important factor in developing Motivation to Change.

25. When probation officers are either overly authoritative or unduly direct, individuals are less likely to engage in criminal activity.
    1. True
    2. False

26. Which of the following indicates cooperation?
    1. Completing conditions of supervision.
    2. Working with correctional staff to establish supervision goals.
    3. Following the rules of supervision.
    4. All of the above.

27. Mandated treatment is more effective than voluntary treatment.
    1. True
    2. False

28. The purpose of Decisional Balance techniques is to...
    1. emphasize that the consequences of the action (crime) outweigh the perceived benefits.
    2. identify an individual's Static Risk factors and Criminogenic Needs.
    3. determine which criminal behavior will result in the greatest reward.
    4. None of the above.

29. Minimizing actions, justifying actions, and shifting responsibility are all examples of...
    1. situational barriers to change.
    2. attitudinal barriers to change.
    3. prosocial supports.
    4. a behavioral chain.

30. If an offender is unable to identify the cost of engaging in crime through Decisional Balance, what other skills can you use to help them?
    1. Explore their Ambivalence to change.
    2. Review their Behavioral (Offense) Chain.
    3. Review their Risk/Need Assessment.
    4. All of the above.
    5. None of the above.

31. The risk and need assessment and offender contact information are the only components that should be included in the case plan.
    1. True
    2. False

32. Which of the following should NOT be incorporated into a case plan?
    1. Special conditions imposed by the court.
    2. Target behaviors.
    3. Current offense.
    4. The offender's interests.

33. Target Behaviors are long-term goals for the offender to lead a crime- and drug-free lifestyle.
    1. True
    2. False

34. Target Behaviors should be described in broad language.
    1. True
    2. False

35. Which of the following would be an appropriate Target Behavior for the long-term goal of sobriety?
    1. Submit a clean urine test to the PO twice per week.
    2. Go to three anger management sessions per week.
    3. Stay drug-free.
    4. Submit five job applications.

36. Which of the following is an example of an Internal Control?
    1. Curfew.
    2. Sense of responsibility to others.
    3. Probation officer.
    4. Drug addiction.

37. Which of the following is NOT a gender-related issue that should be addressed n Case Planning?
    1. Unique health issues
    2. Trauma
    3. Parental role
    4. Language

38. Cultural Competency impairs a systems ability to work effectively in a cross-cultural situation.
    1. True
    2. False

39. Once a Case Plan is developed it must always be followed as written.
    1. True
    2. False

40. What is NOT true about Case Plans?
    1. Only the offender should sign the case plan.
    2. The case plan should define consequences for the offender's actions.
    3. The case plan should be a comprehensive strategy to manage risk.
    4. All of the above.

41. Problem Solving is a process in which probation officers help offenders to identify the thoughts and actions that occur prior to, during, and after an offender engages in criminal activity.
    1. True
    2. False

42. One of the benefits of Problem Solving is that it encourages offenders to ignore consequences.
    1. True
    2. False

43. An identified problem should be linked to any situation impacting an offender's life.
    1. True
    2. False

44. When defining a problem, an offender and probation officer should first...
    1. list as many problems as possible.
    2. determine if the problem exists and is real.
    3. prioritize the problem.
    4. make sure the offender feels the problem is a priority,

45. When identifying alternative options and solutions, correctional staff should...
    1. help the offender examine potential short-term outcomes.
    2. identify the offender's real problems.
    3. help the offender weigh the positives and negatives of engaging in problem behavior.
    4. outline the steps necessary for the offender to achieve their goals.

46. When assessing the positives and negatives of a situation, the probation officer should...
    1. provide examples of other offender's problems.
    2. help the offender see that the negatives outweigh the positives
    3. discuss strategies for dealing with problem behaviors.
    4. All of the above.

47. Reviewing the offenders Risk/Need Assessment is part of which step of the Problem Solving process?
    1. Identifying the triggers that affect the circumstances of the problem.
    2. Identifying the goal.
    3. Identifying alternative options and solutions for achieving the goal.
    4. Assessing circumstances that cause the offender's current situation.

48. A Decision Grid should be used as a Problem Solving Tool only to highlight the negative consequences of current behavior.
    1. True
    2. False

49. Recurring problems are generally related to static risk factors that continue to negatively impact an offender.
    1. True
    2. False

50. Delivery of the positive reinforcement for engaging in good behavior should NOT be...
    1. swift.
    2. certain.
    3. severe.
    4. increased over time.

51. Crime Desistance is when an offender stops their criminal behavior.
    1. True
    2. False

52. All offenders Desist from crime at some point during their life span.
    1. True
    2. False

53. Only offenders who are confident and clear about how to stay crime-free are ready to start Desisting from crime.
    1. True
    2. False

54. Which of the following statements about Desistance is true?
    1. Offenders always desist from crime when they get older.
    2. Desistance occurs as an immediate event, when the offender decides not to engage in crime.
    3. The majority of offenders desist from crime at some point during their life span.
    4. None of the above.

55. Which of the following is NOT a factor related to Desistance?
    1. Believing that the probation officer has the offender's best interests at heart.
    2. Developing enduring supports in life.
    3. Building connections in the community.
    4. Wanting to invest in life with more maturity.

56. Desistance factors (strengths) are often destabilizers that do not insulate an offender from engaging in crime.
    1. True
    2. False

57. To desist from crime, offenders simply need to reduce their need factors.
    1. True
    2. False

58. How can a probation officer help an offender visualize the benefits of being an ex-offender?
    1. Let the offender try to stay crime-free on their own and point out the consequences of failure.
    2. Remind the offender of the consequences of returning to crime.
    3. Ask the offender about how crime has affected their life in a negative way.
    4. Ask the offender about how they can reach their goals through non-criminal, prosocial strategies.

59. Oscar says he does not want to return to prison and asks his supervision officer for help to stay crime-free. What is an example of an External Stabilizer his supervision officer can facilitate?
    1. Help Oscar think through his decision grid.
    2. Specify the rewards and consequences that will be in place for the duration of supervision.
    3. Use questions to help Oscar see positive Strengths in his life.
    4. Make sure supervision meetings are positive, encouraging, and consistent.

60. When attempting to introduce new Stabilizers into an offender's life, it is most helpful to set out a plan for what Stabilizers should be built over the next year.
    1. True
    2. False

APPENDIX B

Officer Self-Reported Use of Skills

Self-Reported Use of Skills	SR_skills WR	Individuals' use of skills relating to: Working Relationship COMPAS Assessment Case-Planning Case Plan-Driven Supervision Intervening w/Problems	WR_1. I find it challenging to find something good to say to a probationer when they are having problems on supervision. WR_2. If a probationer is doing something wrong, I tell them how to fix it. WR_3. I encourage probationers to speak about their concerns and challenges with the demands of supervision. WR_4. I think it's important to make sure I understand the probationer's situation (or point of view). WR_5. I hold probationers accountable for sticking to their exact supervision conditions. WR_6. I tell probationers if they are wrong or have an unrealistic view of their situation. WR_7. I know when a probationer is likely to change or not. WR_8. I tell probationer's how they can improve their situation. WR_9. I am flexible with probationers choosing their own goals that may involve conditions and compliance. WR_10. I talk to probationers about their motivation to change.	Scale Alpha= Values: 1=Very Uncomfortable, 2=Uncomfortable, 3=Neutral, 4=Comfortable, 5=Very Comfortable

			WR_11. I know what probationers need to do in order to do well on probation. WR_12. I make it clear to my probationers that I am in charge. WR_13. I work with probationers to adjust their contacts to fit their specific situation.	
Self-Reported Use of Skills	SR_skills _COMPA S	Individuals' use of skills relating to: Working Relationship COMPAS Assessment	COMPAS_1. I explain to probationers the purpose of the COMPAS and its role in supervision. COMPAS_2. I have trouble getting probationers to talk about their risk level. COMPAS_3. I have probationers fill out the COMPAS self-report section with me during their visit. COMPAS_4. I read the COMPAS self-report section questions word for word to probationers. COMPAS_5. I talk to probationers about their high and low scores on the COMPAS. COMPAS_6. I have a difficult time explaining probationer's COMPAS scores to them. COMPAS_7. I question probationers about inconsistencies between their self-report and official records. COMPAS_8. I explain to probationers how their COMPAS scores relate to their risk of reoffending. COMPAS_9. I confront a probationer when they lie on the self-report section of the COMPAS. COMPAS_10. I define the term "criminogenic needs" for probationers.	Scale Alpha= Values: 1=Very Uncomfortable, 2=Uncomfortable, 3=Neutral, 4=Comfortable, 5=Very Comfortable

| Self-Reported Use of Skills | SR_skills _CP | Individuals' use of skills relating to: COMPAS Assessment Case-Planning | CP_1. I ask probationers for their input on the priorities for their case plan.
CP_2. I spend most of my time with probationers talking about court conditions.
CP_3. If I let the probationer talk too much we will get off track.
CP_4. I try to help probationers understand their needs but most of them just don't get it.
CP_5. I let the probationers on my caseload choose their own goals for their case plan.
CP_6. I tell the probationers I work with how to solve their problems because most are not able to come up with realistic solutions on their own.
CP_7. I take a hands-off approach with probationers so they can take responsibility for their own actions.
CP_8. Identifying the components of a probationer's case plan before my contact with them allows me to be more efficient.
CP_9. I include consequences in probationers' case plans so they know what will happen if they fail to meet their conditions.
CP_10. I choose standard items for probationers' case plans.
CP_11. I use Behavioral Analysis as a tool during case planning.
CP_12. I include incentives in case plans. | Scale Alpha=
Values:
1=Very Uncomfortable,
2=Uncomfortable,
3=Neutral,
4=Comfortable,
5=Very Comfortable |
| Self-Reported Use of Skills | SR_skills _CPDS | Individuals' use of skills relating to: Case Plan-Driven Supervision | CPDS_1. I schedule contacts and urinalyses based on probationers' court conditions.
CPDS_2. I refer probationers for evaluations and treatment based on court conditions. | Scale Alpha=
Values:
1=Very Uncomfortable,
2=Uncomfortable, |

			CPDS_3. How often I meet with a probationer depends on their criminal history. CPDS_4. I review and update probationers' case plans with them every time I see them. CPDS_5. I talk to probationers about their strengths and things that are going well in their lives.	3=Neutral, 4=Comfortable, 5=Very Comfortable
Self-Reported Use of Skills	SR_skills _Int	Individuals' use of skills relating to: Intervening w/Problems	Int_1. I let probationers know when they make me angry or disappointed. Int_2. When a probationer is having problems on supervision I revisit the priorities on their case plan. Int_3. When probationers are having problems on supervision I help them weigh the costs and benefits of their behaviors. Int_4. I talk to probationers about the relationship between their thoughts and their actions. Int_5. I tell probationers how their current thinking is getting them into trouble. Int_6. When a probationer violates a condition I respond with the sanction I feel fits their behavior. Int_7. I follow the sanction matrix when probationers have violated conditions.	Scale Alpha= Values: 1=Very Uncomfortable, 2=Uncomfortable, 3=Neutral, 4=Comfortable, 5=Very Comfortable

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Stephanie A. Maass received her Bachelor of Science degree in Administration of Justice from George Mason University in 2007 and her Master of Arts in Justice, Law, and Crime Policy from George Mason University in 2010. While pursuing her doctorate, she worked as a research associate for the Center for Advancing Correctional Excellence at George Mason University during which time she served at the Principal Investigator on a grant to increase the use of evidence-based practices among probation officers in Hidalgo County, TX. She also served as a project manager on a number of projects, including the SOARING eLearning project. Stephanie has given over a dozen trainings on the use of evidence-based practices in probation to probation officers, sheriffs' departments, and technical assistance providers across the country. She has a number of coauthored peer reviewed publications as well as solo authored publications in practitioner journals, and regularly presents her work at national and international conferences. Stephanie is currently a tenure-track Professor of Criminal Justice in the School of Justice Studies and Sociology at Norwich University in Northfield, VT. She will continue in this position after completing her doctoral degree requirements.