EARLY INTERVENTION SYSTEMS: AN EXPLORATION OF INTERVENTIONS

HANDLED BY SUPERVISORS TO ADDRESS AT-RISK OFFICER BEHAVIOR

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By

Christi L. Gullion

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DEDICATION

To my family, who loved and supported me throughout this journey. This was all possible because of you and for that I am eternally grateful. Thank you.

ABSTRACT

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With the national conversation and media attention surrounding high-profile and critical incidents and officer misconduct, emphasis on supervision and accountability for police officers and their agencies has never been more pronounced. Early Intervention (EI) systems are a supervision and accountability tool to identify and address at-risk officers. While EI systems are prevalent throughout U.S. police agencies, limited research has been conducted in this area. More importantly, EI interventions handled by supervisors to hold officers accountable and prevent repeated at-risk behavior and misconduct have yet to be explored. The purpose of this study was to fill this critical gap in EI system literature by examining the review process and execution of EI alerts and interventions with officers.

This current study examines four critical facets of the EI process, the differences between non-EI flagged and EI flagged officers, policy requirements for the execution of EI interventions, the likelihood of subsequent EI alerts, and temporal distance between the initial and subsequent EI alert during this study period. EI system data including supervisor response memos were collected from the internal affairs unit of a large, metropolitan police agency in the southwestern United States. Results indicate that officer gender, officer tenure, and officer division were all significant for the likelihood of receiving an EI alert. Results also demonstrated that supervisor race, supervisor tenure, type of performance indicator that triggered an EI alert, time to the initial EI alert, and year of the EI alert were all significant for one or more of the policy requirements in the

execution of EI interventions. Furthermore, results indicated that the type of performance indicator, time to the initial EI alert, and year of the EI alert were all significant for the likelihood of a subsequent EI alert, while officer race, supervisor tenure, type of performance indicator, time to the initial EI alert, and year of the EI alert were all significantly associated with the time between an officer's initial EI alert and intervention and their subsequent EI alert during this study period. Finally, a discussion of limitations, future research, and policy implications are presented.

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CHAPTER I

Introduction

Media attention surrounding high-profile and critical incidents involving excessive force and officer misconduct continues to ignite concerns among police agencies and community members regarding transparency and accountability in policing. Between 1997 and 2017, these patterns or practices of excessive force, misconduct, and a failure to supervise officers have resulted in 69 formal investigations and 40 court-ordered reform agreements for police departments (United States Department of Justice [U.S. DOJ] Civil Rights Division, Special Litigation Section, 2017). Such reform agreements have included "improving systems for supervising officers and holding them accountable for misconduct; creating and using data about police activity to identify and correct patterns of police misconduct; and institutionalizing law enforcement agencies' engagement with and accountability to the community" (U.S. DOJ Civil Rights Division, Special Litigation Section, 2017, p. 4).

In addition, these high-profile and critical incidents are causing community members to question the legitimacy of police. For instance, the videotaped beating of Rodney King in March 1991 saw a drastic 50 percent decline in public approval of the Los Angeles Police Department (LAPD) two weeks after the incident (Weitzer, 2002). Other highly publicized incidents of excessive force and officer misconduct have resulted in public disapproval of police expressed through city-wide protests. Some examples include the 2014 shooting of Michael Brown in Ferguson, Missouri, the 2015 in-custody death of Freddie Gray in Baltimore, Maryland, and the 2020 death of George Floyd in Minneapolis, Minnesota (Cheng & Long, 2022). Police agencies and their officers

effectively serving their communities is partially based on those community member's perceptions and beliefs in police, or police legitimacy (LaFree, 1998; Sunshine & Tyler, 2003; Tyler, 2004; Tyler & Huo, 2002). Research has found community members' evaluations of police behavior are highly impacted by social contextual factors including negative media attention surrounding police-community relations and police misconduct (Braga et al., 2014; Weizer & Tuch, 2006; Worden & McLean, 2017).

To sustain police legitimacy and community trust, ensuring agency and officer accountability is vital. Police accountability is especially important given reports suggesting many officers involved in highly publicized and controversial police use of force cases have a long history of repeated incidents related to misconduct (Thompson, 2021). Furthermore, police officers are at risk for stress, depression, domestic violence, chronic illness including substance abuse, and suicide (Burke et al., 2007; Gershon et al., 2009; Gibbs & Kendrick, 2011; Walker & Archbold, 2013). Due to the stress these critical incidents can put upon police officers, officer safety and wellness has become a top priority for police agencies (President's Task Force on 21st Century Policing, 2015; Seattle Police Department Manual, 2021; U.S. Department of Justice [DOJ], Office of Community Oriented Policing Services [COPS Office], 2019). To this end, police agencies utilize accountability tools to review officer activities, identify at-risk officers, address potential misconduct, and prioritize officer wellness.

Given the importance of officer and agency accountability, police leadership and experts have recommended early intervention (EI) systems or programs as a promising practice since the late 1970s (e.g., Gibbs & Kendrick, 2011; U.S. DOJ COPS Office, 2019; Walker & Archbold, 2013). Furthermore, it was estimated that 68 percent of U.S.

police agencies with 100 or more officers had an EI system as of June 30, 2016 (U.S. DOJ Bureau of Justice Statistics Law Enforcement Management and Administrative Statistics Survey [LEMAS], 2020). As a non-disciplinary, supervisory management and accountability tool, an EI system identifies at-risk officers early and provides the opportunity to address problematic behavior to prevent future adverse events that may be harmful to officers, the agency, or the community. This type of accountability tool is essential given research consistently finds that a small proportion of officers are responsible for most problematic behavior and high-risk or critical incidents (Brandl et al., 2001; Christopher Commission, 1991; Harris, 2011, 2014; Kane & White, 2009; McCluskey & Terrill, 2005; McElvain & Kposowa, 2004, 2008; Terrill & Ingram, 2016; Walker, 2001; Walker et al., 2000; White & Kane, 2013) and that early onset of officer misconduct increases the risk of a longer duration and higher frequency of problematic behavior (Gullion et al., 2021a, 2021b; Harris, 2009, 2010a, 2010b, 2011; Harris & Worden, 2014; Kane & White, 2009).

While departments also have other tools that promote accountability, such as the internal affairs (IA) process to investigate allegations of misconduct that have already occurred, EI systems offer the opportunity to proactively educate, mentor, and modify behavior, rather than to simply impose discipline. Furthermore, an EI system is more likely to identify patterns and trends of at-risk officer behavior across various activities, shifts, areas, units, and assignments that would not otherwise be evident when investigating isolated incidents reactively (Bouche et al., 2016; Gullion & King, 2020; Harris, 2014; Hassell & Archbold, 2010; Lersch & Mieczkowski, 1996; Stephens, 2011; U.S. DOJ COPS Office, 2019; Walker & Archbold, 2000; Walker & Archbold, 2013).

Early Intervention System Processes

      Generally, EI systems are non-disciplinary and data-driven, supervisory management tools that track performance indicators (e.g., complaints, uses of force, firearm discharges) based on thresholds defined by the agency. An EI system alerts when a performance indicator or combination of performance indicators meets or exceeds a defined threshold within a specified time frame. After EI alerts flag potential at-risk officer behavior, a review of the incident(s) that triggered the alert and for some agencies the officer's work history, is conducted to determine if an intervention is warranted. Interventions can be wide-ranging, including options from no action, informal meeting, or commendation to training-, wellness-, and correction-based interventions. Agencies may document the intervention outcome and provide follow-up monitoring if applicable. To illustrate the importance of these EI system terms used throughout this current study, definitions are outlined here in Table 1 as a reference:

Table 1

Early Intervention (EI) System Terms

EI System Terms	Description	Example
Performance indicators	A behavior, police incident, activity, or combination thereof that is tracked to measure the performance and well-being of police personnel to identify potential concerns.	Complaints, firearm discharges, missed court, sick days, use of force incidents, vehicle collisions, etc.
Thresholds	The agency-defined number of performance indicators that will trigger an EI system alert if met or exceeded within a specified time frame.	Three complaints in a 90-day period or a combination of any six performance indicators in a six-month period
EI alert	A notification created by the EI system to indicate when a performance indicator or combination of performance indicators meets or exceeds a defined threshold within a specified time frame.	Email, text, push notification, or other type of messaging app sent to the appropriate personnel (e.g., EI system manager, supervisor, commander, etc.) which typically warrants a supervisory review.
EI review process	A supervisor reviews the EI alert to determine appropriate intervention outcome (formal or informal action), if any.	This may include supervisory review of the performance indicators (i.e., incidents) that triggered the alert and/or the officer's work history.
EI intervention	The formal or informal action taken, if any, based on the review of the EI alert.	No action, commendation, informal meeting, training, modified field duties, reassignment, health, and wellness referral, notice to correct, complaint, etc.

Interventions and their outcomes are a key factor in determining the success of an EI system. Yet this EI implementation process can be challenging, in part due to the variation of an agency's available interventions and the discretionary power of the reviewer. In addition, interventions are often tailored to the individual officer, and thus, the success of EI interventions may vary between officers. Ensuring an officers'

successful completion of that intervention is equally important to determine whether the intervention was appropriate. Regular managerial oversight of EI interventions handled by supervisors is also imperative to improve the EI intervention process. Ultimately, the EI system design and implementation can reduce at-risk officer behavior and improve officers' safety, health, and wellness, but its effectiveness is dependent on how the identification, assessment, and monitoring components are executed in practice.

The Function of Supervisors in Early Intervention Processes

The importance of the first-line supervisors' role in the accountability of officer behavior cannot be overstated. First-line supervisors have the greatest opportunity to address at-risk officer behavior, as they are the essential thread of oversight in all accountability tools, from reviewing incident reports, completing performance evaluations, and handling EI system interventions with officers (Walker, 2003; 2007). While not all EI system alerts nor allegations of misconduct are the result of officer misconduct, how supervisors address at-risk officers and hold them accountable is critical (Gullion & King, 2020). The key to any EI system's effectiveness lies largely in whether EI interventions modified officer behavior.

As the primary driver of the EI system's review and intervention process, first-line supervisors are generally responsible for reviewing the incident(s) that triggered an EI alert and the officer's past work history, to determine if an intervention is necessary, and if so, which type of intervention is most appropriate. This includes whether any follow-up or post-intervention monitoring is required. First-line supervisors' familiarity with, proximity to, and authority over their subordinate officers, puts them in the best position to determine suitable and tailored interventions to modify officer behavior. Yet

communicating the EI system's purpose and process and clearly outlining supervisors'

expectations is critical, as is ongoing oversight of the EI system process. Such oversight

will not only reveal if supervisors are appropriately selecting interventions that modify at-

risk behavior but will also confirm that when supervisors choose not to impose an

intervention, (i.e., no action is taken), this was a suitable outcome for those flagged

officers.

Depending on an agency's policy, supervisors may have a great deal of discretion

in how they conduct the review of these EI alerts, whether and how they document their

review process and their determination of interventions or lack thereof, and follow-up or

post-intervention monitoring. For example, if an agency's policy does not specifically

outline what the supervisor's review process must include, then a supervisor may choose

to only review the incident(s) that triggered the alert, may also review the officer's prior

work history, and/or may compare the officer's activities to their peers. In many cases,

the supervisor can choose to either meet with the officer or determine based on their

knowledge of that officer's work history or review of the incident(s) that triggered the

alert whether an intervention is appropriate. Given this, scholarship regarding how

supervisors handle EI alerts and interventions with officers is critical to insight

surrounding whether EI systems are effective in modifying at-risk behavior and

preventing future misconduct from occurring.

Limitations of Prior Research

While the importance of EI systems has been well established and most U.S.

police agencies have implemented an EI system or program (U.S. DOJ Bureau of Justice

Statistics, LEMAS, 2020; U.S. DOJ COPS Office, 2019; Walker & Archbold, 2013),

there is a paucity of EI system scholarship. Less than fifteen empirical studies on EI systems have been conducted to date. More importantly, none of these studies have examined the EI interventions themselves, including their process and outcomes. While most studies find that EI systems have a positive effect on officer misconduct and accountability, these findings are primarily based on a reduction in complaints or uses of force pre-post EI alert (Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013), or explore the most predictive performance indicators using more advanced statistical methods (Carton et al., 2016; Cubitt et al., 2020; Helsby et al., 2018). Rather than simply considering a change in the number of incidents pre- and post-EI alert or intervention, it is also important to examine the process of how supervisors handle EI interventions with flagged officers. This includes assessing the impact for those officers who receive EI interventions, and those in which no action was taken. Such an examination is critical for assessing the effectiveness of EI systems and their processes. Especially given the broad discretion supervisors are afforded in determining whether interventions are necessary for those EI-flagged officers, and if so, which type is most appropriate.

Due to the lack of prior examination of EI system's interventions, scholars and agencies are unaware of the predictors that impact the EI process and the likelihood and timing between repeated EI alerts and interventions. A limited number of studies have assessed the likelihood and timing of repeated complaints and use of force incidents. Specific to complaints, results show that officers receive more complaints in the first three years of their career (Gullion et al., 2021a; Harris, 2009, 2010a, 2010b, 2014; Harris

& Worden, 2014; Kane & White, 2009) and officers with one or more complaints per year were three times more likely to be terminated for misconduct (Kane & White, 2009). Studies examining use of force found that officers are involved in more use of force incidents in the first year of their career (Gullion et al., 2021b) and officers with a prior history of officer-involved shootings were more than twice as likely to be involved in future shootings (McElvain & Kposowa, 2008). These findings emphasize the need for an examination of the likelihood and timing between repeated EI alerts and interventions, especially given that EI alerts and interventions can be based on officer behaviors and activities including and beyond complaints and use of force incidents.

With the lack of sustained police misconduct across U.S. police agencies (Harris & Worden, 2014; Stephens, 2011; Terrill & Ingram, 2016; Walker & Archbold, 2013), understanding how these EI systems are utilized including imposing non-disciplinary interventions on flagged at-risk officers is critical to determining whether EI systems appropriately modify at-risk behavior. Furthermore, understanding the nature of and likelihood and timing between EI alerts and interventions demonstrates whether the process of supervisors handling these interventions with flagged officers and determining appropriate outcomes are effective and if so, for how long.

Purpose of Current Study

The purpose of this study is to contribute to the dearth of EI system research by examining the nature, process, and effectiveness of EI system's interventions. This study examined four key areas: 1) the characteristics that distinguish officers who have and have not been flagged by the EI system; 2) the process and outcomes of EI interventions including how they are handled by supervisors; 3) the predictors of the likelihood of

repeated EI alerts; and 4) the predictors of the timing between repeated EI alerts. The goal of this study is to inform police agencies and scholars about the process and effectiveness of EI systems' alerts and interventions. Specifically, this study took a progressive approach to explore how those officers not flagged and flagged by the EI system differ, and how EI systems' interventions are handled, including the process outcomes and the factors affecting the likelihood and timing between reoccurring EI alerts to determine what works—and how.

To examine these areas, this study collected EI system data from a large, metropolitan police agency in the U.S including EI policies, performance indicators, thresholds, alerts, interventions, intervention outcomes, and supervisors' response memos articulating their review and determination of EI interventions. Second, this study conducted a process review of the EI system alert and intervention documentation to assess the content related to the supervisors who handle EI alerts and interventions, as well as with flagged officers who received interventions. These documents were used to gain information regarding how the EI interventions are handled; accountability of the EI interventions; and whether and to what extent EI interventions modify officer behavior (i.e., prevent future EI interventions). Given EI interventions have yet to be examined in literature, this study benefited from measuring the process and effectiveness of interventions including the predictors that influence the likelihood and timing between EI interventions by gaining detailed information from supervisors' memos decisions and the impact on officer behavior.

The objectives of this study and their associated research questions follow directly from these four key evaluation components. The first objective is to compare those

officers not flagged by the EI system to those officers flagged by the EI system during this sampling period to identify notable differences in individual factors.

This research question is asked for two primary reasons. First, of the limited EI studies conducted, few have compared non-flagged and flagged officers to understand these differences in individual factors for insights in identifying at-risk officers through EI alerts. Second, such a comparison provides a baseline for progressing to the examination of flagged officers and assist in how to best consider the execution of EI alerts and interventions. Specifically, the following research question is addressed:

Research Question 1: What characteristics distinguish officers who received zero EI alerts during the study period from those officers who did receive EI alerts?

The second objective progresses to examine EI interventions for those officers who were flagged by the EI system and the impact on modifying officer behavior by considering the nature of EI interventions and how supervisors handled these interventions with the flagged officers. This was based on the type and process of the EI interventions and their outcomes, including the supervisors' memos articulating their review and justification for these EI interventions outcomes with these flagged officers.

This research question has not been addressed in prior EI studies given they have not yet examined EI interventions. Furthermore, this research question was asked in order to gain insight regarding which individual or EI case factors influence the outcomes of EI memos or policy requirements for supervisors handling these EI alerts and interventions. Such information would be insightful for understanding which policy requirements are meaningful to the execution of EI alerts and interventions and how, and which policy

requirements need managerial oversight and/or revisions to better address officers and modify at-risk behavior. Specifically, the following research question is addressed:

Research Question 2: For those officers who did receive an EI alert, what officer, supervisor, and EI characteristics predict the outcomes of the policy requirements for the EI interventions handled by supervisors?

The third objective is to consider the officer, supervisor, and case factors that affect the likelihood of repeated EI alerts and interventions. This review was conducted to determine which predictors influence the risk of future EI alerts and interventions, even when no action is taken with that flagged officer.

This research question has not been addressed in prior literature and is critical to determine which individual and EI case factors including policy requirements are most influential in addressing and preventing repeated EI alerts. This will also assist in improving the execution of these EI alerts and interventions by determining what factors are most impactful and which may demonstrate the need for agencies to review their EI policy, thresholds, or the EI review process conducted by supervisors. Specifically, the following research question is addressed:

Research Question 3: What factors affect the likelihood of a subsequent EI alert?

The fourth objective is to consider the length of impact of EI interventions on modifying at-risk behavior. Examining the timing between EI alerts and interventions is critical because an EI system is non-disciplinary and can identify at-risk officers but also officers struggling with mental health and wellness. It is also crucial to consider individual factors given that officers working different shifts, areas, units, assignments,

and those with different tenure may have varying levels of productivity. If EI interventions are tailored to officers, this may also impact officer behavior in different ways across officers and for varying lengths of time.

In addition to lack of examination of the timing between EI alerts and interventions in prior literature, this research question is also asked to gain insight regarding the predictors of timing between repeated EI alerts and interventions. This provides detailed information on the supervisor's review and execution process, and the effectiveness of preventing future EI alerts with officers that has not yet been gleaned. Such insight may lead to improvements on the EI alerts, thresholds, and how EI interventions are handled. Specifically, the following research question is addressed:

Research Question 4: For those officers who received a subsequent EI alert, what factors influence the timing between the officer's initial and subsequent EI alert?

These four objectives are important to consider in terms of the impact on officer performance and for agencies and their supervisors in determining how best to guide and mentor officers and handle EI interventions individually and systemically.

Organization of Current Study

Chapter Two reviews the literature on EI systems including the design and implementation, challenges, prior EI system studies, the likelihood and timing of repeated officer incidents, as well as an overview of first-line supervision to include the supervisor's role, prior empirical research, and the relationship between these supervisors and their responsibilities with EI systems. Limitations of EI system literature are also discussed, and the chapter concludes with the rationale for the study of EI system effectiveness utilizing interventions. Chapter Three discusses the data and methodologies

used to examine the research objectives and the analytical approach. Chapter Four details the results of the analyses examining the nature and process of EI alerts and interventions for both officers not receiving and receiving EI alerts and interventions during this study. Chapter Five provides an overview of prior EI system scholarship and its gaps, key findings and limitations of this current study, opportunities for future research, and policy implications for this study's key findings. This final chapter concludes with the importance and impact of this current study.

CHAPTER II

Review of the Literature

This chapter reviews the literature on Early Intervention (EI) systems or programs (hereafter referred to simply as EI systems) and is divided into nine sections. First, the chapter begins by discussing the design and implementation of EI systems, including their nature and purpose, foundation of EI concepts, and historical origin.

The second section of this chapter discusses the challenges of EI systems, including the inconsistency of policy, messaging, and training of EI systems within police agencies, and the variation in EI system design and process across agencies. This variation in EI design and implementation is found among performance indicators, thresholds, interventions, post-intervention monitoring, and management of the review process.

The third section reviews the limited prior research conducted on EI systems and their effectiveness, of which, the majority were case studies of individual police agencies. While there is variation in results, most studies have found EI systems have a positive effect on officer misconduct and accountability, though most are based solely on a reduction in the number of performance indicators (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). This section will discuss EI systems continually touted as a promising practice and outline the findings from these EI studies in terms of overall effectiveness, as well by category of performance indicator including complaints, uses of force, and all additional performance indicators. Furthermore, this section will review the few studies that used

more advanced statistical methods such as machine-based learning to examine EI systems

to determine the most predictive performance indicators for potential at-risk behavior and

future misconduct (Carton et al., 2016; Cubitt et al., 2020; Helsby et al., 2018).

The fourth section of this chapter will discuss the importance of understanding the

predictors that influence the likelihood and timing between repeated officer misconduct,

and the limited research conducted examining the likelihood and timing between repeated

complaints and use of force incidents. This prior research has demonstrated the

significance of having a prior history of at-risk behavior and misconduct, and early onset

of misconduct on the likelihood and timing of officer behaviors and repeated misconduct.

The fifth section will provide an overview of first-line supervision, discussing

their role in guiding and controlling officer behavior and the accountability mechanisms

they are directly responsible for, including EI systems. This is key given how supervisors

address officers and hold them accountable including through an EI system and EI

interventions is key to officers' development and can prevent future at-risk behavior

(Gullion & King, 2020; Gullion, et al., 2021a, 2021b; Walker, 2007).

The sixth section will then discuss the first-line supervisors' role and

responsibility in EI systems including the execution of EI alerts and interventions. The

substantial impact of the supervisor's role in holding officers accountable through the EI

system will be highlighted. This is critical given that prior research has found first-line

supervisors can have substantial impact on officer behavior (Ingram, 2013; Ingram &

Lee, 2015; Ingram et al., 2014; Johnson 2008a, 2008b, 2011, 2015).

The seventh section will discuss the limitations of prior studies conducted on EI

systems and the importance of research on EI systems. Limitations include prior EI

studies' lack of examination of EI interventions, and as result, the absence of consideration for whether EI interventions are effective, and if so, which types of EI interventions are most effective, and for how long. This examination provided insights of the EI review and intervention process by supervisors and the resulting impact on officer behavior.

The eighth and final section will discuss the current study including the purpose and goal and also outlines the four research questions to be addressed as well as the reason and importance for these research questions being asked.

Early Intervention Systems Design and Implementation

Police accountability is critical for any agency and the communities they serve (U.S. DOJ COPS Office, 2019; Walker, 2007; Walker & Archbold, 2013). To this end, officer accountability may be achieved through agency policies, supervisors' direction and guidance, the internal affairs process, CompStat, and an early intervention (EI) system or program, among others. An EI system is a supervisory management and accountability tool that identifies at-risk officers early and provides the opportunity to address problematic behavior prior to future adverse events occurring. Such adverse events may be harmful to officers, the agency, or the community. EI systems can review trends in officers, partnerships, units, geographic areas, and others, to identify areas that need to be addressed. Such improvements can be achieved through the supervision and accountability of individual officers, as well as agency-wide policy changes and training opportunities. Ultimately, an effective EI system can protect officer safety, health, and wellness as well as agency performance while building community trust and support. Thus, a properly implemented EI system is critical to understand trends in at-risk

behavior and provide agencies the opportunity to better mentor officers, modify their behavior and hold them accountable for their actions (Gullion & King, 2020).

Nature and Purpose of Early Intervention Systems

An EI system is a non-disciplinary, data-driven tool that tracks officer performance indicators and alerts an agency when a performance indicator or combination of performance indicators meets a certain threshold, such as a specific number of complaints or vehicle collisions in a certain time frame. The commanding supervisor will then review the incident(s) and perhaps the officer's work history and may meet with the officer to determine the appropriate intervention, if any. Supervisors may document their meeting and the determined intervention depending on their policy requirements. Furthermore, follow-up may be conducted by these supervisors to ensure the officer completed the intervention, and if appropriate, post-intervention monitoring may occur. This may also include managers conducting periodic reviews of the EI system alerts handled by their supervisors which can offer valuable insight into which supervisors are providing appropriate oversight or mentorship to their subordinates (Walker et al., 2001). An EI system or program provides supervisors and managers the opportunity to address at-risk officer behavior in a positive and productive way (Bouche et al., 2016; Stephens, 2011). Ultimately, the design and implementation of an EI system contributes to its effectiveness.

Supervisors identifying the specific at-risk behavior flagged by the EI system for that officer is the initial step in the process. The next step is to determine if there is a pattern of behavior, and thus, if an intervention is needed for that officer who was flagged by the EI system. Police agencies can consider whether the risk factors that triggered the

EI alert indicate a specific officer-related issue worth addressing by a supervisor, or a systemic issue to address in agency-wide policies or training, during recruiting and hiring, or with a general approach to supervision early in an officer's career (Gullion et al., 2021a, 2021b). If these risk factors indicate a specific officer-related issue that requires addressing, supervisors must then determine the appropriate intervention for that officer. One of the criteria for an appropriate EI intervention is that it specifically addresses the risk factor, problematic behavior, or mental health and wellness issue under review. Perhaps more important, ensuring the intervention is tailored and appropriate to the officer for whom the EI alert was triggered is the key to modifying that officer's at-risk behavior (Macintyre et al., 2008; Walker, 2003, 2007; Walker et al., 2001). Furthermore, the effectiveness of an EI system may ultimately depend on the identification of the at-risk behavior and whether EI interventions are tailored to specifically address those triggered officers' needs, and the execution of interventions, including follow-up by supervisors and oversight and accountability by managers.

Foundation of Early Intervention Concepts

While formal EI systems were established more than three decades ago "for reducing officer misconduct and enhancing accountability" (Walker et al., 2000), the concept of using performance indicators to monitor officer behavior was initially conducted informally across various agencies throughout the late 1970s (Milton et al., 1977; Pate et al., 1976; Toch et al., 1975; Walker et al., 2000). This early review process began in reaction to the public concern over police use of deadly force, and many police agencies began reviewing incidents such as arrests, uses of force, complaints, discipline, sick days, and secondary employment to monitor trends in officer behavior. Ultimately,

this informal accountability process was not sustained, given it was inconsistent and often performed on an ad hoc basis or by trial-and-error (Walker et al., 2000).

Some agencies such as the New York City Police Department required officers who entered information into the records to report any identified patterns of behavior to their supervisors (Milton et al., 1977). Other agencies such as the Oakland Police Department used computers to examine officer characteristics (e.g., age, education, tenure, etc.) to determine if there were any associations to their using force (Milton et al., 1977). Other attempts at identifying problematic trends included the Kansas City Police Department linking officers and their supervisors based on the idea that supervisors may be condoning at-risk behavior (Milton et al., 1977). Experimental designs to address at-risk behavior also included using peer group counseling to assist violent-prone officers in changing their behavior by acting as the organizational change agents themselves (Kerstetter, 1979). This approach was found to be successful in the Oakland Police Department (Toch et al., 1975), supporting Guyot's (1977) argument that peer accountability can be a primary control mechanism for a police agency. Another experiment in the Kanas City Police Department using peer pressure and support had problematic officers discuss their citizen interactions in front of a panel of their peers in attempts to modify their at-risk behavior. This approach, however, was found to be unsuccessful (Pate et al., 1976).

Historical Origin of Early Intervention Systems

Regrettably, these initial ad hoc approaches to identify and address at-risk officers were fleeting. The earliest known, formalized and sustaining EI systems, previously known as early warning (EW) systems, were established in the late 1970s by the Miami

Police Department and in the early 1980s by the Miami-Dade Police Department (Walker et al., 2000; Shjarback, 2015). As the first police agency to establish an EI system, the Miami Police Department had good reason to do so. Between 1968 and 1980, after decades of steeping racial tensions, Miami experienced two major riots and thirteen "mini-riots," all resulting from police interactions with black community members (Porter & Dunn, 1984).

As a result, the Miami Police Department received numerous external complaints about officers' behavior and subsequently, the command staff decided to analyze these concerns. In examining officers by assignment from 1976-1978, Miami's command staff determined that five percent of the department's officers had received 25 percent of the complaints (Alpert & Walker, 2000; Ross, 1979; Walker et al., 2000). While the average Miami officer was 32 years old with a tenure of eight years, officers with five or more complaints were on average 27.5 years old with a tenure of 4.2 years (Ross, 1979; Walker et al., 2000). Additionally, those officers with the most complaints were disproportionately assigned to midnight shift (Alpert & Walker, 2000; Ross, 1979; Walker et al., 2000), and officers with secondary employment produced a high number of citizen complaints (Ross, 1979; Walker et al., 2000). Finally, complaints alleging excessive force accounted for only nine percent of complaints against all officers. Yet officers with two to four complaints and five or more complaints accounted for 13 and 16 percent, respectively, of complaints alleging excessive force (Ross, 1979; Walker et al., 2000).

These findings collected by the Miami Police Department showed patterns of officer characteristics, assignment, and complaint type that continue to exist in many

agencies today (Alpert & Walker, 2000; Brandl et al., 2001; Harris, 2014; Harris & Worden, 2014; Lersch & Mieczkowski, 2000; Terrill & Ingram, 2016). The original idea of an EI system was to create a model through which an officer's behavior gets evaluated, strategies are developed to address a finding, programs for improvement are implemented, and the results are evaluated. Based on Miami's results, the command staff advised that at-risk officers be addressed prior to more problematic behavior occurring, and recommended that interventions include increased supervision, counseling, and training. Consequently, the Miami Police Department developed an EI system to track performance indicators including complaints, uses of force, reprimands, and firearm discharges to identify at-risk officers (Walker et al., 2000).

Relatedly, the Miami-Dade Police Department (formerly known as the Metro-Dade Police Department, Dade County Public Safety Department, and the Dade County Sheriff's Office), which also serves Miami-Dade County, had similar challenges to the Miami Police Department in the 1970s with racial relations and continual riots. Logically, their development of an EI system closely followed that of the Miami Police Department. The major catalyst for Miami-Dade's development of an EI system came about in May 1980 after a three-day riot resulted when an all-white jury in Tampa acquitted four officers accused of beating a black insurance agent named Arthur McDuffie who died four days later (Brown, 2015; Lee & Vaughn, 2010; Porter & Dunn, 1984; Walker et al., 2000). This verdict aggravated the underlying and increasing racial tensions in the Miami area based on a pattern of previous critical incidents, including the beating of an African American school teacher, Nathan LaFleur in 1979 (U.S. Commission on Civil Rights, 1984; Walker et al., 2000). The Miami-Dade department (then Dade County Public

Safety) served a search warrant for drugs at the wrong house, and 48-year-old LaFleur was forcibly arrested and beaten, and his son who arrived during the incident was also arrested, and allegedly assaulted by police without cause. The State Attorney found no cause to prosecute, and the grand jury, while critical of the police's negligence, decided criminal charges were not warranted (U.S. Commission on Civil Rights, 1984).

After the LaFleur case, two additional racially charged cases were said to contribute to the increasing racial tensions in Miami, prior to the McDuffie jury acquittal and subsequent riots. The first case was the sexual molestation of an 11-year-old black female by a Florida Highway Patrolman. The initial investigation determined it was not a highway patrolman, despite the victim's identification of Trooper Willie Jones. Jones later plead guilty in exchange for no jail time, receiving three years' probation with court required outpatient psychiatric treatment (U.S. Commission on Civil Rights, 1984). The second case involved 21-year-old black male Randy Heath, who was shot in the back of the head while standing against a wall by an off-duty Hialeah, Florida officer. Though the State Attorney's Office decided this was not criminal, they later presented the case to a grand jury who refused to indict the officer (U.S. Commission on Civil Rights, 1984).

As a result of these riots and prior racial tensions, the Dade County Commission enacted local legislation in January 1980 that required internal investigations conducted by the Miami-Dade Police Department to be made public (Walker et al., 2000). The Miami-Dade Police Department also instituted an employee profile system that formally tracked all complaints, uses of force, commendations, disciplinary actions, and dispositions of internal investigations. As a byproduct of this, the Miami-Dade Police Department established an EI system based on the idea that early identification of at-risk

behavior is not as easily recognized by officers or supervisors, as is a systematic data-driven process. Furthermore, the EI system would distribute monthly, quarterly, and annual reports to supervisors and managers that identified officers with a pattern of problematic behavior. Then supervisors would discuss those reports with each individual officer and determine if further action including interventions (e.g., referrals to programs, psychological services, stress programs, specialized training, etc.) were appropriate.

In considering the EI system's impact, the Miami-Dade Police Department increased in officer strength 96 percent (from 1466 to 2,614 sworn officers) between 1981 and 1992, while the complaints remained steady at about 300 per year. Furthermore, the department received 101 unauthorized force complaints in 1980, as compared to 16 in 1992, a decrease of 85 percent. The EI system identified 150 employees in the first two reporting quarters of 1981, which decreased 70 percent from June 1981 to December 1982, and subsequently, only 46 employees were identified in all of 1982. Department leadership argued that the EI system was effective, having significant impact on uses of force, complaints and personnel identified by the EI process, while acknowledging that other factors such as rank, seniority, job assignment, and geographic patrol areas, may have influenced these decreases (Charette, 1994; Walker et al., 2000). Captain Bernhard Charette's review of the Miami-Dade Police Department's EI system concluded, "the EI [system] is an innovative and proactive administrative tool that can be utilized to manage a serious issue…[and] a department's ability to monitor and control employee conduct with a formalized tracking system instills confidence in the employees, the organization, and the public it serves" (Charette, 1994, p. 58).

Early Intervention System Challenges

Agencies such as Miami and Miami-Dade Police Departments, and others have had an EI system or program in place for quite some time. Yet given the complexity in EI system design and implementation, there are known challenges for police agencies in managing and handling these processes. These known challenges that have been noted by police experts and scholars alike include the lack of a clear and consistent EI policy, department-wide messaging, and training, and the variation in the design and implementation of the EI system process (Alpert & Walker, 2000; Bertoia, 2008; Bouche et al., 2016; Gibbs & Kendrick, 2011; Gullion & King, 2020; U.S. DOJ COPS Office, 2019; Walker, 2007; Walker et al., 2000; Walker & Archbold, 2013).

Early Intervention System Policies and Training

First, prior research has noted that the implementation of an EI system or program may be unsuccessful or at best challenging if police agencies lack a clear and consistent EI policy for their EI program (Alpert & Walker, 2000; Bertoia, 2008; Bouche et al., 2016; Gibbs & Kendrick, 2011; Walker, 2007). Scholarship argues that if an EI policy is deficient in providing clear direction and expectations for supervisors including how to identify patterns and trends of at-risk behavior and determine appropriate interventions, then a supervisor's review may not achieve the desired result (Alpert & Walker, 2000; Gullion & King, 2020). As such, researchers recommend police agencies ensure their policy appropriately outlines their EI system's purpose and processes, data management and access, and clearly defines the roles and responsibilities for supervisors and managers (Gullion & King, 2020; U.S. DOJ COPS Office, 2019; Walker, 2003).

Second, across EI system studies, researchers note that the absence of or inconsistent agency-wide messaging and training may limit the successful implementation of an EI program (Bertoia, 2008; Bouche et al., 2016; Gullion & King, 2020; Walker & Archbold, 2013). To this end, scholars recommend that top-down communication of the EI system and program's nature, purpose, and processes, including that it is a non-disciplinary supervisor and management accountability tool, is critical (Harris & Worden, 2014; Gullion & King, 2020; Walker 2003; Walker 2005; Walker & Archbold, 2013). Additionally, providing the proper in-service training regarding the EI policy and processes consisting of the EI system's performance indicators, thresholds, alerts and interventions, and officers' and supervisors' expectations are essential (Bertoia, 2008; Bouche et al., 2016; Gibbs & Kendrick, 2011; Walker 2007). Scholars have also stated it is equally critical for all personnel to understand the EI system's limitations and the reasoning behind the agency's decisions regarding the selection of performance indicators and thresholds (Alpert & Walker, 2000).

Early Intervention Design and Process

Another challenge beyond ensuring proper development, messaging, and training of EI policy and processes is the variation in design and implementation across EI systems. With the wide range of options available in EI design and implementation, it is unsurprising that there is significant variation among police departments with respect to chosen performance indicators, thresholds, interventions, follow-up with interventions, and post-intervention monitoring. This variation across EI systems challenges scholars' attempts to determine whether EI systems are effective and/or successful. Such variations also present challenges with comparative or cross-agency EI systems research (Gullion &

King, 2020). A detailed discussion of how the performance indicators, thresholds, available interventions, and supervisor's review requirements vary in both design and implementation is important to understand the challenges in assessing an EI system's effectiveness.

First, the types of performance indicators tracked in an EI system can vary by agency. While performance indicators can include a variety of police incidents or job performance measures, some examples include complaints, uses of force, traffic stops, vehicle pursuits, arrests, failure to appear in court, sick days, secondary employment, alcohol and drug use, or domestic violence issues, among others. A systematic review of early intervention systems for police outlined specific examples of performance indicators used by the Los Angeles, Seattle, and Phoenix Police Departments (Gullion & King, 2020). For instance, the Los Angeles Police Department (LAPD) includes performance indicators for complaints, uses of force, traffic collisions, pursuits, stops and arrests, and claims and lawsuits (LAPD, 2020). The Seattle Police Department (SPD) includes supervisor recommended inquiries, complaints, uses of force, vehicle collisions, and claims and lawsuits (SPD, 2021). The Phoenix Police Department (PPD) includes administrative inquiries (typically less serious complaints), integrity incidents, firearm discharges, Professional Standards Bureau (PSB) investigations (usually for more serious complaints), vehicle collisions, pursuits, and overall alerts for a combination of incidents (PPD, 2017). Some police agencies only include complaints and/or uses of force as performance indicators and fail to gain the full picture of officer performance (Walker et al., 2000, 2001). In addition to adverse events, progressive agencies should also include positive performance indicators such as awards, compliments, commendations,

performance evaluations, etc. to have a complete and balanced perspective of that officer's work history (Gullion & King, 2020; Walker, 2003; Walker & Archbold, 2013).

Second, EI thresholds, which are the basis for an EI system to trigger an alert for supervisory review, also vary. For example, SPD's complaint threshold is four complaints occurring within a 12-month period or two Equal Employment Opportunity (EEO) complaints occurring within a 12-month period (SPD, 2021). However, PPD's complaints threshold is three administrative inquires occurring within a rolling 12-month period and is two serious complaint (PSB) investigations occurring within a rolling 12-month period (PPD, 2017). For the combination alerts, SPD established a threshold of any 10 performance indicators occurring within a six-month period, whereas PPD established any six performance indicators occurring within a 12-month period (PPD, 2017; SPD, 2021). The straightforward count approach for EI thresholds is common for most agencies. Yet some agencies take a more statistical approach. For instance, LAPD assigns all sworn personnel to a peer group based on the type of work the employee performs (e.g., patrol, gang enforcement detail, vice, etc.) and/or type of frequency of public contacts. LAPD's EI system then compares an officer's recent performance activity (e.g., complaints, uses of force, traffic collisions, pursuits, stops and arrests, and claims and lawsuits), to that officer's peer group performance threshold. If that officer's activity meets or exceeds his or her peer group performance thresholds, the EI will trigger an alert (LAPD, 2020). In the end, EI thresholds are determined by the police agency and may be based on several factors. These may include thresholds used by other police agencies of similar size and other relevant factors, the police agency's own data and officers' activities, or recommendations from internal or external police experts.

Third, a police agency's EI interventions can vary. This includes the options available to supervisors when determining which intervention is appropriate for officers. In addition, this decision is typically discretionary and subjective in nature. For example, LAPD has intervention options that include no action, commendation, informal meeting, training, modified field duties, directed health and wellness referral, notice to correct, and complaint (LAPD, 2020). SPD has the intervention option of a mentoring plan, which identifies the following: specific performance issues to be addressed; methods and trainings that will be utilized to address the performance issues; time frames for completing assigned tasks or training; and chain of command responsibilities in ensuring performance issues are addressed and corrected by involved employee, to include bi-weekly status reports (SPD, 2021). PPD includes intervention options such as no action needed, supervisor's discretion and training-based or wellness-based interventions (PPD, 2017). While discretion in the supervision, management, and oversight of officers is typical, if an agency has not properly trained supervisors and managers on how to handle these EI alerts and gained leadership buy-in for the EI system, these interventions may not achieve their intended purpose. This may result in supervisors continually choosing the intervention option of no action with their officers or arbitrarily choosing low-level interventions for EI alerts. This lack of commitment can also demonstrate to officers that there is no real weight behind the EI system or program, thereby removing any deterrence that the EI system may have provided (Gullion & King, 2020).

Fourth, the review of interventions differs considerably across EI systems (Gullion & King, 2020; LAPD, 2020; PPD, 2017; SPD, 2021; Walker et al., 2000). Some police agencies require that managers regularly review interventions handled by

supervisors, while other agencies have no such managerial oversight (U.S. DOJ COPS Office, 2019). Some police agencies require supervisors to ensure the officer completed the required intervention (i.e., policy review, training, counseling, etc.) and may also require documentation of this follow-up (PPD, 2017; SPD, 2021), while some agencies do not ensure follow-up of completion of the intervention (LAPD, 2020). Certain police agencies require documentation of the intervention itself, including when (date/time) and where the meeting with the officer occurred, reason for the type of intervention selected, and outcome of the intervention including follow-up and/or post-intervention monitoring (LAPD, 2020; PPD, 2017; SPD, 2021).

In fact, LAPD requires supervisors to document the intervention with the officer, providing a summary and analysis of each incident that occurred within the evaluation period, a comparison of the officer's performance against similar officers with an explanation of any significant differences, justification for the disposition selected (including no action), and a summary of the discussion with the officer regarding the supervisor's review and outcome (LAPD, 2020). SPD requires documenting the assessment conducted for an employee who has either reached the threshold criteria or who has been referred for a discretionary assessment, and if appropriate, a mentoring plan, with a review of the assessment report and the mentoring plan by the managers in the chain of command (SPD, 2021). PPD requires documentation of the date and time of the meeting with the officer, a statement that the alert was reviewed and handled with approval of the chain of command, and continual assessment of the officer's performance (PPD, 2017).

As identified by Gullion and King (2020), some agencies also conduct an annual or biannual audit to evaluate how interventions were handled and whether they were successful. Furthermore, some police agencies will have their training unit, performance review committee, professional standards bureau, or other designated unit or division conduct regular reviews of EI alerts and interventions to determine if there are systemic issues worth addressing department-wide, such as with policies, training, recruitment and selection, promotional process, or other appropriate areas (Alpert & Walker, 2000; Kane, 2007; Shjarback, 2015). According to the U.S. DOJ COPS Office (2019), an agency's requirement for documentation of the review and oversight process for the EI alert and intervention can either be specific in its expectations, or more general, with the latter only requiring documentation or review without specificity of what should be included or how it should be conducted.

Regardless of the variation across EI systems, the importance of having a comprehensive and quality EI program cannot be understated. In 2013, the Police Executive Research Forum (PERF) analyzed consent decree settlement agreements in several cities who were required to implement EI systems. Based on this analysis, PERF compiled the standard EI program components:

- The system must be maintained and used by supervisors and managers.
- An EIS should have policies and protocols for data collection, inputting of historical and current data, maintenance, retrieval, analysis, data security, and access.
- Personnel establishing or using the system must receive proper training.
- Threshold criteria for flagging risk patterns must be developed.

- Follow-up actions for supervisors using EIS data analysis must be specified.

- Interventions by supervisors must be implemented in a timely manner.

- Implementation of interventions must be tracked.

- Intervention progress must be reviewed by a supervisor (PERF, 2013, p. 16).

With the noted variations in EI systems, police agencies would benefit from researchers examining their EI systems and processes, both individually and across multiple police agencies, to provide greater insight regarding effective intervention measures (Gullion & King, 2020).

Prior Early Intervention System Studies

Consistent with the earlier reviews by Commanders John S. Ross (1979) and Bernard Charette (1994) of the Miami and Miami-Dade Police Departments, national police experts and scholars alike continually conclude that a small percentage of officers are responsible for a disproportionate amount of problematic behavior and high-risk incidents (Alpert & Walker, 2000; Brandl et al., 2001; Christopher Commission, 1991; Goldstein, 1977; Harris, 2011, 2014; Kane & White, 2009; McCluskey & Terrill, 2005; McElvain & Kposowa, 2004, 2008; Terrill & Ingram, 2016; Walker, 2001; Walker et al., 2000; White & Kane, 2013). Furthermore, early onset of officer misconduct or at-risk behavior increases the risk of a longer duration and higher frequency of problematic behavior (Gullion et al., 2021a, 2021b; Harris, 2009, 2010a, 2010b; 2014; Harris & Worden, 2014; Kane & White, 2009). While problematic behaviors are more likely to occur early in an officer's career, more experienced officers have an increased risk of family issues, stress, or chronic illness, including substance abuse (Gibbs & Kendrick, 2011; Harris, 2009; 2014; Lersch & Mieczkowski, 1996; Walker & Archbold, 2013).

Given both these high-risk groups, police agencies can identify and address these officers early with an effective EI system, and feasibly prevent future officer misconduct and problematic behaviors from taking place.

Promising Practice

Since the early design and implementation of the permanent EI systems in Miami and Miami-Dade Police Departments, EI systems have been recommended as a promising practice by the International Association of Chiefs of Police (IACP), the U.S. Department of Justice (DOJ) and many policing experts (e.g., Bouche et al., 2016; Commission on Accreditation for Law Enforcement Agencies [CALEA], 2019; Gullion & King, 2020; U.S. DOJ COPS Office, 2009, 2019; Walker & Archbold, 2013; Walker et al., 2006). Moreover, the Special Litigation Section of the U.S. DOJ Civil Rights Division has opened 69 formal pattern-or-practice investigations and entered into 40 reform agreements (federal court-enforced consent decrees and settlement agreements or memorandum of agreements) with various police agencies since 1994 to bring about necessary change. Within these Civil Rights Division's policing reform agreements, EI systems have been a consistent requirement since the beginning (U.S.DOJ Civil Rights Division, 2017). These reform agreements "emphasize not only the creation of such systems, but also the requirement that police leadership and supervisors analyze the data gathered by these systems, address emerging patterns of police misconduct, and enhance individual officer accountability" (p. 31). In fact, more than 68 percent of police agencies with 100 or more officers had an EI system as of June 30, 2016 (U.S. DOJ Bureau of Justice Statistics LEMAS, 2020).

While policing experts recommend EI systems as a promising practice (Bouche et al., 2016; Commission on Accreditation for Law Enforcement Agencies, 2019; Gullion & King, 2020; U.S. DOJ COPS Office, 2009, 2019; Walker & Archbold, 2013; Walker et al., 2006) and the majority of mid- to large-sized U.S. police agencies have implemented an EI system (U.S. DOJ Bureau of Justice Statistics LEMAS, 2020), there have only been a limited number of EI systems studies conducted (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Carton et al., 2016; Cubitt et al., 2020; Davis et al., 2005; Davis et al., 2002; Helsby et al., 2018; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). This paucity of scholarship may be partially due to the considerable variation in EI system design and implementation across police agencies. This includes an EI system's performance indicators, thresholds, interventions, follow-up, and the oversight of the review process for these EI alerts and interventions, making comparisons across police agencies challenging for scholars (Gullion & King, 2020; Walker, 2007).

Overall Effectiveness

Of the limited number EI studies that have been conducted, most have produced positive findings, and the majority were case studies of individual agencies (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Carton et al., 2016; Cubitt et al., 2020; Davis et al., 2005; Davis et al., 2002; Helsby et al., 2018; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Worden et al., 2013). Only two multi-agency studies have been conducted and both found EI systems were effective in identifying at-risk officers and reducing officer misconduct for those officers receiving interventions (Shjarback, 2015; Walker et al., 2001). While most studies have found that EI systems have a positive

effect on officer misconduct and accountability, these findings are primarily based on a reduction in performance indicators including complaints or uses of force (Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). This strengthens Walker's (2007) idea that evaluating the impact of EI interventions on individual officers is easier than determining the effectiveness of EI systems on overall police agency performance.

Effectiveness: Complaints

For those studies that examined complaints as the performance indicator for measuring the effectiveness of EI systems, results indicated that complaints were reduced either due to the implementation of an EI system in a police agency, or after officers received an intervention (Bobb et al., 2009; Briody & Prenzler, 2020; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). One of the earliest of these studies and one of only two multi-agency studies examined the EI systems (then called early warning systems) from the police agencies of Miami-Dade County, Minneapolis, and New Orleans based on a February 1999 survey (Walker et al., 2001). These agencies were chosen because their EI system was in place for at least four years, they had differing EI system policies and practices and their histories and cultures regarding use of force and accountability differed. In the Miami-Dade and Minneapolis Police Departments, their EI systems would flag officers who met the threshold of two citizen complaints in a quarter. In the New Orleans Police Department, the EI system had no specific threshold, but had commanders review performance records and exercise discretion in selecting officers for intervention. Results of this study found a substantial

reduction in complaints across all three police agencies after an officer's EI intervention. More specifically, for the Minneapolis and the New Orleans Police Departments, the average number of complaints for officers flagged by the EI system was reduced by 67 and 62 percent, respectively, one year after the officers' intervention. This study acknowledged the variation across these three police agencies and their EI systems performance indicators, thresholds, and handling of interventions (Walker et al., 2001).

For those EI studies in individual agencies, a study of the Victoria State Police in Australia between 1997 and 2004 examined officers flagged by the EI system who met the threshold of two complaints in 12 months. This study found a 71.07 percent complaint reduction over two years after the EI intervention with the officer, which was remarkably consistent across officers' work locations (Macintyre et al., 2008). Similarly, an EI study of the Los Angeles County Sheriff's Department (LASD) between July 2003 and May 2008 examined officers flagged by their EI system for a Performance Mentoring Program based on a Personnel Performance Index, which was any number of at-risk officer activities including complaints that met a certain threshold (kept confidential by the police agency). This study found a significant reduction in complaints, between 61 and 100 percent depending on the type of complaint, for three years after the EI intervention with the officer (Bobb et al., 2009). An EI system evaluation in a large northeastern police agency in the U.S. between 1987 and 2001 examined officers who were selected to attend an Officer-Civilian Interaction (OCI) School as an intervention, based on several performance indicators including personnel and citizen complaints, among others. This study found overall reductions in personnel and citizen complaints, between 24 and 41 percent on average, over 11 years after attending this school. This

pattern was true for both the officers flagged by the EI system who took the OCI school as an intervention and the control group. This study also acknowledged this reduction in personnel and citizen complaints for both groups could be because officers were less proactive as they matured or they improved their de-escalation techniques and communication skills with experience and tenure (Worden et al., 2013).

A later study was conducted in the New Zealand Police after implementation of their EI system in 2013 (Briody & Prenzler, 2020). This study occurred in part due to the 2015-2016 New Zealand Police annual report that discussed a 53 percent increase in early interventions from 2013 to 2015 resulting in a 63 percent reduction in complaints for those officers In New Zealand, the EI system would flag officers who met the threshold of two citizen complaints in a year (New Zealand Police, 2016). This study examined internal and external (i.e., citizen) complaints from 2014 to 2017 and found an overall reduction of 72.5 percent for one year after those officers received an EI intervention. This study also noted that the number of combined internal and external complaints increased 21 percent, from an average of 2,095 between 2012 to 2014, to an average of 2,541 from 2014 to 2017 (New Zealand Police, 2016).

The second study of the two multi-agency studies was conducted by Shjarback (2015), evaluating the effectiveness of EI systems using data from the 2003 and 2007 Law Enforcement Management and Administrative Statistics (LEMAS) surveys. LEMAS surveys are administered every few years by the Bureau of Justice Statistics (BJS) to collect national data on local police agencies' personnel, operations, and structure (U.S. DOJ, Office of Justice Programs, BJS, 2020). This study examined citizen complaints alleging use of force as reported to BJS across a sample of 94 local police agencies with

100 or more sworn officers who implemented an EI system between 2003 and 2007.

Contrary to prior studies that found EI systems were effective based on a reduction of

complaints after officers were flagged and/or received an intervention, this study did not

find similar results. Although this study did find an eight percent reduction in the average

rate of citizen complaints alleging use of force from 2003 to 2007 across all 94 agencies

which were similar across time for the smaller, mid-sized, and larger agencies, the

reduction was not statistically significant. This was also true even in the breakdown of

agencies by size. This study further considered whether these agencies voluntarily

implemented their EI system or were required to do so by a court-enforced consent

decree. The results did not reveal a statistically significant reduction in the rates of citizen

complaints of use of force in the four agencies federally required to implement an EI

system. This study did acknowledge that organizational and cultural change can take time

and that future LEMAS survey research may show further reduction in complaints or

other performance indicators (Shjarback, 2015).

Effectiveness: Uses of Force

For those studies that examined use of force as the measure of an EI systems'

effectiveness, findings are mixed; some studies revealed positive results (Bobb et al.,

2009; Davis et al., 2005; Davis et al., 2002; Walker et al., 2001), while other studies

found negative effects including increases in use of force incidents and EI systems not

identifying the appropriate at-risk officers (Bazley et al., 2009; Lersch et al., 2006;

Worden et al., 2013). For those studies finding positive outcomes, Walker and colleagues

(2001) also found a significant reduction in use of force incidents across the Miami-Dade

and New Orleans police agencies. More specifically, for the Miami–Dade Police

Department, in the two years prior to their intervention, four percent of the officers flagged by the EI system had zero use-of-force reports. However, for the two years following their EI intervention, 50 percent of those officers had zero use-of-force reports.

For the additional EI studies in individual agencies that found positive results measuring use of force, a five-year study of the Pittsburgh Police Bureau was conducted to evaluate the effectiveness of their EI system implemented due to a federal consent decree requirement (Davis et al., 2005; Davis et al., 2002). Use of force data was examined between 1997 and 2002 and again between 2002 and 2003. Rather than establishing a traditional EI threshold (i.e., a specific number of incidents within a certain time frame), the Pittsburgh Police Bureau compared officers' performance activities to the peers within their command or unit and shift. Officers whose activities were one or more standard deviations from the average of their peers' activities were flagged for EI intervention. Though Pittsburgh's use of force data could not be reasonably compared pre- and post-EI system implementation due to changes in use of force reporting requirements, this study found that use of force incidents declined about 35 percent for one-year post-EI system implementation (Davis et al., 2005).

Finally, the LASD study also examined use of force incidents in their evaluation of the EI system's effectiveness, with the use of force threshold also remaining confidential (Bobb et al., 2009). This study found that officers who were flagged by the EI system and received an intervention were involved in significantly fewer uses of force and officer-involved shootings afterwards. More specifically, the reduction was 51 for use of force incidents and 86 percent for officer-involved shootings, for three years after the EI intervention with the officer (Bobb et al., 2009).

Some studies found negative outcomes in their examination of the effectiveness of EI systems, including an increase in at-risk behavior such as uses of force. The study in the large northeast U.S. police agency found the rates of use of force were slightly higher after officers received an EI intervention and training class, although the average rates of use of force were all consistently low (Worden et al., 2013). Regarding studies that concluded EI systems were not identifying the appropriate at-risk officers, one study examined use of force data during the year 2000 in an urban, southeastern police agency in the U.S. This agency flagged officers for an EI intervention if they met the threshold of four or more use of force incidents classified as "high" in a quarter.[1] Results revealed that officers who used lower levels of force to handle higher levels of resistance were more likely to be identified by the EI system, while officers who used higher levels of force to handle lower levels of resistance were not identified by the EI system (Bazley et al., 2009). An earlier EI study also conducted in this same agency found that officers with the highest use of force incidents were not flagged for intervention. Of 55 officers at the 90th percentile with respect to the proportion of high force used, there were 11 officers in the top category that used high force in nearly 75 percent of their opportunities, though they also had very few opportunities to engage in the use of force. Yet none of these 11 officers were flagged for an EI intervention. Also, this study found that officers with less opportunity to use force were using force more often, and officers with more opportunity to use force were using force less often (Lersch et al., 2006). The question for future scholars to consider is whether the best measure of at-risk behavior in an EI system is

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[1] Use of force incidents classified by this police agency as "high" included the "use of punches/kicks; total appendage restraints; use of chemical agent; use of impact weapon; firearm pointed at a suspect; firearm fired at a suspect; and suspect bitten by a police canine" (Bazley et al., 2009, p. 112).

centered on frequency, type, weighted risk scores based on a combination of officer activities, comparisons of average rates with an officer's peers, or some other measurement.

Effectiveness: Additional Performance Indicators

Beyond examining complaints and use of force, prior studies have also examined additional performance indicators for measuring the effectiveness of EI systems, including arrests, traffic stops, force-related lawsuits, and other incident reports (Bobb et al., 2009; Davis et al., 2005; Davis et al., 2002; James et al., 2020; Worden et al., 2013). The five-year EI study in the Pittsburgh Police Bureau found that arrests and traffic citations declined by 40 and 35 percent, respectively, during the years of the consent decree and implementation of the EI system. Explanations for these declines offered by officers included they were less proactive to avoid being flagged by the EI system, or the reforms increased accountability and review of their actions which had positive outcomes (Davis et al., 2005; Davis et al., 2002). The EI study in a large U.S. northeastern police agency found a decrease in officers' arrests after they received an EI intervention and training, although in later training classes, arrest rates remained steady for those officers. Similar to the explanation for the reduction in complaints, this study acknowledged the consistency in arrests for later training classes could have been based on maturation and experience or improvement in their performance and skillset based on the EI intervention and training (Worden et. al., 2013).

The LASD study also examined force-related lawsuits as a measure of EI system effectiveness. This study found a reduction from an average of 30 new force-related lawsuits each year prior to the study, to an average of 23 new force-related lawsuits for

the three-year period most recent to the study (Bobb et al., 2009). Another EI study conducted in a large municipal police department in the U.S. examined incident reports generated between 2015 and 2017. A random selection of 500 incident reports recorded by officers flagged by the EI system and 500 incident reports recorded by officers not flagged by the EI system were included. All these incident reports were then blindly scored (i.e., the researcher was not aware of which group the incident reports belonged to) using interval-level performance metrics for categories including use of force, tactical social interaction, and crisis intervention. Scores were compared between the two groups to evaluate the effectiveness of the EI system at identifying poorer performing officers. Of these 1000 reports, 667 had sufficient information to score, as 333 incident reports were either were not completed by the on-scene officer or did not feature a police-citizen interaction (James et al., 2020).

The overall score across all 667 incident reports was 80.46 percent, with each group of 354 incident reports completed by 156 officers flagged and 313 incident reports from 220 officers not flagged by the EI system with a score of 80.63 and 80.27 percent, respectively. Thus, there was no significant difference between EI system-flagged and non-EI system–flagged officers. Furthermore, this study found no correlation between the number of times the EI system flagged an officer and their performance scores over time, suggesting that there was no observable modified behavior change resulting from the EI system. However, when comparing EI-flagged and non-EI-flagged officers engaging in certain behaviors such as de-escalation, use of force, and communication skills, these groups differed significantly in using reasonable force. That is, EI-flagged officers used reasonable force in 17.5 percent of their police-citizen interactions as opposed to non-EI-

flagged officers who used reasonable force in 11.7 percent of their interactions with citizens. While this study also found that EI-flagged officers were more likely to use force than non-EI-flagged officers, the use of that force was appropriate and within policy. These authors suggest that agencies EI system use of force thresholds must account for the context in which the force was used, reflecting officer behavior rather than simply outcomes, as well as considering proactive officers working in high-crime areas and busier shifts (James et al., 2020).

Advanced Statistical Methods

In addition to examining specific performance indicators for determining the effectiveness of EI systems, limited research has been conducted to investigate which EI system performance indicators best predicted at-risk officers and future misconduct (Carton et al., 2016; Cubitt et al., 2020; Helsby et al., 2018). Additional EI studies have used advanced statistical methods such as machine-learning algorithms to explore which performance indicators best identified at-risk officers for intervention. One study of the Charlotte-Mecklenburg Police Department (CMPD) in North Carolina examined various types of performance records (e.g., training, internal affairs, traffic stops, field interviews, complaints, arrests, citations, secondary employment, etc.) as early as 2001 up to 2009 through 2015 to examine EI system effectiveness. Several machine learning models were

tested including extra trees[2], random forest[3], and AdaBoost[4] to improve CMPD's existing

EI system and predict which officers were likely to have a future adverse event. Findings

demonstrated that all three machine-learning algorithms yielded better results than

logistic regression and significantly outperformed CMPD's existing EI system.

Furthermore, the extra trees model was the highest predictive performing model among

these three. This study compared the performances of the CMPD's existing EI system

thresholds and the data-driven machine learning extra trees model between April 2014

and April 2015 to examine the outcomes for true positives (high-risk officers), true

negatives (low-risk officers), false positives (officers incorrectly flagged by the EI

system), and false negatives (officers who should have been flagged by the EI system but

were not). The extra trees model was able to correctly identify 76 percent more high-risk

officers (true positives), while flagging 22 percent fewer low-risk officers (false

positives) compared with CMPD's existing EI system (Carton et al., 2016; Helsby et al.,

2018).

Finally, using the best performing extra trees model to find the most predictive

indicators for officers engaging in future adverse events, this CMPD study found that

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[2] Extra trees (Extremely Randomized Trees) predictive modeling is an ensemble of decision or regression trees learned from bootstrapped data, but unlike random forest, it uses the whole original sample to grow the trees, and the algorithm splits nodes by choosing cut points at random (Guerts et al., 2006; Helsby et al., 2018). In this study, the model includes 10,000 trees to reduce variance in which officers are flagged (Helsby et al., 2018).
[3] Random forest predictive modeling is similar to extra trees, with the main two differences being random forest uses bootstrap replica or it subsamples the input data with replacement, and for the selection of cut points, random forest chooses the optimum split rather than simply choosing it randomly (Hastie et al., 2009; Helsby et al., 2018).
[4] AdaBoost (Adaptive Boost) predictive modeling is an ensemble learning method that uses an iterative approach by combining multiple models (weak learners) to reach the final output (strong learners). In essence, it builds a model and gives equal weights to all data points, and then assigns higher weights to points that are wrongly classified, and then those higher weights are given more importance in the next model. It will keep reiterating until all the data points are correctly classified or the maximum iteration level is reached (Hastie et al., 2009; Helsby et al., 2018).

officers with a prior history of adverse events and misconduct investigations, sustained and not sustained, were the most predictive performance indicators of future adverse events. In addition, officers conducting field interviews where the citizen had a weapon was associated with future adverse events, as were traffic stops for safety or moving violations, those resulting in a verbal warning, and traffic stops in general, though the direction of the association was unknown. This study concluded these findings support the idea that a small proportion of officers are at-risk for future adverse events based on officer behavioral characteristics, and that an EI system with the proper controls may be able to flag such officers for interventions (Carton et al., 2016; Helsby et al., 2018).

Another study in Australia across 13 years also utilized machine-based learning analysis, specifically random forest, to predict future officer misconduct. Officer demographics and complaint histories were examined from the misconduct database of the New South Wales Police Force (NSWPF) between January 2003 and October 2016. This study randomly selected 600 officers who had received sustained complaints of serious misconduct requiring consideration of dismissal or criminal charges and this sample was matched with a comparison sample of 600 officers randomly selected from their academy class. First, utilizing the random forest model, this study found that officers with prior serious misconduct strongly predicted future misconduct. Next, examining officer demographics, results demonstrated that officers from the serious misconduct group were an average of 37.2 years old with 12.6 years of service prior to serious misconduct. Moreover, 50.2 percent of these officers had been pursued for dismissal, and 72.1 percent had received remedial action for prior misconduct. Yet, after consideration for serious misconduct, 46 percent of officers were still employed. Findings

also included that 44.3 percent of the officers with prior serious misconduct had secondary employment, which strongly predicted future misconduct. Furthermore, those complaint types with the strongest interaction with serious misconduct involved issues with an investigation and improper use of force. Finally, non-sustained complaints were examined for the frequency of complaints received by officers. Results showed that while officers having three non-sustained complaints or fewer did not particularly increase the likelihood of serious misconduct, after four non-sustained complaints, the likelihood of serious misconduct for these officers rapidly increased, until reaching 12 non-sustained complaints, and then this effect weakened. This study concluded that police agencies must ensure ongoing oversight of officers throughout their career, and not only in the earlier years, and specifically for those with secondary employment (Cubitt et al., 2020).

Likelihood and Timing of Repeated Officer Incidents

As a non-disciplinary tool, EI systems provide the opportunity to address and prevent future at-risk officer behavior and misconduct, rather than waiting for the completion of an IA investigation and subsequent disciplinary action. Enhanced supervision, mentoring, or other interventions may be an earlier and more effective deterrent, especially given that research finds officers with multiple complaints annually were more likely to be terminated for misconduct (Kane & White, 2009) and officers with more excessive force complaints have an increased risk of using higher levels of force (McCluskey & Terrill, 2005). Understanding the likelihood and temporal patterns in repeated at-risk officer behavior can assist police agencies in defining appropriate EI system thresholds for flagging at-risk officers and providing timely, appropriate, and tailored interventions for officers with recurring EI interventions. Awareness of these risk

factors can also inform supervisors how to best handle EI interventions with officers, what intervention action is appropriate based on the pattern of at-risk behavior, or how supervisors can appropriately mentor and provide guidance to these at-risk officers to correct their behavior and prevent future officer misconduct.

When exploring the predictors of police incidents such as complaints, use of force, and others, prior research has focused on the likelihood of such predictors rather than the timing between repeated police incidents. Examining the likelihood and timing between at-risk officer behavior is also important given that national police experts and scholars alike have found that a small percentage of officers are responsible for a disproportionate amount of problematic behavior and high-risk incidents (Brandl & Stroshine, 2013; Christopher Commission, 1991; Gullion et al., 2021a, 2021b; Harris, 2011, 2014; McElvain & Kposowa, 2004, 2008; Terrill & Ingram, 2016; Walker, 2001; Walker et al., 2000; White & Kane, 2013). Furthermore, early onset of officer misconduct increases the risk of a longer duration and higher frequency of problematic behavior (Gullion et al., 2021a, 2021b; Harris, 2009, 2010a, 2010b, 2014; Harris & Worden, 2014; Kane & White, 2009).

The small percentage of officers being responsible for a disproportionate amount of problematic behavior and high-risk incidents within a given police agency has been consistently examined with complaints and use of force incidents. Specific to complaints, Terrill and Ingram's (2016) study across eight U.S. police agencies reported that while 63% of patrol officers did not receive any complaint allegations, 37% of the patrol officers were responsible for all complaint allegations. Harris' (2011) study in a large northeastern U.S. police agency, found that "the top 10% of officers with complaints

account for about two fifths of all complaints" (p. 207). Similarly, studies have found a high concentration of use of force incidents among a small group of officers (Adams, 1999; Brandl & Stroshine, 2013; McElvain & Kposowa, 2004). Brandl and Stroshine (2013) found that 71% of a police agency's officers were not involved in any uses of force, and the "high-rate" officers involved in three or more uses of force represented only 6% of all officers. Yet these "high-rate" officers accounted for 32% of the total use of force incidents (Brandl & Stroshine, 2013). McElvain and Kposowa (2004) found that over 76% of an agency's officers had not been investigated for using force, with the remaining officers being the subject of all use of force investigations over five years.

Few studies have examined the likelihood of repeated uses of force. McElvain and Kposowa (2008) found that officers who had a prior history of officer-involved shootings were more than twice as likely to be involved in future shootings than those without a prior shooting history. Brandl and Stroshine (2013) found that those "high-rate" officers with three or more uses of force were significantly younger, male, assigned to high crime areas and night/overnight shifts, involved in more prior use of force incidents, had more officers on-scene with them, and made more arrests. In addition, Gullion and colleagues (2021) found that the risk of a subsequent use of force was reduced when officer's initial use of force occurred in neighborhoods with higher minority composition and the time to a subsequent use of force increased when their initial use of force resulted in citizen injury. For officers with a subsequent use of force, more than half had their next use of force within three months of their initial use of force, and 93% did so within a year of their initial use of force.

Limited research has explored the timing and duration between repeated officer misconduct, finding some notable patterns. First, the few studies that have examined the timing between complaints have found that officers receive more complaints in the first three years of their career and are at greater the risk for continued misconduct complaints dependent upon the proximity of the first complaint to start of career (Harris, 2009, 2010a, 2014; Harris & Worden, 2014; Kane & White, 2009). For both internal and citizen complaints, officers who had earlier onset received a larger number of internal or citizen complaints respectively, on average, over time than officers with later onset (Harris, 2009; 2010b). In addition, officers with one or more complaints per year were three times more likely to be terminated for misconduct (Kane & White, 2009), and officers who received severe discipline for sustained complaints were more likely to receive an additional sustained complaint, compared to non-disciplined officers (Harris & Worden, 2014). Given this association between receiving severe discipline for sustained complaints and receiving an additional sustained complaint, this brings to light the importance of examining the effect on the likelihood and timing between officer incidents and misconduct (Gullion et al., 2021a, 2021b; Harris, 2014; Harris & Worden, 2014). In addition, providing closer supervision and mentoring and implementing other supervision and accountability tools such as EI systems, could address and prevent future misconduct (Harris, 2010a, 2010b).

These findings provide critical insights into the onset and timing of repeated officer incidents and misconduct and the importance of identifying and addressing at-risk officers. In terms of identification, having insight of the risk factors that affect the timing and duration of officer misconduct can help inform EI system thresholds which produce

EI alerts for supervisory review. In terms of addressing at-risk officers, awareness of these risk factors for the timing and duration of repeated behavior and officer misconduct can inform supervisors how to best handle EI interventions with officers, what intervention action is appropriate based on the pattern of at-risk behavior, or how supervisors can appropriately mentor and provide guidance to these at-risk officers and prevent future officer misconduct. While there is little empirical research examining risk factors related to the timing and duration of repeated officer misconduct, prior research has not yet examined the timing or duration between reoccurring EI alerts and interventions. This study hopes to contribute to this gap in policing literature.

First-Line Supervision

First-line supervisors play a vital role in "directing and controlling the behavior of officers in police-citizen interactions" (Walker, 2007, p. 12). The role and responsibility of first-line supervisors (e.g., sergeants) is to guide and mentor subordinate officers and provide ongoing field supervision to observe police-community interactions and officers' decisions during on-scene incidents. Beyond field supervision, first-line supervisors are the essential thread of oversight in all other accountability tools, from reviewing incident reports, completing performance evaluations, and handling EI system interventions with officers (Walker, 2003; 2007). Furthermore, how supervisors address officers who receive complaints or are involved in critical incidents and hold them accountable including through an EI system and EI interventions is key to officers' development and can prevent future at-risk behavior (Gullion & King, 2020; Gullion, et al., 2021a, 2021b; Walker, 2007).

Police supervision and accountability are recommended as a top priority for police agencies (Archbold, 2021; President's Task Force on 21st Century Policing, 2015; U.S. DOJ COPS Office, 2019). The interrelated goals of police supervision and accountability directly tie into the crucial role first-line supervisors play in the EI intervention process. While policies and training are good initial steps for preparing an officer for the field, supervision and accountability tools such as EI systems and EI interventions are crucial to ensuring officers are making appropriate decisions and correcting their behavior when needed. Furthermore, providing closer supervision and mentoring early in an officers' career and implementing accountability tools such as EI systems, can properly direct officer behavior and prevent future misconduct (Gullion et al., 2021a, 2021b; Harris, 2010a, 2010b).

Supervisor's Role and Responsibilities in Early Intervention Systems

First-line supervisors play a significant role in the effectiveness of EI systems, given their responsibility for reviewing EI alerts and determining interventions for subordinate officers, often with a wide amount of discretion. This deserves special emphasis given research has found that first-line supervisors can have considerable influence on officer behavior (e.g., DeJong et al., 2001; Engel, 2000; Engel & Worden, 2003; Ingram, 2013; Ingram & Lee, 2015; Ingram et al., 2014; Johnson 2008a, 2008b, 2011, 2015). And when supervisory impact fails, this is associated with an increase in critical incidents and officer misconduct (Ivkovlc & Shelley, 2007; Lee et al., 2013; Lee & Vaughn, 2010; Lim & Sloan, 2016; Prenzler, 2009; Schafer & Martinelli, 2008). Thus, the execution of the EI process by supervisors is critical to modifying officer behavior.

First in this EI execution process, supervisors are responsible for reviewing EI alerts to identify potential patterns of problematic or at-risk behavior. Supervisors' relationships with subordinate officers and their knowledge of officers' behavior may come into play when reviewing these incidents triggered by the EI system and when making decisions regarding EI interventions. For example, prior knowledge and experience have been found to impact the development of trust between officers and supervisors related to decision-making in critical incidents, often based on assumed trust developed from prior positive or negative experiences (Wheatcroft et al., 2012). Relatedly, if a supervisor is relying on trust and prior positive or negative experiences with officers during their review of these EI alerts and officer behaviors including critical incidents, this may influence whether these EI interventions result in any formal actions.

Second, supervisors often meet with officers to discuss the EI alert and intervention, regardless of the intervention outcome. Supervisors' leadership traits and communication methods likely have significant impact on how these EI intervention meetings are conducted, and more importantly, how they are received by officers. Prior research shows supervisors' leadership traits and communication methods directly affect an officer's understanding of decisions, compliance with policies, and prevention of future misconduct (e.g., Johnson, 2008a; Peacock et al., 2021; Schafer, 2010a, 2010b; Van Craen & Skogan, 2017). In addition, studies examining the relationships between first-line supervisors and their subordinates have found the quality and substance of these relationships has a significant impact on officer attitudes and behaviors (Davis & Mateu-Gelabert, 1999; Ingram & Lee, 2015; Nix & Wolfe, 2016; Terrill, 2001; Wolfe & Piquero, 2011; Wolfe et al., 2018). Thus, supervisors' relationships with officers may

have substantial influence on how officers receive these EI intervention meetings and their outcomes.

Third, differences in supervisory styles may result in a variation of approaches to the EI intervention process, including the review of EI alerts and how interventions are executed. For instance, prior research demonstrates that supervisory styles significantly influence officer behavior (Engel, 2000, 2002, 2003), as well as perceptions of agency policies which may also be predictive of officer behaviors (e.g., Dhont et al., 2010; Kop & Euwema, 2001). This suggests that not only does the variation in supervisory styles likely affect the EI intervention process but may also impact officer behavior after the intervention.

Finally, supervisors have a key role in determining which EI interventions are most fitting for officers. Scholars have continued to suggest that the types of interventions be examined in future research, and that interventions should be tailored to individual officer behavior patterns and trends (e.g., Gullion et al., 2021b; Macintyre et al, 2008; U.S. DOJ COPS Office, 2019). For instance, Macintyre and colleagues (2008) propose that "more refined research might also reveal that some types of interventions (e.g., anger management training) are more effective than others (such as a simple meeting with a supervisor to alert the member to his problem areas)" (pp. 249-250). Ultimately, the responsibility for reviewing EI alerts and determining appropriate and tailored interventions or lack thereof for officers identified by the EI system falls onto their first-line supervisors.

Limitations of Prior Early Intervention Systems Research

Although prior EI studies offer several insights regarding the effectiveness of EI systems, there are some limitations to consider, especially regarding the EI review and intervention process as this study addressed. First, prior research has not yet studied the effects of the EI interventions handled by supervisors and their impact on officer performance. Examining how first-line supervisors handle the EI interventions and whether the resulting outcome modifies officer behavior (i.e., reducing or preventing repeated EI alerts and interventions) is critical in assessing an EI systems' effectiveness. It is also important to include those EI alerts reviewed by supervisors where it was determined that no action was needed. Often supervisors will meet with those officers to discuss the incident(s) that triggered the EI alert, and then determine that no action is necessary. Given this is still a type of intervention for officers flagged by the EI system, this must also be included as part of the EI intervention assessment for whether officer behavior was modified.

Second, EI system studies have also yet to examine the likelihood of and timing between EI alerts and interventions handled by supervisors to address at-risk officer behavior. While most studies' findings are consistent regarding male, young, and experienced officers being at a higher risk for the frequency and duration of receiving complaints and being involved in use of force incidents, examining the risk factors related to the likelihood of and timing between EI alerts and interventions may offer more insight into officers at-risk for repeated EI interventions. This is especially true given that EI alerts are triggered by officer behaviors and incidents beyond complaints and use of force incidents. This current study builds upon this limited research and fills a critical gap

in our collective by examining the factors that affect the likelihood and timing between an officer's initial and subsequent EI alert and intervention during the sampling period.

Chapter Summary

EI systems, while prevalent in police agencies across the U.S., has been the focus of limited research over the past four decades. Yet EI systems have been supported by policing experts and researchers as a promising practice for identifying at-risk officers, addressing, and preventing misconduct, and holding officers and agencies accountable. Of the limited prior studies conducted, most have found positive results for the effectiveness of EI systems, measuring a reduction in complaints, uses of force, and other performance indicators, after an officer is flagged by the EI system or received an intervention (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). Additionally, EI studies have found that advanced statistical methods including extra trees and random forest models were better at identifying at-risk officers than traditional EI systems. Moreover, officers with a prior history of adverse events and misconduct investigations such as prior serious misconduct and secondary employment were the most predictive performance indicators of future adverse events (Carton et al., 2016; Cubitt et al., 2020; Helsby et al., 2018).

Limited research has also explored the likelihood and timing of officer misconduct utilizing complaints and use of force incidents and found that early onset of officer misconduct increases the risk of a longer duration and higher frequency of problematic behavior (Gullion et al., 2021a, 2021b; Harris, 2009, 2010a, 2010b, 2014; Harris & Worden, 2014; Kane & White, 2009). Officers received more complaints if they

were male, young, and inexperienced (Harris, 2009, Harris & Worden, 2014; Walker & Archbold, 2013), and officers with three or more uses of force were significantly younger, male, assigned to high crime areas and night/overnight shifts, and involved in more prior use of force incidents (Brandl & Stroshine, 2013). Related to repeated at-risk behavior, officers with one or more complaints per year were three times more likely to be terminated for misconduct (Kane & White, 2009), and officers with a prior history of officer-involved shootings were more than twice as likely to be involved in future shootings (McElvain & Kposowa, 2008).

The extant EI scholarship has yet to examine the EI system interventions and their impact on officer behavior including whether interventions are effective, and if so, for how long. Specifically, understanding the nature of EI interventions, and the predictors that influence the likelihood of and timing between repeated EI interventions. Examining EI interventions would provide further insight into the review and accountability process of EI alerts and interventions and whether this modifies at-risk officer behavior.

Current Study

The purpose of the current study is to explore the nature and process of EI alerts and interventions handled by supervisors as discussed in this chapter. The goal is to gain insight from police agency personnel on their review and decision-making processes for EI alerts and interventions and the impact on officer behavior. Specifically, this study explores the nature and process of EI alerts and interventions in a progressive way from those officers not receiving EI alerts and interventions, to those officers receiving EI alerts and interventions, and the predictors of these EI alerts. To accomplish this, four research questions are addressed.

First, a descriptive comparison of those officers who have not received any EI alerts during this sampling period to those officers who received at least one EI alert during this time frame is conducted to identify notable differences in individual and EI process and outcome factors. Specifically, the following research question is addressed:

Research Question 1: What characteristics distinguish officers who received zero EI alerts during the study period from those officers who did receive EI alerts?

Second, this study then progresses to those officers who have received EI alerts and initially explores the outcomes of those supervisor response memos for the EI interventions conducted. The aim is to explore the individual and EI characteristics that may influence the outcomes of those EI interventions handled by supervisors. Specifically, the following research question is addressed:

Research Question 2: For those officers who did receive an EI alert, what officer, supervisor, and EI characteristics predict the outcomes of the policy requirements for the EI interventions handled by supervisors?

Third, this study examines the process of handling EI alerts and interventions and the factors that affect the likelihood and timing between initial and subsequent EI alerts during the sampling period. The goal is to determine whether and to what extent the process of how supervisors handle these EI alerts and interventions is having the desired impact of modifying officer behavior, explored through the reoccurrence and timing of future EI alerts. Accordingly, the following research questions are addressed:

Research Question 3: What factors affect the likelihood of a subsequent EI alert?

Research Question 4: For those officers who received a subsequent EI alert, what

factors influence the timing between the officer's initial and subsequent EI alert?

The following chapter discusses how the above four research questions were carried out in greater detail.

CHAPTER III

Data and Methods

Police leadership, experts and scholars have recommended early intervention (EI) systems as a promising practice since the 1970s (e.g., CALEA, 2019; Gibbs & Kendrick, 2011; Gullion & King, 2020; U.S. DOJ COPS Office, 2009, 2019; Walker & Archbold, 2013; Walker et al., 2006). Furthermore, the prevalence of EI systems is substantial, given approximately 68 percent of U.S. police agencies with 100 or more officers had an EI system as of June 30, 2016 (U.S. DOJ Bureau of Justice Statistics LEMAS, 2020). Yet, there is currently a lack of research in this area. Prior EI system studies are limited in both number and scope (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Carton et al., 2016; Cubitt et al., 2020; Davis et al., 2005; Davis et al., 2002; Helsby et al., 2018; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013) and none have yet examined EI interventions.

This current study fills this critical gap in prior research by progressively examining the nature, process, and outcomes of the EI interventions handled by first-line supervisors as well as the resulting impact on officer behavior based on repeated EI interventions. This study contributes to prior research by using a longitudinal EI intervention data set from a large metropolitan police agency in the southwestern U.S. with the goal of providing evidence-based guidance for police leadership to use when making supervision and accountability decisions. This includes holding officers accountable, providing proper mentoring and guidance, and establishing appropriate EI system thresholds and a process for handling interventions.

The data used for this study come from the EI system's interventions that were handled by first-line supervisors from 2014-2020 as provided by a large, metropolitan police agency in the southwestern United States. The research study site allows for insight into the processes of EI system's interventions as handled by supervisors and the impact on officer behavior based on EI system data including repeated EI alerts, interventions, and supervisor's response memos for addressing these outcomes with officers. This study uses data from this research study site and a methodology that is designed to allow for an adequate examination of the nature and process of EI alerts and interventions in a progressive way from those officers not receiving EI alerts and interventions, to those officers receiving EI alerts and interventions, and the predictors of these EI interventions. This includes examining the EI process outcomes and the factors that affect the likelihood and timing between an officer's initial and subsequent EI alert.

The remainder of this chapter describes the data and methodology proposed to address this study's goal of examining the nature and process of EI alerts and interventions through its proposed research questions. Specifically, this chapter discusses the research study site, the police agency's EI system policy and intervention process, data collection, confidentiality protections, sample, measures and variables, and the analytic strategy.

Research Study Site

This section provides a description of the research study site for this current study, including the city, police agency, and organizational structure characteristics of this large, metropolitan police agency. EI system's alerts and interventions are based on officers' meeting or exceeding agency-defined thresholds related to officer activities, and those

officers' first-line supervisors are handling those EI interventions, including determining the necessary outcomes. Thus, the characteristics of the city and the communities they serve, the police agency, and its organizational structure offer context for these EI system interventions, and the supervisors involved in handling these EI interventions to hold these officers accountable and prevent future at-risk behavior.

City Characteristics

This large metropolitan U.S. police agency serves a mid-sized city with a population of approximately 400,000 people, and roughly over 2,000 Uniform Crime Report (UCR) Part I violent crimes, and 10,000 property crimes, for a total of more than 12,000 Part I violent and property crimes in 2020. Therefore, in 2020 there were about 30 Part I violent and property crimes per 1,000 residents. From 2016 to 2020, there was a total of between 12,000 and 15,000 violent and property crimes annually (Federal Bureau of Investigation, Crime Data Explorer, 2020). When comparing these crime statistics to those cities of similar size, this mid-sized city sits between cities with both higher and lower crime per 1,000 residents. Additionally, roughly 55 percent of the city's population is non-white, 6 percent have female headed households, 15 percent are below poverty, and 5 percent are unemployed (United States Census Bureau, 2020).

Police Agency Characteristics and Organizational Structure

This police agency has approximately 700 sworn personnel and 200 civilian staff members, making the number of sworn officers per 1,000 residents approximately 1.75. In 2020, this police agency responded to roughly 100,000 total calls for service, which is nearly 150 calls for service per officer, and made approximately 10,000 total arrests, which is almost 15 arrests per officer (Police Agency Annual Report, 2020).

Using a geographic policing model (i.e., officers and supervisors are assigned to and responsible for their own geographic areas and building relationships with the community), this police agency is organizationally structured into four patrol districts, which are further divided into sectors and beats. Officers and supervisors assigned to these geographic areas generally work one of four shifts: day, afternoon, night, and overnight. In addition, there is a supervisor assigned to each beat within the sectors, and to each of the four shifts for every patrol district. Thus, officers have noted stability in reporting directly to those supervisors within each beat, being assigned for anywhere between one and three years on average. This stability in supervisors assigned to beats and shifts also supports a geographic policing model.

Police Agency EIP Policy and Intervention Process

The study agency has had their EI system in place for more than 10 years, developed, implemented, and managed by their Internal Affairs (IA) Unit with a policy that outlines the purpose and process of the EI system and its interventions, including the roles and responsibilities of the supervisors and managers. The EI system tracks performance indicators including chargeable vehicle accidents, complaints (alleged racial profiling, formal, and citizen), missed court appearances, supervisor-initiated discipline, vehicle pursuits, unconfirmed sick leave, and use of force incidents. It is important to outline how this police agency defines each of these EI performance indicators as they may differ in context across agencies. In this police agency, performance indicators tracked by the EI system are defined as follows in Table 2:

Table 2

Performance Indicators Tracked

Performance Indicator	Description
Alleged Racial Profiling Complaints	A complaint that alleges "law enforcement-initiated action took place based on, but not limited to, an individual's race, ethnicity, national origin, gender, sexual orientation, gender identity, religion, economic status, age, cultural group, or any other identifiable group, rather than on the individual's behavior or on information identifying the individual as having engaged in criminal activity" (Police Agency Racial/Bias-Based Profiling Policy, 2017, p. 27).
Formal Complaints	An internally generated complaint (e.g., filed by a supervisor or a commander against their subordinate) where the discipline entails 20 hours of suspension up to termination (Police Agency Annual Report, 2020).
Supervisor-Initiated Discipline	Any disciplinary action initiated by a supervisor and given to their subordinate (Police Agency Annual Report, 2020).
Citizen Complaints	An externally generated complaint (e.g., filed by a community member against a police employee or the agency) (Police Agency Annual Report, 2020).
Unconfirmed Sick Leave	An employee who is absent for an alleged medical incapacity of the employee or a qualifying family member, who does not provide a physician's written statement or other acceptable written documentation of the incapacity to work (Police Agency Personnel Manual, 2021).
Use of Force Incidents	Any incident where an employee uses less lethal or lethal force required to be reported including empty hand control (e.g., pressure points, joint locks, handcuffing, use of personal weapons such as hands or feet, pain-compliance techniques, takedown maneuvers), drawing or pointing CEW (e.g., Taser) or a firearm directly at a person, intermediate or impact weapon use (e.g., pepper spray or Taser and canine deployment), and discharging firearm (Police Agency Use of Force Policy, 2020).
Missed Court Appearances	Any employee who is required to report "for service as a juror [or for court preparation] or subpoenaed appearance as a witness in duty-connected criminal or administrative proceeding" that does not appear (Police Agency Personnel Manual, 2021, p. 181).
Chargeable Vehicle Accidents	Any employee involved in a job-related motor vehicle accident in which they as the driver are at-fault, causing damage to another person's property or person in their agency-assigned police vehicle (Police Agency Personnel Manual, 2021).
Vehicle Pursuits	"An event involving one or more law enforcement officers attempting to apprehend a suspect, who is attempting to avoid arrest while operating a vehicle by using highspeed driving or other evasive tactics, such as driving off a highway, turning suddenly or driving in a legal manner but willfully failing to yield to an officer's emergency signal to stop" (Police Agency Vehicle Pursuits Policy, 2016, p. 1).

These performance indicators were included as such in this agency's EI system that was integrated into their risk management system in 2014. The EI system previously tracked a combination of performance indicators (i.e., any of number performance indicators occurring in certain time frame). Up to 2014, the EI system triggered an alert if the combination of any five performance indicators occurred within six months. This police agency conducts annual evaluations of the thresholds to ensure the EI program meets the department's needs and trends. In 2015, the combination threshold was changed from any five to any seven performance indicators that occurred within six months due to the duplication of other performance indicators. However, in 2016, this combination threshold was turned off completely due to continued duplication across other performance indicators. Given these changes, this agency updated their EI policy in 2016 to reflect this change. In this police agency, EI alerts are triggered by the system if an officer meets or exceeds the following thresholds as shown in Table 3:

Table 3

Agency-defined Thresholds for Flagging Officers

Type of Performance Indicator	Threshold
Alleged Racial Profiling Complaints	Two or more within 90 days
Formal Complaints	Two or more within 90 days
Supervisor-Initiated Discipline	Two or more within 90 days
Citizen Complaints	Three or more within 90 days
Unconfirmed Sick Leave	Nearly a week or more within 90 days
Use of Force Incidents	Six or more within 90 days
Missed Court Appearances	Two or more within 6 months
Combination (through 2014)	Any five or more within 6 months
Combination (2015)	Any seven or more within 6 months
Chargeable Vehicle Accidents	Two or more within 1 year
Vehicle Pursuits	Two or more within 1 year

When an officer meets or exceeds any of these thresholds, EI alerts or notifications are sent to the division commander of the flagged officer, and typically assigned to their immediate supervisor. As required by agency policy, the supervisor then reviews the behavior or incidents associated with the EI alert and any other relevant data and meets with the officer to determine if formal action is needed. Subsequently, the supervisor completes a response memo, and forwards this through their chain of command and it is then received by internal affairs.

The supervisor must review the EI alert or notification report with the flagged officer during their meeting and encourages the officer to provide insight regarding each of the incidents and problems identified. The supervisor's response memo must summarize the EI intervention option(s) chosen including the recommended action and justification for such recommendations. This meeting with the officer and the subsequent response memo by the supervisor serves as the first step of an EI intervention. Additionally, subsequent intervention options that may be given to EI flagged officers by their supervisors include but are not limited to no action needed; coaching/mentoring; referral to the Critical Incident Stress Management (CISM) Team (professionals trained in crisis intervention support for those who have experienced traumatic events); referral to the employee assistance program; referral to agency-authorized mental health and wellness care; training; and reassignment or transfer. The supervisor must also monitor and formally report on the progress of the flagged officer in complying with the recommended action plan when appropriate with regular required reporting of progress established by the supervisor's division commander.

Internal Affairs provides quarterly summary reports to the police chief for those officers who were flagged by the EI system based on meeting or exceeding defined thresholds and includes a summary of the triggered performance indicators and their respective dispositions during the prior three-year period. Furthermore, IA also conducts annual evaluations of this EI system regarding its processes and effectiveness in the identification of officers in need of intervention. This annual report includes a review of the defined thresholds to offer officers a better opportunity to meet the police agency's mission, vision, and values and makes improvements to increase the agency's accountability to the community (Police Agency Early Intervention Policy, n.d.).

Data Collection

Outreach was initially conducted to various U.S. police agencies and after selecting and securing the research study site used for this current study, a letter of support was secured in May 2020 from that police agency's leadership. Subsequently, this dissertation study was submitted and approved in June 2020 by the Institutional Review Board (IRB) at Sam Houston State University (SHSU).

The official data collected for the current study included EI system case information for officers flagged for meeting or exceeding a threshold, and the associated EI alerts, interventions, and their outcomes, provided by a large, metropolitan police agency in a southwestern U.S city. Access to the police agency's personnel database was also provided to include additional officer-related information that was not included in the EI system data. Three data sources were drawn from: the internal EI system database which includes information on the EI alerts and interventions; the internal personnel database for current employees; and the internal personnel database for employees who

were separated or terminated from the agency. While this agency has had an EI policy and program in place for many years, the EI system database was integrated into a new automated records management system in 2014. These updates to the EI system database and processes meant that accessibility of this agency's EI data was not available or automated prior to 2014. Thus, the data provided by this agency included officer and supervisor demographics and case characteristics for the EI alerts and interventions that occurred between 2014-2020 for all police officers and those first-line supervisors who handled the EI interventions for officers. Throughout this study the term "officer" will be used to define all officers that have the authority to use force and who are supervised by sergeants. The officer group that comprises this current study's sample includes corporals (field training officers), officers, and recruit officers.

In addition, supervisors' memos were obtained that aligned with EI alerts and interventions that occurred between 2014-2020 which outlines the supervisors' process for handling the EI interventions for those flagged officers. These supervisors' memos were required to be completed by supervisors for every EI alert, including documenting their review process for those officers and their incidents that triggered the EI alert, meeting with the officer, and the recommendation and justification for the determined intervention outcome (i.e., formal, or informal action), if any.

To complete the next phase of this data collection process, the three data sources were reviewed and individual cases for each officer were created that included their demographics, work characteristics, and EI data information (e.g., the type of performance indicator that triggered the EI alert; the total number of EI interventions received, etc.).

Confidentiality Protections

In addition to standardized protocol, several precautions were taken to ensure the confidentiality of agency and officer information. These confidentiality protections were outlined in the dissertation study that was approved in June 2020 from the IRB at SHSU.

First, the name of the research study site used in this current study remains confidential for the protection of the police agency and its officers.

Second, the research study site provided all digital documentation in a cloud storage account that was accessible through a personal and highly secure password known only by the main researcher and author of this dissertation study, who also is the Primary Investigator (PI). All digital documentation of the personnel and EI data including EI alerts and interventions that were collected from this police agency were moved from this original secure cloud storage account to a highly secure, encrypted external hard drive where they are currently and will remain. Only the main researcher and author of this dissertation study, who also is the Primary Investigator (PI), has access to this encrypted external hard drive which is also password-protected.

Third, all the personnel (e.g., demographics, work assignments, etc.) and EI data including information regarding specific performance indicators (e.g., complaints, use of force incidents, etc.) obtained from this research study site did not contain the names of any of the police officers or supervisors. Rather, only badge numbers were included in the personnel and EI data provided by this police agency. Furthermore, although these badge numbers were initially collected to connect the personnel and EI data across cases, these badge numbers were extracted out and replaced with unique identifying numbers.

Fourth, in addition to the quantitative data provided, the supervisor response memos were also collected. These memos are narrative accounts of the supervisor's response to their review of the EI alert and intervention, including any determined formal or informal action taken with the officer. In terms of the confidentiality protections from the police agency, all officers and supervisors' names were redacted from these supervisor response memos prior to providing them in the secure cloud storage account to this researcher for this dissertation study. This included redaction of any printed names as well as any signatures. To reiterate, these supervisor response memos were collected directly from the secure cloud storage account and moved to the highly secure and password-protected encrypted external hard drive.

Sample

The analysis was limited to include only those officers who were employees sometime between January 1, 2014, and December 31, 2020, with some officers having separated from the agency during this time frame. The type of separation from this police agency for these officers included: deceased, resigned, retired, and terminated.[5] Between 2014-2020, there were 647 total officers that could have been flagged for an EI alert or notification, and 112 total first-line supervisors (i.e., sergeants) that could have handled the EI interventions with these officers. The data included basic demographic information for officers involved in the incidents and details surrounding each EI alert and intervention including the information coded from the supervisor response memos (e.g., type of performance indicator, date of EI alert, date of supervisor's response memo,

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[5] As detailed later in the analytic strategy, officers were right-censored if they were separated or terminated from the agency during this study, in which case their end date was the date of separation or termination. This accounts for those that are no longer employed by the end of the sample period, December 31, 2020.

policy requirements detailed or not in the supervisor response memo, intervention outcome, etc.).

The first research question (RQ1) in this current study examines the characteristics that distinguish officers who received zero EI alerts to those officers who received at least one EI alert during this time frame.

The additional research questions (RQ2-RQ4) in this current study examine those officers who received at least one EI alert resulting in an intervention during this sampling period. Part of the focus of these additional three research questions (RQ2-RQ4) is the EI review process in which the supervisor reviews the EI alert and conducts the intervention including determining the outcome if any (i.e., no action, formal, or informal action). This EI review process was documented on the supervisor response memos provided by the police agency. However, this police agency was either not able to locate some supervisor response memos or could not provide them due to being a part of an ongoing investigation or pending civil litigation. Therefore, the sample of 253 officers who received at least one EI alert during this sampling period was reduced to a final sample of 201 officers to ensure the associated supervisor response memos were also present for analysis. This final sample was used to addressed research questions two, three and four (RQ2-RQ4) regarding the EI review of alerts and intervention process, and the likelihood of and timing between subsequent EI alerts.

Measures

Dependent Variables

The first research question (RQ1) in this current study is addressed by conducting a descriptive comparison between officers who received and did not receive EI alerts during the sampling period, specifically asked as follows:

Research Question 1: What characteristics distinguish officers who received zero EI alerts during the study period from those who did receive EI alerts?

The dependent variable to address RQ1 is captured as a dichotomous indicator of whether an officer received an EI alert during the sampling period (1=yes; 0=no). Overall, 39.10% of the 647 total officers received at least one EI alert during this time.

The second research question (RQ2) is addressed by examining which individual and EI alert and intervention characteristics predict the policy requirements and outcome of the EI interventions as articulated in the supervisor response memos, specifically asked as follows:

Research Question 2: For those officers who did receive an EI alert, what officer, supervisor, and EI characteristics predict the outcomes of the policy requirements for the EI interventions handled by supervisors?

To address this research question, this study reviewed and initially coded for variables based on several readings of the response memo narratives (i.e., EI interventions) completed by the supervisors after their meeting with the EI flagged officers. All the supervisor response memos used in this study were coded by the author, who served as the primary investigator for this project. The types of variables coded in these response memos included supervisor demographics and work assignments, as well

as supervisory requirements as outlined in the police agency's policy. More specifically, whether supervisors met or spoke with the flagged officer to discuss the incidents and problems identified, whether the supervisor documented individual summaries of each triggered incident, whether the supervisor asked the officer about any personal or job-related stressors, and the outcome of the EI intervention. It should be noted that a single coder's bias cannot be measured (Artstein & Poesio, 2005).

EI interventions were coded based on explicit information provided in these response memos written by the supervisors. No interpretations were made by the author. For example, cases were coded 1 if the supervisor explicitly stated that they met with the officer and 0 if no such statement was recorded by the supervisor; no interpretations about the meeting location, method, or officer and/or supervisor perceptions were made by the coder. A reliability check was also performed after finishing coding all of the response memos. This included going back through these supervisor response memos after a month had passed to determine if the original coding was accurate and consistent and was measuring what this author intended to measure. This resulted in corrections being made when needed.

The dependent variable to address RQ2 is captured as four different supervisor response memo outcomes of the intervention meetings required by this agency's policy for those officers who received at least one EI alert and intervention. The four outcomes are captured as dichotomous indicators of whether the supervisor met or spoke with the officer during their initial EI intervention (1=yes; 0=no); whether the supervisor provided individual summaries of each of the incidents flagged by the EI system in their supervisor response memo for the officer's initial EI intervention (1=yes; 0=no); whether the

supervisor asked the officer about any personal or job-related stressors during their initial EI intervention (1=yes; 0=no); and whether the supervisor took some type of formal action with the officer (1) or whether no action was taken (0). Overall, 78.11% of the supervisors met or spoke with the officer during their initial EI intervention; 49.25% of the supervisors provided individual summaries of each of the incidents flagged by the EI system in their supervisor response memo for the officer's initial EI intervention; and 58.21% of the supervisors asked or addressed any personal or job-related stressors affecting the officer during their initial EI intervention, though in some response memos it was implicitly addressed. This nuance will be captured later by expanding these dummy variables as explicitly addressed, implicitly addressed, or not addressed, to better examine RQ3 and RQ4. Additionally, the supervisors took formal action in only 3.48% of the initial EI interventions with officers.

The remaining research questions (RQ3 and RQ4) are specifically asked as follows:

Research Question 3: What factors affect the likelihood of a subsequent EI alert?

Research Question 4: For those officers who received a subsequent EI alert, what factors influence the timing between the officer's initial and subsequent EI alert?

For these remaining two research questions (RQ3 and RQ4), the dependent variable is captured in two ways. First, to address RQ3, a dichotomous indicator of whether an officer received a subsequent EI alert after that officer's initial EI alert and intervention during the study period. This outcome, the likelihood of receiving a subsequent EI alert, is dichotomized as the officer received a subsequent EI alert after

their initial EI alert and intervention (1) or only received the initial EI alert and intervention (0). Overall, 58.71% of the officers received a subsequent EI alert after receiving an initial EI alert and intervention during this study period.

The second treatment of the outcome for RQ4, time to subsequent alert, measures the temporal distance between an initial EI alert and the first subsequent EI alert (i.e., time to failure) during this study period, or alternatively, the survival time (in months). Survival time is measured by calculating the time in days between the officer's initial EI alert and intervention and subsequent EI alert. This calculation of the number of days between the initial and subsequent EI alert allows for an analysis of the factors that are associated with time to the subsequent EI alert.[6]

Demographic and Occupational Variables

To compare EI flagged and non-flagged officers (RQ1), and to examine the process and outcomes of the EI intervention meetings (RQ2), and the likelihood of (RQ3) and timing (RQ4) between the officer's initial EI alert and intervention and their subsequent EI alert, officer and supervisor demographic and occupational variables are included in these analyses.

Regarding officer demographic variables, the officer's race and ethnicity and gender are included. Officer race and ethnicity is measured through a series of dummy

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[6] For RQ4, days from the officer's initial to subsequent EI alert represents officer at-risk behavior to at-risk behavior and thus was used as this ensures that the supervisor's review process and intervention with the officer occurred between this time. Given that the supervisor response memo date does not represent the date the supervisor met or spoke with that officer if this occurred and does not reflect when any of the other process requirements occurred, the timing between EI alerts better accounts for this variation in process and intervention response times by the supervisors. In addition, dates that the supervisor met or spoke with the officer was often not provided, even in those cases where the supervisor did meet or speak with that flagged officer.

variables, black, Hispanic, and other; white is the reference category.[7] Officer gender is also measured as a dummy variable (0=female; 1=male).

Regarding officer occupational variables, officer tenure and the officer's division assignment when the initial EI alert and intervention occurred were also included. To address RQ1, non-flagged and flagged officers were included in this sample and 260 (or 40.19%) of the 647 officers were hired after the beginning of this study period, January 1, 2014. Thus, officer tenure was captured as the officer's hire date to either their separation date or the end of the study period if they were still current employees on December 31, 2020. Of the 647 total officers, 46 (or 7.11%) officers were separated from this agency before the end of the study period. However, this simply provides a measure of officer tenure or experience at either their separation from this agency or the end of this study in order to compare non-flagged and flagged officers.

The division where the officer was assigned when the initial EI alert and intervention occurred is an important distinction given the differences in daily activities and interaction with the public. For example, officers in patrol division or tactical support division (e.g., SWAT, traffic, etc.) regularly work in the field making traffic and pedestrian stops and arrests, interacting with community members, and thus, have more opportunities to be involved in critical incidents. In contrast, officers working in other divisions including administrative units (e.g., personnel and recruiting, jail, training academy, warrants, etc.) are not regularly working in the field or interacting with community members. Additionally, prior research has found officers working in busier or high crime areas often result in their being involved in more use of force incidents,

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[7] The other race category includes Asian officers and officers of two or more races.

receiving more complaints, having more officers on-scene with them, and making more arrests (Brandl & Stroshine, 2013; Gullion et al., 2021a; Harris, 2014; Harris & Worden, 2014; Lersch, 2002; Lersch et al., 2006). Thus, officer division is captured as four dummy variables, including patrol division (comprised of north, south, east and west patrol divisions), criminal investigations division, tactical support division, and other divisions. Patrol division, which accounted for 65.67% of the divisions where the officer was assigned when they received their initial EI alert and intervention, was used as the reference category.

Regarding supervisor demographic variables, the supervisor's race and ethnicity, gender, and tenure are included. Supervisor race and ethnicity is measured through a series of dummy variables, black, Hispanic, and other; white is the reference category.[8] Supervisor gender is also measured as a dummy variable (0=female; 1=male). The supervisor's tenure is also measured in months and represents the time from the supervisor's hire date to the initial EI alert.[9]

Early Intervention (EI) Case Variables

To examine the process and outcomes of the EI intervention meetings (RQ2), and the likelihood of (RQ3) and timing (RQ4) between the officer's initial and subsequent EI intervention, EI case variables from the officer's initial EI alert and intervention are included in these analyses.

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[8] Ibid., p. 80

[9] While capturing supervisor tenure as the supervisors' hire date to the initial supervisor response memo was considered, this was not ultimately decided given that if supervisors met or spoke with officers, it took place prior to that supervisor response memo, and the dates were often not indicated. To more accurately represent supervisor tenure at the time of the intervention which took place any time between the EI alert and supervisor response memo, it was decided that supervisor hire date to initial EI alert would be used.

Regarding the EI case variables, the type of performance indicator that triggered the EI alert, the time to the initial EI alert, and the year of the EI alert are included. The type of performance indicator that triggered the initial EI alert is measured through a series of dummy variables including chargeable vehicle accidents, combination of any five or seven performance indicators in six months, unconfirmed sick leave, and other performance indicators[10] (alleged racial profiling, formal, and citizen complaints; missed court appearances; supervisor-initiated discipline, and vehicle pursuits); use of force incidents, which accounted for the highest frequency (37.81%) of the performance indicators, is the reference category. The time to the initial EI alert is included, measured in months, and represents the time from the officer's hire date to the initial EI alert received.[11] Finally, given the research study site previously tracked a combination of performance indicators up to 2015, and eliminated this combination performance indicator prior to 2016, the EI alert process may have changed for those EI alerts and their interventions. Thus, the year of the EI alert is measured as a dummy variable (1=EI alerts from 2014-2015; 0=EI alerts from 2016-2020).

Early Intervention (EI) Process Variables

To examine the process and outcomes of the EI intervention meetings (RQ2), and the likelihood of (RQ3) and timing (RQ4) between the officer's initial and subsequent EI intervention, EI process variables from the officer's initial EI alert and intervention are included in these analyses. These are the outcomes of the agency's policy requirements

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[10] These six performance indicators did not individually make up at least 10% of the EI alerts received by the 201 officers in this sample so they were collapsed into an "other performance indicators" category.
[11] This measure therefore captures the portion of the officer's tenure with the agency prior to their initial EI alert during this study period, understanding this may not be the first EI alert ever received for those hired prior to the beginning of the study period. This is discussed further in the analytical strategy section below.

resulting from the supervisor's review, and handling the EI intervention, including documentation in the supervisor response memo. These EI process variables are similar to the four policy requirements (i.e., EI memo outcomes) used as dependent variables for RQ2, now included as independent variables for examining RQ3 and RQ4.

These EI process variables are captured as four different supervisor response memo outcomes from the intervention meetings with officers who received at least one EI alert and intervention. The first two EI process variables are captured as dichotomous indicators of whether, for an officers' initial EI alert and intervention received during this study, the supervisor met or spoke with the officer (1=yes; 0=no) and provided individual summaries of the incidents flagged by the EI system (1=yes; 0=no).

The third EI process variable previously used as a dependent variable to address RQ2 was captured as a dichotomous outcome of whether the supervisor asked the officer about any personal or job-related stressors during their initial EI intervention (1=yes; 0=no). However, some supervisor response memos implicitly addressed this policy requirement (e.g., the supervisor determined, discovered, or did not find any personal or job-related stressors affecting the officer; the supervisor did not find any cause for referral, etc.) rather than explicitly asked the officer. To better address this for RQ3 and RQ4, this is now measured through a series of dummy variables. These include: the supervisor explicitly asked the officer about any personal or job-related stressors, or the supervisor implicitly addressed any personal or job-related stressors affecting the officer; the supervisor did not mention addressing any personal or job-related stressors with the officer is the reference category.[12]

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[12] For the dichotomous measure of this variable, if it was implicitly addressed by supervisors, this was included within the yes category, given that leadership would consider this having been appropriately

In addition, an examination was conducted to determine whether the combination of these process variables (i.e., policy requirements) or lack thereof had any impact. Thus, a scale variable was captured as an indicator of whether the supervisor met/spoke with the officer, provided individual summaries, asked the officer about any stressors, a combination of these or none of these occurred. This was measured as the supervisor conducted none of these policy requirements (0), at least one of these policy requirements (1), at least two of these policy requirements (2), or all three of these policy requirements (3).

The fourth EI process variable is captured as a dichotomous indicator of whether the supervisor took some type of formal action with the officer (1) or whether no action was taken (0). Formal action taken in these cases includes coaching/mentoring, letter of counseling, memo to file, referral to the employee assistance program, and training.

Analytical Strategy

The goal of this current study is to examine the nature and process of EI alerts and interventions in a progressive way from those officers not receiving EI alerts and interventions, to those officers receiving EI alerts and interventions, and the predictors of these EI interventions. This includes examining the EI process outcomes and the factors that affect the likelihood and timing between an officer's initial and subsequent EI alert. To accomplish these goals, four research questions are addressed. This study conducted logistic regression analyses each for RQ1 and RQ2, and two distinct but complementary analyses for RQ3-RQ4: logistic regression and survival analysis. Each analytic strategy is discussed in further detail.

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addressed by supervisors. This was confirmed by the leadership of this police organization as common practice.

The first research question specifically asked:

Research Question 1: What characteristics distinguish officers who received zero EI alerts during the study period from those officers who did receive EI alerts?

To address this first research question, this study conducted a logistic regression analysis. Given the dichotomous nature of the dependent variable, that is, whether an officer received an EI alert during the sample period, logistic regression was used. Logistic regression was estimated to examine the influence of the predictor on the risk of this outcome of receiving an EI alert to identify notable differences in officer demographic and occupational factors.

This study then progressed to those officers who have received EI alerts and initially explored the process outcomes of those supervisor response memos for the EI interventions conducted. The aim is to explore the individual and EI characteristics that may influence the outcomes of those EI interventions handled by supervisors. The second research question specifically asked:

Research Question 2: For those officers who did receive an EI alert, what officer, supervisor, and EI characteristics predict the outcomes of the policy requirements for the EI interventions handled by supervisors?

To address this second research question, this study conducted a logistic regression analysis. Given the dichotomous nature of each of the four the dependent variables which are outcomes of the EI intervention meetings with the officers, logistic regression was used. Specifically, one logistic regression model was conducted for each of the three response memo outcomes, resulting in a total of three separate logistic regression models. Logistic regressions were estimated to examine the influence of the

predictors on the risk of these four response memo outcomes. These response memo outcomes include whether the supervisor met with the officer, whether they provided individual summaries of the incidents flagged by the EI system, and whether they asked officers about any personal or job-related stressors.

Next, this study examines the factors that affect the likelihood of an officer receiving a subsequent EI alert after their initial EI alert and intervention during the sampling period. The goal is to determine whether and to what extent the process of how supervisors handle these EI alerts and interventions is having the desired impact of modifying officer behavior, explored through the reoccurrence of future EI alerts. The third research question specifically asked:

Research Question 3: What factors affect the likelihood of a subsequent EI alert?

To address this third research question, this study conducted a logistic regression analysis. Given the dichotomous nature of the dependent variable, logistic regression examined the likelihood of an officer receiving a subsequent EI alert after their initial EI alert and intervention, and factors that may affect this likelihood. A logistic regression model best predicts the likelihood of an officer receiving a subsequent EI alert after their initial EI alert and intervention, with positive coefficients indicating a higher likelihood of the subsequent EI alert occurring.

Finally, this study examines the process of handling EI alerts and interventions and the factors that affect the timing between EI alerts during the sampling period. The goal is to determine whether and to what extent the process of how supervisors handle these EI alerts and interventions is having the desired impact of modifying officer

behavior, explored through the timing of future EI alerts. The fourth research question specifically asked:

Research Question 4: For those officers who received a subsequent EI alert, what

factors influence the timing between the officer's initial and subsequent EI alert?

To address this fourth and final research question, this study conducted a survival analysis, which examines the timing between an officer's initial and a subsequent EI alert (i.e., time to failure) during this study period, and the factors that may affect this timing.

Survival analysis is a method for analyzing the time at risk until the occurrence of an event; for this study it is the time from the date of the officer's initial EI alert to a subsequent EI alert, while still accounting for those who did not experience the event. The follow-up period for all officers ends on December 31, 2020. Officers were right-censored if they either did not receive a subsequent EI alert during this study period, or if they were separated or terminated from the agency during this study. If so, their end date was the date of their separation or termination. Furthermore, survival analysis equalizes all officers' failure time so that officer, supervisor and EI case and process covariates can be controlled for.

While this study is examining the timing between an officer's initial and subsequent EI alert that occurred between 2014 and 2020, the initial EI alert and intervention may not be the first EI alert and intervention the officer has ever received. However, given the EI system goal of identifying at-risk officers early and modifying officer behavior after any EI intervention occurs, it was appropriate to consider while understanding that this initial EI alert and intervention is merely the initial EI alert and intervention received by the officer during this study period.

Moreover, the officer's initial EI alert and intervention has no specific significance or theoretical implication but is simply used as a baseline to examine the timing between the EI alerts. Regardless of when an EI intervention occurs, if it is appropriately handled by the supervisor, then generally speaking, the timing to another EI alert should be longer than those EI interventions handled less effectively. While officers may not always have control over every incident they are involved in (e.g., using force when necessary, receiving a citizen complaint, etc.), these EI thresholds are not based on individual but multiple incidents or behaviors within a certain time. More importantly, these EI alerts and interventions handled by supervisors are based on identifying a pattern of officer behavior. Thus, it is key to gain insight on what factors may be effective in reducing that officer's risk (i.e., time to failure) to a subsequent EI alert and resulting intervention, regardless of which two EI alerts and interventions are considered. This is especially meaningful if those factors are impacting the effectiveness of EI interventions modifying officer at-risk behavior.

Survival analysis measures two functions of time: the survival function, or the probability of the event not occurring for every point in time up to a particular time, and the hazard function, or the probability of the event occurring per unit of time, given survival up to that time. In this study, the survival function is the likelihood of officers not receiving a subsequent EI alert for every day up until the study period ends, December 31, 2020. While the hazard function is the likelihood of the officer receiving a subsequent EI alert each day given survival up until that day. Initially, nonparametric models were produced to provide survival or failure estimates examining an officer's risk of receiving a subsequent EI alert as a function of time, prior to considering the effects of

the covariates. These models include a life table, which clusters the data into intervals for presenting the survival functions, a Kaplan-Meier failure estimate which provides the probability of failure, and a Kernel-Smooth Hazard estimate which provides the hazard ratio, or the rate of risk of failure at any point in time, given an officer has survived up to that point (i.e., the instantaneous risk of an event occurring).

The second step examines the relationship between one or more factors with the survival time. Cox regression (Cox, 1972) was chosen as there is no requirement to identify a particular baseline hazard rate, or starting point, which other survival models require and is in line with approaches taken by Gullion et al. (2021a, 2021b), Harris (2014), and Harris and Worden (2014). The Cox regression is most appropriate given that although previous empirical research suggests that younger officers tend to make more arrests, use force more frequently, engage in at-risk behavior, and thus are likely to have more opportunities to receive EI alerts and interventions, there is no specific "theoretical or empirical support for a baseline timeframe for when this begins to occur" (Harris, 2014, p. 296; Harris & Worden, 2014, p. 1273). A key assumption of the Cox regression model is that the hazards should be proportional over time. The proportionality of hazards was tested based on Schoenfeld residuals and by examining the plots of ln (–ln S[t]) against survival time t for the various covariate categories. Neither test indicated the proportional hazards assumptions had been violated, as the p-value from the formal test of the proportional hazards was not significant, and the plots were found to be approximately parallel.

CHAPTER IV

Results

The current chapter details the results of the descriptive comparison and several analyses examining the nature and process of EI alerts and interventions in a progressive way from those officers not receiving EI alerts and interventions, to those officers receiving EI alerts and interventions, and the predictors of these EI interventions. This includes examining the EI process outcomes and the factors that affect the likelihood and timing between an officer's initial and subsequent EI intervention.

The first section of this chapter examines the differences between the non-EI flagged and EI flagged officers. A descriptive analysis of the sample of non-EI flagged and EI flagged officers is presented including officer demographic and occupational variables. Next, a logistic regression analysis was conducted to address the first research question (RQ1) by examining the influence of the predictor on the risk of this outcome of receiving an EI alert to identify notable differences in officer demographic and occupational factors.

The second section then progresses with those officers who have received EI alerts. A descriptive analysis of the final sample of officers who received at least one EI alert and intervention during this sampling period is presented, including individual and EI case processing and outcome variables to address RQ2-RQ4.

The third section explores the process outcomes of those supervisor response memos for the EI interventions conducted. A series of logistic regression models are conducted to address the second research question (RQ2) and examine the individual and

EI characteristics that may influence the each of the three supervisor meeting outcomes for those EI interventions handled by supervisors.

The fourth section of this chapter seeks to address research question three (RQ3) by examining the likelihood of an officer receiving a subsequent EI intervention after their initial EI intervention during the sampling period. To this end, a logistic regression model was produced to explore the likelihood of an officer receiving a subsequent EI intervention after their initial EI intervention, and factors that may affect this likelihood.

The fifth and final section of this chapter examines the process of handling EI interventions and the factors that affect the timing between initial and subsequent EI interventions during the sampling period to address research question (RQ4). To achieve this, a survival analysis was conducted, which examines the timing between an officer's initial EI intervention and a subsequent EI intervention (i.e., time to failure) during this sampling period, and the factors that may affect this timing.

RQ1: Predicting Non-EI Flagged and EI Flagged Officers

Descriptive Statistics

To begin, this study conducted a descriptive analysis of the total 647 officers who were employed between 2014-2020, the 394 officers who have not received any EI alerts during this sampling period and 253 officers who received at least one EI alert during this time. This comparison was conducted to address the first research question (RQ1) in this study, whose goal was to identify notable differences in individual and EI process and outcome factors.

Of the 647 officers who were employed between 2014-2020, 78.36% were male, 61.21% were white, and 55.64% were assigned to patrol. For the 394 officers who

received zero EI alerts during this time frame, 74.62% were male, 59.64% were white, and 49.24% were assigned to patrol. Full descriptive statistics for this sample of total officers, EI flagged, and non-EI flagged officers is presented in Table 4.

A descriptive comparison of non-EI flagged and EI flagged officers for officer demographics found similarities with a few notable exceptions. Regarding officer race and ethnicity, 59.64% of non-EI flagged officers were white, similarly represented by 63.64% of the EI flagged officers. Approximately 15% of both the non-EI flagged and EI flagged officers were Hispanic. There is a slight decrease in representation of black officers from the non-EI flagged to the EI flagged officer group (17.01% versus 13.83%). When comparing officer gender, there is a slight increase in male representation (74.62% to 84.19%) and a slight decrease in female representation (25.38% to 15.81%) from non-EI flagged to EI flagged officers.

A descriptive comparison of the officer occupational variables between the non-EI flagged and EI flagged officers is also warranted. There is a slight difference in officer tenure, as the average tenure of non-EI flagged officers was 140 months, or almost twelve years, while the average tenure for EI flagged officers was 117 months, or almost ten years. However, average tenure for these non-flagged and flagged officers is not measuring when these officers received an EI alert, but only the tenure from their hire date to either their separation date or the end of the study period if officers were still currently employed with the agency at the end of the study.

Regarding the officer division, there is a notable increase found for the patrol division (49.24% to 65.61%) and a notable decrease for the other divisions category (24.37% to 6.72%) between the non-EI flagged and EI flagged officers respectively. For

the remaining officer divisions, there were slight increases for the criminal investigations and tactical support divisions between the non-EI flagged and EI flagged officers.

Table 4

Descriptive Statistics for Total (n=647), Non-EI Flagged (n = 394), and EI Flagged

Officers (n = 253)

Variables	Total Officers				Non-EI Flagged Officers				EI Flagged Officers			
	n	% or Mean	SD	Range	n	% or Mean	SD	Range	n	% or Mean	SD	Range
Demographic and Occupational Variables												
Officer Race												
White (reference)	396	61.21			235	59.64			161	63.64		
Black	102	15.77			67	17.01			35	13.83		
Hispanic	103	15.92			63	15.99			40	15.81		
Other	46	7.11			29	7.36			17	6.72		
Officer Gender												
Male (reference)	507	78.36			294	74.62			213	84.19		
Female	140	21.64			100	25.38			40	15.81		
Officer Tenure (in months)		131	99	1-478		140	106	1-478		117	85	9-457
Officer Division												
Patrol Division (reference)	360	55.64			194	49.24			166	65.61		
Criminal Investigations Division	93	14.37			60	15.23			33	13.04		
Tactical Support Division	81	12.52			44	11.17			37	14.62		
Other Divisions	113	17.47			96	24.37			17	6.72		

Logistic Regression Results

In addressing RQ1 which asked what characteristics distinguish non-EI flagged and EI flagged officers, results from the logistic regression analysis examined the outcome of the risk of an officer receiving an EI alert to identify notable differences in officer demographic and occupational factors, which are presented in Table 5.[13]

The results demonstrate that officer gender, tenure, and division is significantly associated with officers receiving an EI alert during this study period.

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[13] In this logistic regression model and all subsequent logistic regression models, the dependent variable is binary and coded accordingly, and assumptions were tested and met including ensuring observations were independent of each other, multicollinearity was not present among the independent variables, there were no extreme outliers, independent variables were linearly related to the log odds, determinations of model fit were conducted, and sufficient sample size was considered. While a few of the models are just under ten cases per independent variable (201 cases for 22 independent variables) which may limit the effects of the results slightly, this guideline fluctuates among statisticians, and most of the models in this study adhere to this guideline.

First, officer gender is significant, with a coefficient of 0.57 and an odds ratio of 1.78. Thus, being a male officer increases the odds of receiving an EI alert before the end of the study period by a factor of 1.78.

Next, officer tenure was also significant with a coefficient of -0.002 and a odds ratio of 1.00. While officer tenure in months was an important measurement for some officers hired after the beginning of the study period, to assist with interpretation, officer tenure was rescaled to years and included again in the logistic regression model. This resulted in officer tenure with a coefficient of -0.03 and an odds ratio of 0.97. Thus, for each additional year of officer tenure, the odds of receiving an EI alert during this study period was significantly reduced. While 59.81% of the officers were hired prior to the beginning of the study period and may have had more time to gain maturity and experience, it is noted that this data does not reflect any EI alerts received prior to this time.

Finally, regarding the other divisions category, one of the four divisions where officers were assigned, was also significant with a coefficient of ¬1.49 and an odds ratio of 0.23. Specifically, officers that were assigned to the other divisions category, reduced their likelihood of receiving an EI alert by a factor of .23, compared to the patrol division. Given the other divisions category includes administrative units (e.g., personnel and recruiting, jail, training academy, warrants, etc.) not regularly working in the field, while officers in patrol division regularly work in the field making traffic and pedestrian stops and arrests, and interacting with community members, this finding is not surprising.

Table 5

Logistic Regression Predicting Likelihood of Officer Receiving an EI Alert (n = 647)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	-0.23	0.25	0.79
Hispanic	-0.11	0.24	0.89
Other	-0.24	0.33	0.79
Officer Gender			
Male	**0.57	0.22	1.78
Officer Tenure (in months)	**-0.002	0.001	1.00
Officer Division			
Criminal Investigations Division	-0.32	0.25	0.72
Tactical Support Division	0.05	0.26	1.05
Other Divisions	***-1.49	0.29	0.23
Constant	-0.26	0.24	0.77
Nagelkerke R^2	0.06		

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

RQ2-RQ4: Predicting EI Flagged Officers

Descriptive Statistics

Descriptive statistics for the flagged officers receiving at least one EI alert and intervention with an associated supervisor response memo to address RQ2-RQ4 is presented in Table 6. This includes examining the EI process outcomes (i.e., policy requirements as indicated in supervisor response memos) to address RQ2 and the factors that affect the likelihood and timing between an officer's initial and subsequent EI alert to address RQ3 and RQ4, respectively.

Of these 201 officers, 84.08% were male, 64.18% were white, and 65.67% were assigned to the patrol division when they received their initial EI alert. Regarding the supervisors who handled these EI alerts and interventions with officers, 85.57% were

male, 62.19% were white, and average tenure was 183 months or slightly more than 15 years at the time of the EI intervention. Concerning the EI case variables, the average time to the initial EI alert was 72 months or slightly more than six years and 37.81% of the EI alerts were triggered by use of force incidents meeting or exceeding the agency-defined threshold. Regarding the EI process variables, 78.11% of supervisors met or spoke with the officer about the EI alert and potential intervention, 50.75% provided individual summaries of the incidents that triggered the EI alert, only 41.79% of supervisors did not address whether officers had any personal or job-related stressors, and no formal action was taken in 96.52% of the EI alerts and interventions.

Table 6

Descriptive Statistics for Officers Who Received At-Least One EI Alert (n=201)

Variables	n	% or Mean	SD	Range
Demographic and Occupational Variables				
Officer Race				
White (reference)	129	64.18		
Black	29	14.43		
Hispanic	29	14.43		
Other	14	6.97		
Officer Gender				
Male (reference)	169	84.08		
Female	32	15.92		
Officer Division				
Patrol Division (reference)	132	65.67		
Criminal Investigations Division	26	12.94		
Tactical Support Division	27	13.43		
Other Divisions	16	7.96		
Supervisor Race				
White (reference)	125	62.19		
Black	39	19.40		
Hispanic	24	11.94		
Other	13	6.47		
Supervisor Gender				
Male	172	85.57		
Female	29	14.43		
Supervisor Tenure (in months)		183	82	65-408
EI Case Variables				
Type of Performance Indicator				
Use of Force (reference)	76	37.81		
Chargeable Vehicle Accidents	19	9.45		
Combination of Any 5 or 7 in Six Months	32	15.92		
Other	13	6.47		
Unconfirmed Sick Leave	61	30.35		
Time to Initial EI Alert (in months)		72	67	10-343
Year of the EI Alert				
2014-2015	92	45.77		
2016-2020 (reference)	109	54.23		
EI Process Variables				
Supervisor Met or Spoke with Officer				
Yes	157	78.11		
No	44	21.89		
Supervisor Provided Individual Summaries				
Yes	99	49.25		
No	102	50.75		
Supervisor Asked Officer About Stressors				
Explicitly Addressed	63	31.34		
Implicitly Addressed	54	26.87		
Not Addressed (reference)	84	41.79		
Formal Action Taken				
Yes	7	3.48		
No	194	96.52		
Survival Times - to Failure				
Kaplan-Meier Estimator (in months)		22		12-80

RQ2: Predicting EI Memo Outcomes

To address RQ2, EI flagged officers were examined including demographic, occupational, and EI case variables, to assesses the likelihood of each of the three EI memo outcomes (i.e., policy requirements) conducted by supervisors. Results of each of the three logistic regression models predicting the likelihood of the supervisor meeting with the officer, providing individual summaries, and asking about stressors will be reviewed in their own subsections. [14]

Predicting Likelihood of Meeting

In addressing RQ2 regarding what characteristics predict the outcomes of the policy requirements for the EI interventions handled by supervisors, the first logistic regression analysis model examined supervisors meeting or speaking with officers regarding the EI alert as an outcome, or the likelihood of this occurring, and the results are presented in Table 7.[15]

The results demonstrate that supervisor tenure is significant, with a coefficient of −0.01 and an odds ratio of 0.99. Thus, for each additional month of a supervisor's experience at this agency, the odds of the supervisor meeting or speaking with the officer regarding the EI alert are reduced by a factor of 0.99.

Year of the EI alert was also significant with a coefficient of -1.63 and an odds ratio of 0.20. Thus, officers whose initial EI alerts were flagged in 2014 or 2015

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[14] Whether or not formal action was taken was not expected to influence the likelihood of these process variables occurring as this determination is the final decision made by that supervisor after these other preceding process variables occur. Furthermore, model fit was examined, and it was determined these models were better measures of fit without the formal action variable included. Thus, formal action was excluded from these three process models examined in RQ2.

[15] The EI process variable of whether the supervisor asked the officer about any personal or job-related stressors was not included in this logistic regression model given that the supervisor could not ask officers about any personal or job-related stressors if they did not meet or speak with these officers.

decreased the odds of the supervisor meeting or speaking with the officer regarding the initial EI alert by a factor of 0.20.

Table 7

Logistic Regression Predicting Likelihood that Supervisor Met/Spoke with Officer (n = 201)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	-0.03	0.64	0.97
Hispanic	1.13	0.72	3.10
Other	-0.48	0.87	0.62
Officer Gender			
Male	0.50	0.59	1.65
Officer Division			
Criminal Investigations Division	1.01	0.68	2.74
Tactical Support Division	0.30	0.65	1.35
Other Divisions	1.49	0.83	4.46
Supervisor Race			
Black	1.38	0.75	3.97
Hispanic	0.96	0.75	2.61
Other	1.96	1.20	7.07
Supervisor Gender			
Male	-0.03	0.86	0.97
Supervisor Tenure (in months)	**-0.01	0.003	0.99
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	0.39	0.97	1.47
Combination of Any 5 or 7 in Six Months	1.07	0.69	2.91
Other	1.06	1.19	2.88
Unconfirmed Sick Leave	-0.66	0.56	0.52
Time to Initial EI Alert (in months)	0.001	0.003	1.00
Year of the EI Alert			
2014-2015	***-1.63	0.49	0.20
EI Process Variables			
Supervisor Provided Individual Summaries			
Yes	-0.210	0.433	0.81
Constant	*2.39	1.10	10.93
Nagelkerke R^2	0.24		

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Predicting Likelihood of Individual Summaries

The second logistic regression analysis model examined the policy requirement of supervisors providing individual summaries for those incidents that triggered the EI alert as an outcome and the results are presented in Table 8.[16]

The results demonstrated that black supervisors were significant, with a coefficient of 1.31 and an odds ratio of 3.71. Thus, black supervisors had an increased likelihood of providing individual summaries of the incidents that triggered the EI alert by a factor of 3.71, as compared to white supervisors, all else equal.

Year of the EI alert was also significant with a coefficient of 1.44 and an odds ratio of 4.23. Thus, officers whose initial EI alerts were flagged in 2014 or 2015 increased the odds of the supervisor meeting or speaking with the officer regarding the initial EI alert by a factor of 4.23.

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[16] The process variables of whether the supervisor met or spoke with the flagged officer or asked the officer about any personal or job-related stressors were both included in this model as these process variables are mutually exclusive from the outcome variable of whether the supervisor provided individual summaries of the incidents that triggered the EI alert. More specifically, in any given case, a supervisor can provide these individual summaries or not, and still meet or speak with the officer and ask about stressors, or not.

Table 8

Logistic Regression Predicting Likelihood that Supervisor Provided Individual

Summaries (n = 201)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	-0.45	0.50	0.64
Hispanic	0.62	0.50	1.87
Other	0.46	0.65	1.59
Officer Gender			
Male	-0.40	0.48	0.67
Officer Division			
Criminal Investigations Division	-0.61	0.50	0.54
Tactical Support Division	-0.85	0.52	0.43
Other Divisions	-0.18	0.64	0.83
Supervisor Race			
Black	**1.31	0.48	3.71
Hispanic	-0.60	0.54	0.55
Other	-0.52	0.70	0.60
Supervisor Gender			
Male	0.33	0.53	1.39
Supervisor Tenure (in months)	0.004	0.002	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	-0.41	0.65	0.66
Combination of Any 5 or 7 in Six Months	-0.41	0.55	0.66
Other	1.24	0.73	3.47
Unconfirmed Sick Leave	0.19	0.47	1.21
Time to Initial EI Alert (in months)	-0.003	0.003	1.00
Year of the EI Alert			
2014-2015	***1.44	0.44	4.23
EI Process Variables			
Supervisor Met or Spoke with Officer			
Yes	0.227	0.523	1.25
Supervisor Asked Officer About Stressors			
Explicitly Addressed	-0.52	0.48	0.59
Implicitly Addressed	-0.58	0.48	0.56
Constant	-1.01	0.85	0.36
Nagelkerke R^2	0.15		

Note. *p≤.05. **p≤.01. ***p≤.001.

Predicting Likelihood of Asking About Stressors

The third logistic regression analysis model examined the policy requirement of supervisors asking officers about any personal or job-related stressors that may be better addressed in an employee assistance program and the results are presented in Table 9.[17]

The results demonstrated that unconfirmed sick leave was significant, with a coefficient of -1.05 and an odds ratio of 0.35. Thus, an officer's initial EI alert during this study period that was triggered for unconfirmed sick leave decreased the likelihood of the supervisor asking them about any personal or job-related stressors by a factor of 0.35.

In addition, the year of the EI alert was significant, with a coefficient of -0.85 and an odds ratio of .43. Thus, officers whose initial EI alerts were flagged in 2014 or 2015 decreased the odds of the supervisor asking officers about any personal or job-related stressors by a factor of .43.

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[17] The EI process variable of whether the supervisor met or spoke with the officer was not included in this logistic regression model given that the supervisor could not ask officers about any personal or job-related stressors if they did not meet or speak with these officers.

Table 9

Logistic Regression Predicting Likelihood that Supervisor Asked About Stressors (n = 201)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	0.75	0.52	2.12
Hispanic	0.70	0.50	2.01
Other	-0.03	0.68	0.97
Officer Gender			
Male	0.25	0.48	1.28
Officer Division			
Criminal Investigations Division	0.62	0.52	1.87
Tactical Support Division	0.14	0.50	1.15
Other Divisions	0.20	0.62	1.22
Supervisor Race			
Black	0.66	0.50	1.93
Hispanic	0.20	0.53	1.22
Other	0.55	0.73	1.72
Supervisor Gender			
Male	0.06	0.54	1.06
Supervisor Tenure (in months)	-0.001	0.002	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	0.37	0.67	1.44
Combination of Any 5 or 7 in Six Months	0.27	0.53	1.31
Other	0.18	0.73	1.19
Unconfirmed Sick Leave	*-1.05	0.46	0.35
Time to Initial EI Alert (in months)	-0.002	0.003	1.00
Year of the EI Alert			
2014-2015	*-0.85	0.41	0.43
EI Process Variables			
Supervisor Provided Individual Summaries			
Yes	-0.43	0.35	0.65
Constant	0.72	0.78	2.04
Nagelkerke R^2	0.15		

Note. *p≤.05. **p≤.01. ***p≤.001.

Predicting Formal Actions

The fourth and final logistic regression analysis model to address RQ2 examined

the outcome of the EI alert and intervention, specifically whether formal action was

taken. However, because only seven (or 3.48%) of the 201 officers' EI interventions

resulted in an outcome other than no action, this logistic regression model was not as

informative as originally proposed to be. Rather than providing a logistic regression

model here, a discussion of the characteristics of these seven EI intervention outcomes

resulting in formal action was more appropriate (see Appendix A for the results of the

descriptive statistics).

Of these seven EI interventions resulting in formal action, five (or 71.43%) were

given to white male officers who were assigned to the patrol division when they received

their initial EI alert. Regarding the supervisors who handled these EI alerts and

interventions with officers, all seven were white male supervisors with an average tenure

of 153 months or almost 13 years at the time of the EI intervention.

Concerning the EI case variables, three (or 42.86%) of the performance indicators

resulting in formal action were in the other category (alleged racial profiling, formal, and

citizen complaints; missed court appearances; supervisor-initiated discipline, and vehicle

pursuits), while two (or 28.57%) were for chargeable vehicle accidents and two (or

28.57%) were for unconfirmed sick leave. The average time to the initial EI alert for

those resulting in formal action was 107 months or almost nine years.

Regarding the EI process variables, five (or 71.43%) of supervisors met or spoke

with the officer about the EI alert and potential intervention, three (or 42.86%)

supervisors provided individual summaries of the incidents that triggered the EI alert, and

four (or 57.14%) supervisors failed to address whether officers had any personal or job-related stressors during the EI review process. The seven EI intervention outcomes for formal action taken were equally distributed at two each (or 28.57%) across coaching/mentoring and referral to the employee assistance program, and one each (or 14.29%) across letter of counseling, memo to file, and remedial training.

RQ3: Predicting Subsequent EI Alert

In addressing RQ3 which asked what factors affect the likelihood of a subsequent EI intervention after the initial EI intervention for those EI flagged officers, results from the logistic regression analysis examined this risk of a subsequent EI intervention to determine which officer and supervisor demographic and occupational factors and EI case factors predict this risk occurring.

Two logistic regression models were produced, as the first model included the three EI memo outcomes examined in RQ2 (supervisor met/spoke with officer, provided individual summaries of incidents, and asked officers about stressors) as separate variables, and the second model included these three policy requirements together as a scale variable to see if any combination of these factors would cumulatively affect the likelihood of a subsequent EI intervention. Results of the first logistic regression model are presented in Table 10.

The results demonstrate that the performance indicator for chargeable vehicle accidents was significant with a coefficient of -1.29 and an odds ratio of 0.27. Thus, officers that received their initial EI alert during this study period based on meeting or exceeding the threshold for unconfirmed sick leave decreased the likelihood of the officer receiving a subsequent EI alert by a factor of 0.27.

In addition, the time to initial EI alert was found to be significant with a coefficient of -0.01 and an odds ratio of 0.99. Thus, for each additional month it takes for an officer to receive their initial EI alert during this study period, the odds of the officer receiving a subsequent EI alert decreased by a factor of 0.99.

Finally, the year of the EI alert was significant, with a coefficient of -1.66 and an odds ratio of 5.28. Thus, officers whose initial EI alerts were flagged in 2014 or 2015 decreased the odds of the officer receiving a subsequent EI alert by a factor of 5.28.

Table 10

Logistic Regression Predicting Likelihood of a Subsequent EI Alert: Policy Requirements

Independent (n = 201)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	0.24	0.50	1.27
Hispanic	-0.55	0.48	0.58
Other	-0.15	0.66	0.86
Officer Gender			
Male	0.30	0.47	1.35
Officer Division			
Criminal Investigations Division	-0.11	0.51	0.90
Tactical Support Division	0.43	0.53	1.54
Other Divisions	-0.30	0.65	0.74
Supervisor Race			
Black	-0.10	0.47	0.91
Hispanic	-0.19	0.51	0.83
Other	0.42	0.69	1.53
Supervisor Gender			
Male	0.67	0.50	1.95
Supervisor Tenure (in months)	0.001	0.002	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	*-1.29	0.61	0.27
Combination of Any 5 or 7 in Six Months	-1.07	0.60	0.34
Other	-0.38	0.70	0.69
Unconfirmed Sick Leave	-0.79	0.49	0.46
Time to Initial EI Alert (in months)	*-0.01	0.003	0.99
Year of the EI Alert			
2014-2015	***1.66	0.46	5.28
EI Process Variables			
Supervisor Met or Spoke with Officer			
Yes	0.27	0.548	1.31
Supervisor Provided Individual Summaries			
Yes	0.03	0.35	1.03
Supervisor Asked Officer About Stressors			
Explicitly Addressed	-0.23	0.48	0.79
Implicitly Addressed	-0.16	0.48	0.85
Constant	-0.51	0.87	0.60
Nagelkerke R^2	0.14		

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Next, results of the second model which included these three policy requirements together as a scale variable to see if any combination of these factors or lack thereof would cumulatively affect the likelihood of a subsequent EI alert. This second model did not produce any significant changes from the prior logistic regression model that included these policy requirements separately. Thus, the combination of these policy requirements does not impact the likelihood of a subsequent EI alert differently than their impact as individual predictors. Results are presented in Table 11.

The results demonstrate that similar to the previous logistic regression model predicting the likelihood of a second EI alert with the process variables included separately, when these process variables are included as a scale variable, chargeable vehicle accidents was again significant, with a coefficients of -1.30 and an odds ratios of 0.27. Thus, officers that received their initial EI alert during this study period based on meeting or exceeding the threshold for chargeable vehicle accidents decreased the likelihood of the officer receiving a subsequent EI alert by a factor of 0.27.

In addition, time to the initial EI alert was again found to be significant with a coefficient of -0.01 and an odds ratio of 0.99. Thus, for each additional month it takes for an officer to receive their initial EI alert during this study period, the odds of the officer receiving a subsequent EI alert decreased by a factor of 0.99.

Finally, again similar to the prior logistic regression model, the year of the EI alert was significant, with a coefficient of 1.65 and an odds ratio of 5.21. Thus, officers whose initial EI alerts during this study period were flagged in 2014 or 2015, increased the odds of the officer receiving a subsequent EI alert by a factor of 5.21.

Table 11

Logistic Regression Predicting Likelihood of a Subsequent EI Alert: Policy Requirements

Cumulative (n = 201)

Variables	Coefficient	SE	Odds
Demographic and Occupational Variables			
Officer Race			
Black	0.21	0.50	1.23
Hispanic	-0.55	0.48	0.57
Other	-0.17	0.66	0.84
Officer Gender			
Male	0.29	0.47	1.34
Officer Division			
Criminal Investigations Division	-0.10	0.50	0.91
Tactical Support Division	0.42	0.52	1.51
Other Divisions	-0.27	0.65	0.76
Supervisor Race			
Black	-0.08	0.47	0.92
Hispanic	-0.17	0.50	0.85
Other	0.45	0.68	1.56
Supervisor Gender			
Male	0.67	0.50	1.96
Supervisor Tenure (in months)	0.001	0.002	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	*-1.30	0.61	0.27
Combination of Any 5 or 7 in Six Months	-1.04	0.60	0.35
Other	-0.38	0.69	0.68
Unconfirmed Sick Leave	-0.76	0.48	0.47
Time to Initial EI Alert (in months)	*-0.01	0.003	0.99
Year of the EI Alert			
2014-2015	***1.65	0.44	5.21
EI Process Variables			
Cumulative Policy Requirements	0.01	0.194	1.01
Constant	-0.41	0.83	0.67
Nagelkerke R^2	0.14		

Note. *p≤.05. **p≤.01. ***p≤.001.

RQ4: Predicting Time to Subsequent EI Alert

In addressing RQ4 which asked what factors influence the timing between EI alerts, results from the survival analysis examined the timing from an officer's initial EI alert and intervention to their first subsequent EI alert during this study period to identify which factors may impact repeated EI alerts for officers receiving interventions.[18]

First, of the 201 officers who received at least one EI alert resulting in an intervention during the study period, 118 officers (or 58.71%) were involved in a subsequent EI alert before the end of the study. Of these 118 officers, three officers were removed from this risk pool for the Cox regression models examining the relationship between one or more predictors and survival time due to these officers' initial and subsequent EI alerts occurring on the same day. With their timing between EI alerts being zero days, there is no opportunity for these officers to have time to failure. Given they are removed from this risk pool, a discussion of the characteristics of these three officers was appropriate here.

Of these three officers who received their initial and subsequent EI alert on the same day, all three were white male officers assigned to the patrol division when they received their initial EI alert during the study period. Regarding the supervisors who handled these EI alerts and potential intervention, all three were white male supervisors with an average tenure of 142 months or slightly over almost 12 years at the time of the

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[18] Days from an officer's initial EI alert to the initial intervention was considered for inclusion in this model to account for the difference in time between the identification of the at-risk behavior (i.e., EI alert) and the intervention with officer. However, the dates the supervisor met or spoke with the officer was not always provided in the supervisor response memos. The supervisor response memo date was considered for acting as a proxy for this intervention date, but 41 of the supervisor response memos did include dates they were written. Similarly, days from an officer's initial intervention to the subsequent EI alert was also considered for inclusion in this model to account for the time after the intervention to the officer's subsequent EI alert but could not be included due to the lack of dates for the 41 supervisor response memos.

EI alerts. Concerning the EI case variables, two (or 66.67%) of the performance indicators were for a combination of five in six months and one (or 33.33%) was triggered for use of force. The average time to the initial EI alert for those three officers was 12 months, with all three officers' initial EI alerts occurring between 2014 and 2015. Regarding the EI process variables, two (or 33.00%) supervisors met or spoke with the officer about the EI alert and potential intervention, two (or 66.67%) supervisors provided individual summaries of the incidents that triggered the EI alert, and only one (or 33.33%) supervisor addressed whether officers had any personal or job-related stressors during the EI review process. None of the three EI alert outcomes resulted in formal action taken with those officers.

Next, the results of the life table analysis, presented in Table 12. This life table represents an officer's time to failure, or the time until an officer's subsequent EI alert. The table is clustered into 2-month intervals until 24 months and is then presented in yearly intervals. This table also shows the total number of officers at the beginning of the sample, the number of failures (i.e., those officers receiving subsequent EI alert, and those officers censored at each interval (i.e., did not receive a subsequent EI alert during the study period). This table also indicates the aggregate proportion of officers who survive (i.e., do not receive a subsequent EI alert) at the end of each interval.

For the 118 officers who failed, the average time to failure was 22 months, or almost two years. However, within eight months, slightly more than half (or 52.54%) of the officers received a subsequent EI alert following their initial EI alert and intervention during this study period. Finally, of the officers who failed, 84.75% did so within the first two years of receiving their initial EI alert during this study period.

Table 12

*Life Table for Officers Time to Failure (Received a Subsequent EI Alert) (n= 201)*

Interval (months)[a]		Total	Subsequent EI Alert	Censored	Survival	SE	95% CI	
0	2	201	16	4	0.92	0.02	0.87	0.95
2	4	181	18	5	0.82	0.03	0.77	0.87
4	6	158	15	3	0.75	0.03	0.68	0.81
6	8	140	13	6	0.68	0.03	0.61	0.74
8	10	121	8	3	0.64	0.03	0.56	0.70
10	12	110	3	6	0.62	0.04	0.54	0.68
12	14	101	7	3	0.58	0.04	0.50	0.64
14	16	91	8	1	0.52	0.04	0.45	0.59
16	18	82	7	0	0.48	0.04	0.40	0.55
18	20	75	4	0	0.45	0.04	0.38	0.53
20	22	71	1	1	0.45	0.04	0.37	0.52
22	24	69	0	3	0.45	0.04	0.37	0.52
24[a]	36	66	7	6	0.40	0.04	0.33	0.47
36	48	53	5	9	0.36	0.04	0.29	0.44
48	60	39	3	12	0.33	0.04	0.26	0.41
60	72	24	3	14	0.29	0.04	0.22	0.37
72	84	7	0	7	0.29	0.04	0.22	0.37

Note: [a] Clustered into 2 month intervals until 24 months (2 years) and then presented yearly.

The results of the Kaplan-Meier failure estimate, examining the probability of failure from officers' EI alert to their subsequent EI alert is graphically presented in Figure 1. This represents the cumulative failure function over time. As seen in Figure 1, the probability of failure function increases sharply at the beginning of time, suggesting the risk of a subsequent EI alert is highest in the months immediately after the officer is involved in their initial EI alert. This failure function also reveals that for over 91% of officers', failure occurs within the three years from their initial EI alert during this study period.

Figure 1

Failure Rate of Officers Receiving a Subsequent EI Alert
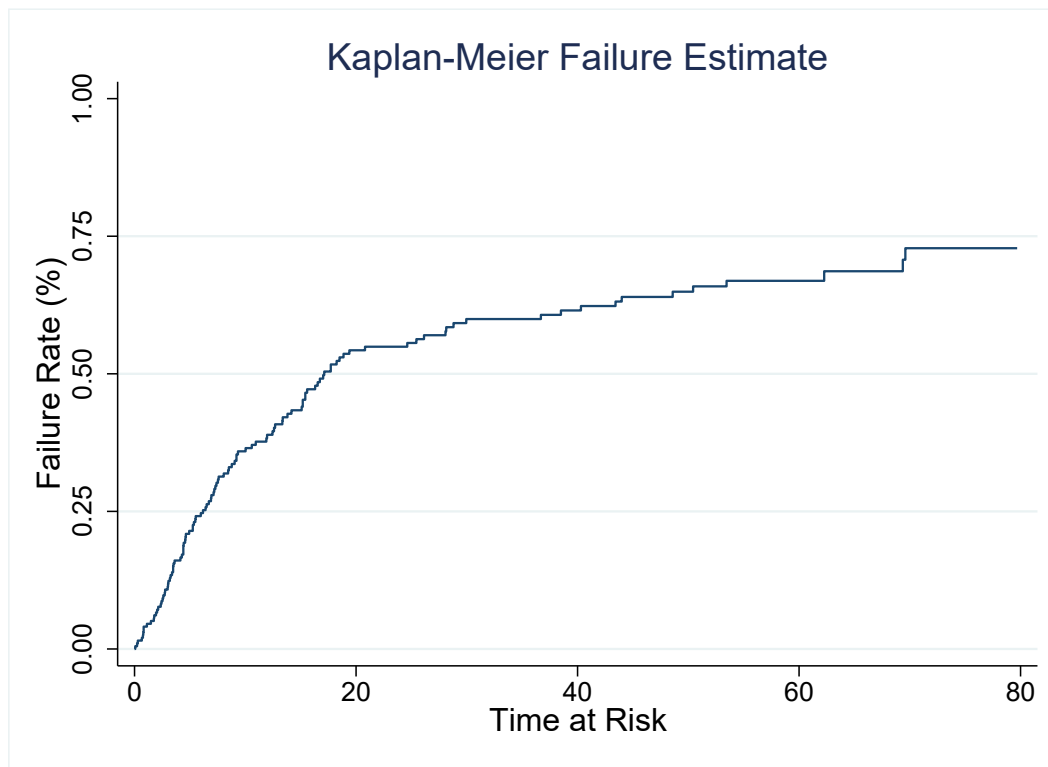
In addressing RQ4 to examine the relationship between one or more factors with the survival time, two Cox regression models were produced, as the first model included the three policy requirements examined in RQ2 (supervisor met/spoke with officer, provided individual summaries of incidents, and asked officers about stressors) as separate variables, and the second Cox regression model included these three policy requirements together as a scale variable to see if any combination of these factors would cumulatively affect the timing between the initial and subsequent EI alert. In addition,

each of these models included Results of the first Cox regression model are presented in Table 13.[19]

The results from the Cox regression model were similar in some ways and different in other ways to the logistic regression model. In a Cox regression model, positive coefficients indicate a greater rate of risk of failure or shorter survival times, whereas negative coefficients indicate a slower rate of risk of failure or longer survival times (Cox, 1972).

First, while not significant in the logistic regression model, being a Hispanic officer was significant in this Cox regression model with a coefficient of -0.69 and a hazard ratio of 0.50. Specifically, Hispanic officers decreased their rate of failure by a factor of 0.50, having a longer time to a subsequent EI alert as compared to white officers, all else equal.

Second, supervisor tenure was significant in the Cox regression model with a coefficient of 0.002 and a hazard ratio of 1.00. While supervisor tenure in months was an important measurement for some supervisors hired closer to the beginning of the study

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[19] The final sample of 201 officers from prior models was reduced to 198 officers for these two Cox regression models due to three officers having failed, or receiving their initial and subsequent EI alert, on the same day. Thus, their time at risk was zero days, and they were removed from the risk pool. The prior logistic regression models were run with both this sample of 198 officers and compared to the sample of 201 officers, and there were no significant differences across models. Furthermore, the logistic regression models are predicting likelihood, while the Cox regression models are predicting timing, which are independent concepts, and thus, this difference in sample sizes are appropriate. In addition, while using the second and third EI alert rather than the first to second EI alert during this study period for these three officers was considered, the central focus of this study is the prediction of any subsequent EI alert, to address the supervision and accountability of officers. Furthermore, the type of performance indicator from the first to second EI alert for these three officers was use of force and the combination of any five or seven performance indicators in six months. This is an important distinction as the reasons for the EI alert and the determination of an appropriate intervention for each of these two performance indicators or EI alert should be evaluated independently by supervisors, regardless of occurring on the same day. Finally, not using the second to the third EI alert for these three officers allows for consistency in examination, as the processes for supervisors may be different from the across EI alerts and interventions based on policy changes, training, assignment, supervisors, etc. Thus, it was important for this study to remove these three officers from the risk pool for the Cox regression models to maintain the examination of the first to second EI alert during this study for all officers.

period, to assist with interpretation, supervisor tenure was rescaled to years and included again in the Cox regression model. This resulted in officer tenure with a coefficient of 0.03 and a hazard ratio of 1.03. Thus, officers who had more tenured supervisors handle their initial EI alert during this study period had a shorter time to a subsequent EI alert, compared to those officers who had less tenured supervisors handle their initial EI alert during this study period, all else equal.

Third, and similar to the logistic regression model, the Cox regression model results indicated that the performance indicator for chargeable vehicle accidents was significantly related to officers receiving a subsequent EI alert, with a coefficient of -0.99 and a hazard ratio of 0.37. Specifically, officers who's initial EI alert was triggered due to chargeable vehicle accidents decreased their rate of failure by a factor of 0.37. Thus, officers who received their initial EI alert due to meeting or exceeding the threshold for chargeable vehicle accidents had a longer time to a subsequent EI alert, compared to officers whose initial EI alert was triggered by the use of force, all else equal.

Fourth, results demonstrated that the performance indicator for the combination of any five or seven performance indicators in six months and unconfirmed sick leave were also significantly related to officers receiving a subsequent EI alert, with coefficients of -0.69 and -0.89 and hazard ratios of 0.50 and 0.41, respectively. Specifically, officers who's initial EI alert was triggered due to either the combination of any five or seven performance indicators in six months or unconfirmed sick leave decreased their rate of failure by factors of 0.50 and 0.41, respectively. Thus, officers who received their initial EI alert due to meeting or exceeding the threshold for either the combination of any five or seven performance indicators in six months or unconfirmed sick leave had a longer

time to a subsequent EI alert, compared to officers whose initial EI alert was triggered by use of force, all else equal.

Fifth, the results indicated that the time to the officers' initial EI alert was significant, with a coefficient of -0.004 and a hazard ratio of 1.00. While the time to the officer's initial EI alert in months was an important measurement for some officers hired after the beginning of the study period, to assist with interpretation, time to the officer's initial EI alert during this study period was rescaled to years and included again in the Cox regression model. This resulted in the time to the officer's initial EI alert with a coefficient of -0.05 and a hazard ratio of 0.95. Specifically, for each additional year without receiving an initial EI alert, an officer's rate of failure decreased by a factor of 0.95, increasing their time before being involved in a subsequent EI alert, all else equal.

Finally, the year of the EI alert was significant, with a coefficient of 0.60 and a hazard ratio of 1.82. Specifically, officers whose EI alerts were flagged in 2014 or 2015 increased their rate of failure by a factor of 1.82. Thus, officers whose EI alerts were flagged in 2014 or 2015 had a shorter time to a subsequent EI alert, compared to officers whose EI alerts were flagged between 2016 and 2020, all else equal.

Table 13

Cox Regression Predicting Time to Failure: Policy Requirements Independent (n = 198)

Variables	Coefficient	SE	Hazard Ratio
Demographic and Occupational Variables			
Officer Race			
Black	0.23	0.29	1.26
Hispanic	*-0.69	0.34	0.50
Other	-0.40	0.42	0.67
Officer Gender			
Male	0.22	0.30	1.25
Officer Division			
Criminal Investigations Division	-0.21	0.32	0.81
Tactical Support Division	0.43	0.31	1.54
Other Divisions	-0.28	0.39	0.75
Supervisor Race			
Black	-0.04	0.32	0.96
Hispanic	0.13	0.33	1.13
Other	0.40	0.38	1.49
Supervisor Gender			
Male	0.17	0.39	1.19
Supervisor Tenure (in months)	*0.002	0.001	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	*-0.99	0.48	0.37
Combination of Any 5 or 7 in Six Months	*-0.69	0.33	0.50
Other	-0.12	0.44	0.89
Unconfirmed Sick Leave	**-0.89	0.30	0.41
Time to Initial EI Alert (in months)	*-0.004	0.002	1.00
Year of the EI Alert			
2014-2015	*0.60	0.27	1.82
EI Process Variables			
Supervisor Met or Spoke with Officer			
Yes	0.24	0.33	1.28
Supervisor Provided Individual Summaries			
Yes	-0.14	0.21	0.87
Supervisor Asked Officer About Stressors			
Explicitly Addressed	0.11	0.29	1.11
Implicitly Addressed	0.11	0.31	1.12

Note. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Next, results of the second Cox regression model included the three policy requirements together as a scale variable to see if any combination of these factors or lack thereof would cumulatively affect the timing between an officer's initial EI alert and intervention and subsequent EI alert. Results are presented in Table 14.

The results demonstrate that while being a Hispanic officer and supervisor tenure became slightly insignificant in this model, chargeable vehicle accidents, the combination of any five or seven performance indicators in six months, unconfirmed sick leave, time to the initial EI alert, and the year of the EI alert all remained significant in this Cox regression model. Specifically, the performance indicators of chargeable vehicle accidents, the combination of any five or seven performance indicators in six months, and unconfirmed sick leave were significantly related to officers receiving a subsequent EI alert, with coefficients of -0.93, -0.66, and -0.90, and hazard ratios of 0.39, 0.52, and 0.41, respectively. Thus, officers who's initial EI alert was triggered due to chargeable vehicle accidents, the combination performance indicator, or unconfirmed sick leave decreased their rate of failure or had a longer time to their subsequent EI alert by factors of 0.39, 0.52, and 0.41, respectively, compared to officers who initial EI alert was triggered by the use of force performance indicator.

In addition, the time to the officers' initial EI alert was again significant, with a coefficient of -0.003 and a hazard ratio of 1.00. Again, to assist with interpretation, time to the officer's initial EI alert was rescaled to years and included in the Cox regression model. This resulted in the time to the officer's initial EI alert with a coefficient of -0.05 and a hazard ratio of 0.95. Specifically, for each additional year without receiving an

initial EI alert, an officer's rate of failure decreased by a factor of 0.95, thus increasing their time before being involved in a subsequent EI alert, all else equal.

Finally, the year of the EI alert was also significant, with a coefficient of 0.48 and a hazard ratio of 1.61. Specifically, officers whose initial EI alerts were flagged in 2014 or 2015 increased their rate of failure by a factor of 1.61. Thus, having a shorter time to a subsequent EI alert, compared to officers whose EI alerts were flagged between 2016 and 2020, all else equal.

Table 14

Cox Regression Predicting Time to Failure: Policy Requirements Cumulative (n = 198)

| Variables	Coefficient	SE	Hazard Ratio
Demographic and Occupational Variables			
Officer Race			
Black	0.25	0.29	1.29
Hispanic	-0.62	0.33	0.54
Other	-0.44	0.42	0.64
Officer Gender			
Male	0.27	0.30	1.32
Officer Division			
Criminal Investigations Division	-0.16	0.31	0.85
Tactical Support Division	0.47	0.30	1.60
Other Divisions	-0.23	0.38	0.80
Supervisor Race			
Black	-0.07	0.32	0.93
Hispanic	0.13	0.32	1.14
Other	0.43	0.38	1.53
Supervisor Gender			
Male	0.18	0.39	1.20
Supervisor Tenure (in months)	0.002	0.001	1.00
EI Case Variables			
Type of Performance Indicator			
Chargeable Vehicle Accidents	*-0.93	0.46	0.39
Combination of Any 5 or 7 in Six Months	*-0.66	0.33	0.52
Other	-0.16	0.43	0.85
Unconfirmed Sick Leave	**-0.90	0.29	0.41
Time to Initial EI Alert (in months)	*-0.003	0.002	1.00
Year of the EI Alert			
2014-2015	*0.48	0.25	1.61
EI Process Variables			
Cumulative Policy Requirements	0.091	0.12	1.10

Note. *p≤.05. **p≤.01. ***p≤.001.

The results of the Kernel-Smoothed hazard estimate, a graphical representation of an officer's rate of risk of a subsequent EI alert at any given point in time is presented in Figure 2. This represents the cumulative failure function over time. This hazard rate

reflects the instantaneous relative rate of risk of the officer being involved in a subsequent EI alert at any point in time, given they have survived up to that point. As seen in Figure 2, each hazard rate is greatest shortly after an officer received their initial EI alert and quickly declines thereafter.

Figure 2

Kernel Smoothed Hazard Rate of Officers Receiving a Subsequent EI Alert
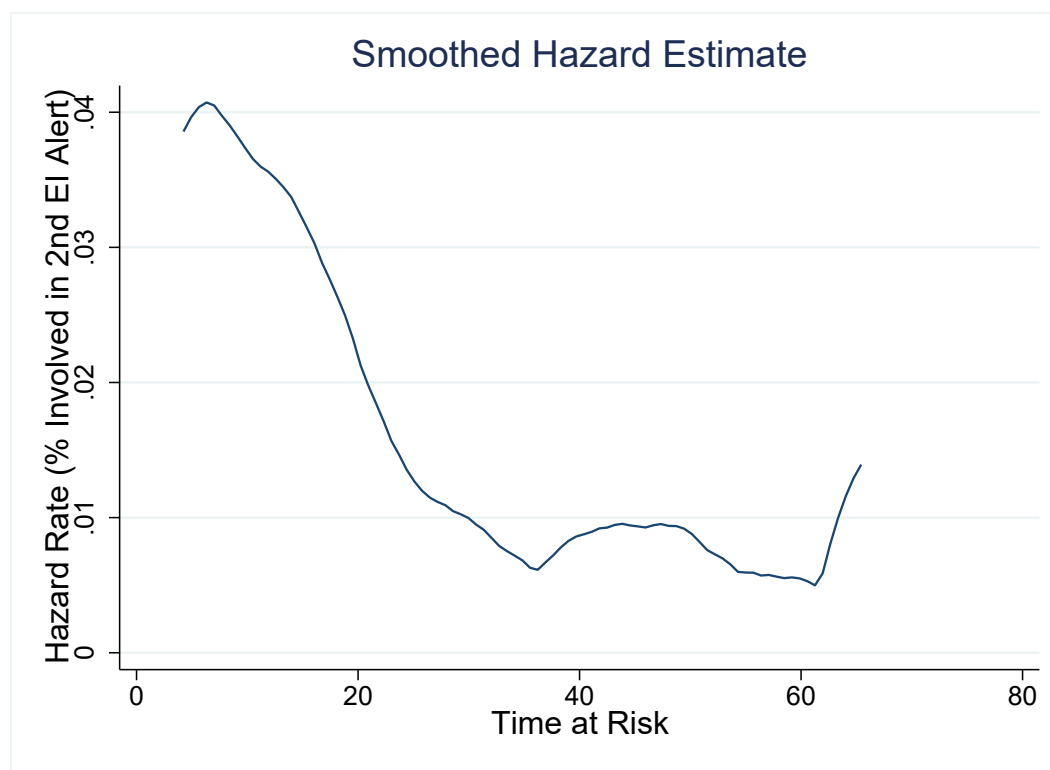
Overall, the analyses presented above help to highlight which officers are at a higher risk of being flagged by the EI system, and which individual, occupational, and EI case and process factors matter in this police agency's EI system including when the supervisors are handling these initial and subsequent EI alerts and interventions with EI flagged officers. This current study has offered key findings that provide important insights into these four research questions and how this impacts police agencies and their

use of EI systems including handling EI alerts and interventions. This also offers

important direction for future research in this area, and critical policy implications. These

areas will be discussed in this next section.

CHAPTER V

Discussion and Conclusion

This final chapter provides an overview of this current study and future considerations and is divided into seven sections. The first section of this chapter summarizes the prior EI system scholarship and its gaps. The second section highlights the importance of the current study in addressing the gap in prior EI research and restates the goal and purpose of this study, including the research questions addressed. The third section highlights the key findings for each of the four research questions addressed in this study and their relationship to both prior literature and the big picture. The fourth section discusses the limitations of this current study, while the fifth section offers opportunities for future research surrounding EI systems or programs including EI alerts, the EI review process, and the EI interventions and their outcomes. The sixth section outlines the empirical and policy implications of this study's key findings. The empirical implications outline the methodological contributions to the EI literature while the policy implications are key for police agencies who have implemented or are considering implementing an EI system or program. The seventh and final section offers a conclusion including the importance and impact of this current study.

Summary of Extant Scholarship

EI systems are data-driven, supervisory management and accountability tools that track performance indicators to identify and address at-risk officer behavior early. This type of accountability tool is critical given that a small proportion of officers are consistently responsible for most problematic behavior and high-risk or critical incidents (Brandl et al., 2001; Christopher Commission, 1991; Harris, 2011, 2014; Kane & White,

2009; McCluskey & Terrill, 2005; McElvain & Kposowa, 2004, 2008; Terrill & Ingram, 2016; Walker, 2001; Walker et al., 2000; White & Kane, 2013) and early onset of officer misconduct increases the risk of a longer duration and higher frequency of problematic behavior (Gullion et al., 2021a, 2021b; Harris, 2009, 2010a, 2010b, 2011; Harris & Worden, 2014; Kane & White, 2009).

As of June 30, 2016, roughly 68 percent of mid- to large-sized U.S. police agencies have implemented an EI system (U.S. DOJ Bureau of Justice Statistics LEMAS, 2020). Yet only a limited number of EI systems studies have been conducted (Bazley et al., 2009; Bobb et al., 2009; Briody & Prenzler, 2020; Carton et al., 2016; Cubitt et al., 2020; Davis et al., 2005; Davis et al., 2002; Helsby et al., 2018; James et al., 2020; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). While most studies have found that EI systems have a positive effect on officer misconduct and accountability, this is primarily based on a reduction in performance indicators such as complaints or uses of force (Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). Beyond this, some EI studies have found that a prior history of adverse events and misconduct investigations or secondary employment were the most predictive performance indicators of future adverse events (Carton et al., 2016; Cubitt et al., 2020; Helsby et al., 2018).

However, this extant EI scholarship has yet to examine the EI interventions or the supervisors' execution of this EI review process. This assessment is critical given that a high number of supervisors' reviews of EI alerts may have an outcome of "no intervention necessary" or officers may be flagged numerous times by the EI system,

questioning the impact of the EI inventions themselves. This current dissertation study is an attempt to fill this critical gap in EI literature regarding the supervisors' execution of the EI review process including EI alerts and interventions with officers.

Summary of the Current Study

This current study took a progressive approach to examine four key areas: 1) the characteristics that distinguish officers who have and have not been flagged by the EI system; 2) the process and outcomes of EI interventions including how they are handled by supervisors; 3) the predictors of the likelihood of repeated EI alerts; and 4) the predictors of the timing between repeated EI alerts.

Key Findings

To examine the factors that affect the supervisors' execution of the EI review process or policy requirements and intervention outcomes, and the likelihood and timing of initial and repeated EI alerts occurring, this current study utilized EI data and supervisors' response memos articulating their review and determination of EI alerts and interventions from a large, metropolitan police agency in the U.S. Officer and supervisor demographic and occupational factors, and EI case and process factors were considered. A summary of the key findings is presented in Table 15.

Table 15

Summary of Findings

Variables	Significant for the Likelihood of…					
	RQ1: An Officer Receiving an EI Alert (n=647)	RQ2: Supervisor Met/Spoke w/ Officer (n=201)	RQ2: Supervisor Provided Individual Summaries (n=201)	RQ2: Supervisor Asked Officer About Stressors (n=201)	RQ3: A Subsequent EI Alert (n=201)[a]	RQ4: Timing Between EI Alerts (n=198)[b]
Demographic and Occupational Variables						
Officer Race						
Black	NS	NS	NS	NS	NS	NS
Hispanic	NS	NS	NS	NS	NS	(-)
Other	NS	NS	NS	NS	NS	NS
Officer Gender						
Male	(+)	NS	NS	NS	NS	NS
Officer Tenure (in months)	(-)	--	--	--	--	--
Officer Division						
Criminal Investigations Division	NS	NS	NS	NS	NS	NS
Tactical Support Division	NS	NS	NS	NS	NS	NS
Other Divisions	(-)	NS	NS	NS	NS	NS
Supervisor Race						
Black	--	NS	(+)	NS	NS	NS
Hispanic	--	NS	NS	NS	NS	NS
Other	--	NS	NS	NS	NS	NS
Supervisor Gender						
Male	--	NS	NS	NS	NS	NS
Supervisor Tenure (in months)	--	(-)	NS	NS	NS	(+)
EI Case Variables						
Type of Performance Indicator						
Chargeable Vehicle Accidents	--	NS	NS	NS	(-)	(-)
Combination of Any 5 or 7 in Six	--	NS	NS	NS	NS	(-)
Other	--	NS	NS	NS	NS	NS
Unconfirmed Sick Leave	--	NS	NS	(-)	NS	(-)
Time to Initial EI Alert (in months)	--	NS	NS	NS	(-)	(-)
Year of the EI Alert						
2014-2015	--	(-)	(+)	(-)	(+)	(+)
EI Process Variables						
Supervisor Met or Spoke with Officer						
Yes	--	--	NS	--	NS	NS
Supervisor Provided Individual Summaries						
Yes	--	NS	--	NS	NS	NS
Supervisor Asked Officer About Stressors						
Explicitly Addressed	--	--	NS	--	NS	NS
Implicitly Addressed	--	--	NS	--	NS	NS
Cumulative Policy Requirements	--	--	--	--	NS	NS

Note. (+) = significant increase, (-) = significant decrease, NS = non-significant, and -- = not applicable. [a] This model did not substantially change whether the process variables were combined into the cumulative policy requirements variable or remained separate. [b] Hispanic officers and supervisor tenure became slightly insignificant when the cumulative policy requirements variable was included in the model.

Key Findings for Predicting Non-Flagged and Flagged Officers (RQ1)

In considering the four key areas examined in this current study and their associated research questions, the first research question (RQ1) examined the characteristics that distinguish non-flagged and flagged officers. This first research question only examined officer demographic and occupational factors given that non-flagged officers were included in this sample and thus, supervisor and EI case factors would not be associated with them during this study period.

Demographic and Occupational Factors. Regarding officer demographic and occupational factors for the EI review and intervention process, results demonstrated that officer gender, tenure, and division were significantly associated with the likelihood of receiving an EI alert during this study period.

Specifically, being a male officer increases the odds of receiving an EI alert before the end of the study period. This aligns with prior literature that has found male officers have a higher likelihood of officer misconduct including involvement in use of force incidents and receiving complaints, compared to female officers (Brandl et al., 2001; Harris, 2010a; Hickman et al., 2000; Lawton, 2007; Lersch & Mieczkowski, 1996; McCluskey & Terrill, 2005; Paoline & Terrill, 2007; Willits & Makin, 2018).

Officer tenure was also significant, with each additional month of experience decreasing the odds of receiving an EI alert during this study period. While more than half of the officers were hired prior to the beginning of the study period and may have had more time to gain maturity and experience on the job, it is noted that this data does not reflect any EI alerts received prior to this time. However, prior research has found young and inexperienced officers receive more citizen complaints, are more likely to be investigated for use of force allegations, and are more likely to engage in misconduct, as compared to older and more experienced officers (Brandl et al., 2001; Harris, 2009, 2010a, 2014; Harris & Worden, 2014; Lersch & Mieczkowski, 1996, 2000; McElvain & Kposowa, 2004; Terrill & Ingram, 2016).

Finally, officers that were assigned to the other divisions category, reduced their likelihood of receiving an EI alert during this study as compared to officers working in the patrol division. This finding is not surprising given the other divisions category includes administrative units (e.g., personnel and recruiting, jail, training academy, warrants, etc.) not regularly working in the field, while officers in patrol division consistently make traffic and pedestrian stops and arrests and interact with community members. Prior research has also found officers working busier or high crime areas often result in being involved in more use of force, receiving more complaints, having more officers on-scene with them, and making more arrests (Brandl & Stroshine, 2013; Gullion et al., 2021a; Harris, 2014; Harris & Worden, 2014; Lersch, 2002; Lersch et al., 2006).

Key Findings for Predicting EI Memo Outcomes (RQ2)

The second research question (RQ2) in this study examined the EI review and intervention process (i.e., EI memo outcomes for policy requirements) handled by supervisors.

Demographic and Occupational Factors. Regarding officer demographic and occupational factors for the EI review and intervention process, results demonstrated that while officer demographic and occupational factors did not reach significance for any of the process models, the supervisor demographic and occupational factors reached significance across two of the three process models. Supervisor race and tenure were both significant across one of the three process models. Specifically, black supervisors increased the likelihood of the supervisor providing individual summaries of the incidents that triggered the initial EI alert during this study, as compared to white supervisors. While prior literature has yet to examine EI intervention memos, it may be that black supervisors feel at risk of more scrutiny by command staff and thus, provide individual summaries more often compared to white supervisors. Another possibility is that black supervisors may be more compliant with agency policy due to their being better leaders, the desire to promote to positions held less often by minorities, or believing in the agency mission, vision, and values including its leadership more so than their counterparts. Additionally, supervisor tenure decreased the odds of the supervisor meeting or speaking with officers regarding their initial EI alert and intervention during this study. Thus, for each additional month of supervisor tenure, the odds of the supervisor meeting or speaking with officers regarding their initial EI alert and intervention during this study was significantly reduced. As supervisor tenure or experience at this agency increases, it

may lead these supervisors to feeling their daily and ongoing supervision with officers in their unit is sufficient, and therefore meeting or speaking with officers about their EI alert is unnecessary. In addition, these more experienced supervisors may decide to informally monitor these officers rather than meet or speak with them directly.

   EI Case Factors. Regarding EI case factors for the EI review and intervention process and EI memo outcomes, results demonstrated that the type of performance indicator and the year of the EI alert during this study period were both significantly associated with one and all three of the process models, respectively. Specifically, officers initial EI alert being triggered for meeting or exceeding the threshold for unconfirmed sick leave decreased the likelihood of supervisors asking those officers about any personal or job-related stressors as compared to officers with an initial EI alert during this study that was triggered for use of force incidents. Given that supervisors were less likely in those early years between 2014-2015 to ask officers about any personal or job-related stressors, it may have been that the agency placed less importance on officer mental health and wellness than they did in the later years from 2016-2020. While they required supervisors to ask about these stressors in their agency policy early on, it may have not been as emphasized as it was after national conversations were had and research supporting officer safety and wellness came out, such as in the President's Task Force on 21st Century Policing (2015). Another possible explanation may be that if their commanders were not providing oversight of the EI alert and intervention process during those earlier years, supervisors may have felt they would not be held accountable for not complying with policy. Therefore, supervisors may have felt that broaching the

subject of personal or job-related stressors with officers was not worth the effort or what they might have seen as an uncomfortable or unwarranted conversation.

Additionally, the year of the EI alert decreased the likelihood of both supervisors meeting or speaking with officers regarding their initial EI alert and intervention during this study period and asking those officers about any personal or job-related stressors. Thus, for officers whose initial EI alert was flagged in 2014 or 2015, the odds of the supervisor meeting or speaking with officers regarding their initial EI alert and intervention during this study and asking those officers about any personal or job-related stressors was significantly reduced. In contrast, for officers whose initial EI alert during this study period was flagged in 2014 or 2015, the odds of the supervisor providing individual summaries for the incidents that triggered the initial EI alert and intervention during this study period was significantly increased. Given the integration into the new records management system in 2014, one explanation may be supervisors were in the practice of providing individual summaries prior to 2014, but that the increase in more strict policy requirements for the EI process in other areas may have increased supervisors' awareness of complying with the EI policy including meeting with the officer and asking about stressors in those later years from 2016-2020.

Key Findings for Predicting a Subsequent EI Alert (RQ3)

Research question three (RQ3) in this study examined the likelihood of an officer receiving a subsequent EI alert after their initial EI alert and intervention during this study period. While officer demographic and occupational factors were again not significantly associated with the likelihood of officers receiving subsequent EI alert during this study period, several EI case factors were found to be significant.

EI Case Factors. Regarding the case factors for the EI alert outcomes, results demonstrated that the type of performance indicator, the time to the initial EI alert, and year of the EI alert were all significant with officers receiving a subsequent EI alert during the study period.

Specifically, initial EI alerts during this study period that were triggered due to meeting or exceeding the threshold for chargeable vehicle accidents decreased the likelihood of officers receiving a subsequent EI alert during this study period. One potential explanation for this significance may be the visibility that comes with officers being involved in a chargeable vehicle accident has enough stigma or embarrassment attached to it that officers reduce their field activities or proactive engagements so that future EI alerts or interventions do not occur. Another explanation may be that chargeable vehicle accidents by their nature usually result in disciplinary action, whether formal or informal, and therefore such discipline is enough of a deterrent to prevent future EI alerts and interventions. Another final potential explanation is that officers may rely more on their partners driving their police vehicle after their initial chargeable vehicle accident, and thus, reduce their risk of receiving another chargeable vehicle accident or combination threshold that includes this type of performance indicator.

Time to the initial EI alert was also significant, decreasing the likelihood of officers receiving a subsequent EI alert after their initial EI alert and intervention during this study period. Thus, for each additional month until an officers' initial EI alert during this study period, the odds of receiving a subsequent EI alert was significantly reduced. This finding suggests that the timing of repeated EI alerts is important, and that perhaps those officers receiving more tailored or appropriate interventions with their supervisors

for earlier EI alerts are modifying their behavior more so than their counterparts, resulting in a reduced likelihood of receiving future EI alerts.

Finally, the year of the EI alert was significant, increasing the likelihood of officers receiving a subsequent EI alert after their initial EI alert and intervention during this study period. Thus, for officers' whose initial EI alert was triggered in 2014 or 2015, the odds of receiving a subsequent EI alert significantly increased. One potential explanation may be that the supervisors' process for the execution of these EI alerts and interventions were different in these earlier years before an annual audit of the EI policy and program began in 2016. Supervisors may not have been adhering to the policy requirements such as meeting with the officer, providing individual summaries, or asking about stressors prior to 2016, which meant that officers were not receiving appropriate interventions and thus not modifying their behavior, resulting in repeated future EI alerts.

Key Findings for Predicting Time to Subsequent EI Alert (RQ4)

The fourth and final research question (RQ4) in this study examined the timing between officers initial EI alert and intervention and their subsequent EI alert during this study period.

Demographic and Occupational Factors. Regarding officer demographic and occupational factors for the EI review and intervention process, results demonstrated that officer race was significantly associated with the timing between officers initial and subsequent EI alert during this study period. Specifically, Hispanic officers decreased their rate of risk of failure (i.e., receiving a subsequent EI alert) or resulted in a longer time to their subsequent EI alert as compared to white officers, all else equal. While prior literature has yet to examine the timing between EI alerts, it may be that Hispanic officers

feel at risk of more scrutiny in future incidents after receiving EI interventions from their supervisors as compared to white officers, and thus, reduce their risk of future incidents by engaging in less proactive policing. Another possibility is that Hispanic officers may take their EI interventions with supervisors more seriously due to their desire to promote to positions held less often by minorities, and thus modify their behavior by increasing their communication skills and de-escalation techniques more so than their counterparts.

In addition, supervisor tenure was also found to be significant, increasing the rate of risk of failure (i.e., receiving a subsequent EI alert). Thus, for each additional month of supervisor tenure for handling those officers receiving their initial EI alert during the study period, an officer's rate of failure increased. Thus, officers that have more tenured supervisors handle their initial EI alert during this study period have a shorter amount of time before receiving a subsequent EI alert, compared to their counterparts. One possible explanation may be that more tenured supervisors may take the execution of EI alerts and interventions less seriously than their younger or less tenured counterparts, which may be perceived by those officers receiving EI interventions as less important to be concerned with modifying their behavior.

EI Case Factors. Regarding EI case factors for the EI review and intervention process, results demonstrated that the type of performance indicator for the initial EI alert during this study period, time to the initial EI alert, and year of the EI alert were all significantly associated with time to a subsequent EI alert.

Specifically, officers initial EI alert being triggered for meeting or exceeding the threshold for chargeable vehicle accidents, the combination of any five or seven performance indicators, or unconfirmed sick leave all decreased their rate of risk of

failure. Thus, officers with an initial EI alert during this study period that was triggered for any of these three performance indicators had a longer time before receiving a subsequent EI alert, compared to officers with their initial EI alert triggered for use of force incidents. One explanation for these findings may be that chargeable vehicle accidents, the combination of any five or seven performance indicators, or unconfirmed sick leave may not be viewed as high-risk activities in danger of repeated EI alerts in a shorter time as opposed to use of force incidents. Another explanation may be that the problematic behavior surrounding these particular performance indicators might be more visible for a supervisor to review and provide appropriate intervention for, than is use of force incidents that are less evident unless the supervisor is on-scene or reviews the officer's body worn camera footage to identify problematic behavior.

In addition, time to the initial EI alert was also significant, decreasing the rate of risk of failure for officers during this study period. Thus, for each additional month without receiving an initial EI alert during this study period, an officer's rate of failure was significantly decreased, and thus having a longer time before being involved in a subsequent EI alert, all else equal. Again, this finding suggests that the timing of repeated EI alerts is critical and that perhaps more tailored or appropriate interventions with supervisors for earlier EI alerts are modifying officers' behavior more so than their counterparts receiving less appropriate interventions, resulting in a shorter time to their receiving future EI alerts.

Finally, the year of the EI alert was significant, increasing the rate of risk of failure during this study period. Thus, officers' whose initial EI alert was triggered in 2014 or 2015 significantly increased their rate of failure, and thus having a shorter time

before being involved in a subsequent EI alert, all else equal. Again the supervisors'

process for the execution of these EI alerts and interventions may have been different in

these earlier years before an annual audit of the EI policy and program began in 2016,

resulting supervisors not providing appropriate interventions, and thus officers not

modifying their behavior, leading to repeated future EI alerts in a shorter time frame.

Limitations

While this dissertation study has provided valuable insights in the EI review

process and supervisors' execution of EI alerts and interventions, it is not without

limitations. Given this study examined data from one police agency, this limits the

generalizability of these findings across other police agencies. Also, due to limitations in

the availability of measures in the performance indicator data (e.g., use of force incidents,

complaints, vehicle pursuits, etc.), other measures of individual, situational,

organizational, and community characteristics affecting the EI process outcomes, and the

likelihood of and timing between EI alerts may not be accounted for.

Such factors may include officer and supervisor workgroups, education, prior

military experience, supervisor styles and length of supervisor-officer relationship, and

for incidents that triggered the EI alerts, citizen demographics, proactive stops, level of

force, complaint allegation, number of officers on-scene, area occurred, neighborhood

composition, outcome for citizens (e.g., injury, arrest, etc.), and disciplinary action for

officers, among other factors. Additional EI case factors that may be beneficial to explore

include the total number of prior EI alerts, the types of incidents that triggered prior EI

alerts and their outcomes (i.e., any formal action taken) throughout the officer's career,

and whether the types of incidents that triggered the EI alerts were the same or different between EI interventions.

Additionally, this study also examined officers' initial and subsequent EI alert that occurred during this study period and recognized that this may limit these findings. Many of the officers included in this study likely had at least one if not multiple EI alerts and interventions prior to January 1, 2014, the beginning of this study period. Furthermore, while an officer's total number of EI alerts after the initial and subsequent EI alert was not examined in this study, officers received up to 15 EI alerts during this study period. Specifically, of the 253 officers with at least one EI alert during this study period, 107 officers (or 42.29%) had one EI alert, 118 officers (46.64%) had between two and five EI alerts, 21 officers (or 8.30%) had between six and ten EI alerts, and 7 officers (or 2.77%) had between 11 and 15 EI alerts during this study period. Thus, analyzing officers' additional EI alerts may provide insight for factors affecting the EI process outcomes, and the likelihood and timing of their future recurrence of officer misconduct. This may also be informative for whether the EI interventions are achieving their intended purpose of addressing at-risk officer behavior early.

The current study also relied on the examination of EI alerts that were triggered for sworn officers in this police agency. Sworn personnel such as first-line supervisors, mid-level managers, and commanders nor civilian employees were included in this study. The idea was to focus on officers that worked in patrol or in the field, or had regular interactions with the community, and thus engaged in higher-risk activities tracked by the EI system. Given this, these EI alerts and interventions are not representative of all EI

alerts and interventions handled in this police agency during this same study period, limiting generalizability.

Another limitation of this study includes the inability to verify the accuracy of the information in each supervisor response memo. It is unknown whether the information provided by the supervisor accurately represents the experiences of those involved. This includes what the police officers are aware of and find important regarding the EI review process and execution of their EI alert and intervention and the incidents that triggered the EI alerts, as well as the mindset and reasoning behind the decisions made by supervisors in handling these EI alerts and interventions with officers.

The accuracy and timing of the data collection across all the performance indicators tracked by the EI system may also limit these findings and their generalizability. Furthermore, because this is the first study to examine EI interventions and specifically the supervisors' EI review process and execution of the EI alerts and interventions, replication is required before strong conclusions can be reached.

Future Research

Limitations notwithstanding, there are many opportunities for future research in this area of EI systems, especially given that prior EI studies have yet to examine the EI interventions themselves. Given the large number of EI systems utilized, the cost to implement and maintain an EI system, and the research demonstrating mostly positive results of EI systems, scholars should continue evaluating how EI systems are utilized and whether they are successful. Scholars are also encouraged to explore EI systems specifically as it relates to the EI review process by supervisors and the execution of these EI alerts and interventions with officers. Having an effective EI system to hold

officers and agencies accountable will assist in addressing and preventing at-risk officer behavior, ensuring police legitimacy and procedural justice, and building community trust and partnerships.

Future research should examine EI data including EI alerts, interventions, and supporting materials surrounding the EI review and execution process from other police agencies in other regions and of varying agency sizes. In addition, this should include an examination of additional measures that may affect the process requirements and the likelihood of and timing between EI alerts and interventions. These measures could include individual, situational, organizational, and community characteristics both within the EI data and related to the incidents that triggered the EI alerts.

Forthcoming scholarship could also compare across groups such as partnerships, shifts, units, and patrol areas to determine if factors affecting the likelihood and timing of misconduct are similar or diverge for certain officers or groups. For example, Ouellet et al. (2019) examined officer misconduct using network analysis and found officers in networks with a greater proportion of fellow officers previously named in force complaints were at an increased risk of being named in future force complaints. Additionally, future scholars should explore any follow-up monitoring that may have been conducted by supervisors, whether formal or informal, and the officers' activities post-EI intervention.

Future research would also benefit from exploring or expanding other areas of EI alerts and interventions. Such as exploring prior officer EI alerts and interventions as well as continued officer misconduct beyond the subsequent EI alert during a study period to determine if different factors are in effect. In addition, future scholars should consider EI

alerts and interventions outcomes and officer activities or behaviors beyond the performance indicators tracked by this agency's EI system. This may include arrests, alcohol and drug use, claims and lawsuits, domestic violence issues, secondary employment, and traffic and pedestrian stops, as well as positive behaviors such as awards, comments and commendations, and performance evaluations to see how these affect recurrent EI alerts and interventions. Moreover, considering employees beyond sworn police officers may be an opportunity to compare groups of employees by workgroup and assignment and to determine different effects for the upper ranks and civilian employees on how EI alerts and interventions modify their behavior.

Additionally, future EI studies should consider the accuracy and timing of the EI data collection process across the EI system itself as well as the other databases that are the sources for maintaining the incidents that trigger these EI alerts. For example, while scholars may use strong methodological approaches and statistical designs in their studies, if the accountability data is of poor quality such as being inaccurate, untimely, or incomplete, this may lead to questioning the validity of the results produced. Thus, future research should consider examining the quality of the data inputted into these accountability systems prior to assessing their effectiveness. This is especially key given the importance of real-time and accurate data for an effective EI system, and the impact of its EI alerts and interventions on modifying officer behavior and preventing repeated EI alerts and interventions.

Beyond the accuracy and timeliness of the EI data and its associated performance indicators, other supporting materials that are examined regarding the EI review process and execution of the EI alerts and interventions must be considered for whether it

accurately represents the experiences of those involved. For example, while supervisor response memos may have sometimes documented those supervisors met or spoke with officers regarding the EI alert and intervention, it is difficult to know what the police officers are aware of or what they were told regarding this EI review process and execution of the EI intervention. Furthermore, it is equally challenging to understand the mindset and decision-making process for these supervisors handling these EI alerts and interventions with these officers, as the supervisor response memos do not tell the whole story.

Thus, future research should consider using qualitative methodological approaches to examine police accountability, specifically, EI systems and their alerts and interventions. For example, officer interviews would help provide insight regarding why officers engage in these repeated behaviors, the impact of receiving EI alerts and interventions from supervisors, and whether or how it modifies at-risk officer behavior. Equally important, supervisor interviews would help shed light on supervisors' mindsets and decision-making in handling these EI alerts and interventions with officers including why they met or speak with some officers and not others, reasons for no formal action taken, and other such process and intervention outcomes. Qualitative research would also provide further insight into the underlying reasons EI alerts and interventions may be effective or not and how to improve these EI systems, contributing to the big picture of EI systems and their overall value.

Implications

Building on prior EI systems research and contributing to the paucity of EI scholarship by examining the EI review and execution process for EI alerts and

interventions, findings from this current study inform several key empirical and policy implications.

Empirical Implications

This current dissertation study makes significant contributions to the extant EI scholarship in a number of ways including in its methodological and statistical analyses approach.

First, the data utilized in this dissertation study included supervisor response memos that outlined the review and execution process for these EI alerts and their interventions with officers. EI interventions and specifically supervisors' articulation of the review and execution of these EI interventions with officers has not yet been examined in prior literature. Utilizing these supervisor response memos, this current study was able to determine whether supervisors were adhering to this agency's EI policy requirements, which should be considered a critical component of whether the EI interventions with officers are appropriate and timely in addressing these EI alerts and preventing future EI alerts. In addition, these supervisor response memos provided key insights into this EI alert review and intervention process between supervisors and officers to better understand the EI system processes to determine what works and how.

Second, because this critical data was obtained including supervisor response memos articulating the process required by EI policy, it allowed this study to consider these policy requirements as outcomes in the logistic regression analyses. This statistical approach has not been conducted in prior research and provided insight into the factors that impact these policy requirements and supervisor's adherence to them.

Third, this current dissertation study performed survival analysis to examine the timing between EI alerts and interventions, or their time to failure, and the factors that may affect this timing. While survival analysis has been utilized previously in policing literature (e.g., Gullion et al., 2021a, 2021b; Harris, 2014; Harris & Worden, 2014; McElvain, & Kposowa, 2008), it has not yet been used to examine the likelihood and timing between EI alerts and interventions. Such an examination of EI alerts and interventions using survival analysis provides critical insight regarding the timing between EI alerts and interventions and thus whether these EI interventions are modifying at-risk officer behavior. In addition, the factors affecting this likelihood and timing provided valuable information regarding which officer and supervisor demographic and occupational and EI case factors most impact the likelihood and timing between EI alerts. Agencies can be more informed regarding which factors should be focused on when providing managerial oversight of these EI interventions and when assessing the EI program overall including the design and implementation of EI alerts and interventions.

Fourth, this current study is the first of its kind in the area of EI system research related to EI interventions with officers. Findings from this current dissertation study contributes not only to the knowledge that has been lacking in prior EI literature regarding supervisors' review and execution of EI alerts and interventions with officers, but also reveal a path forward in conducting more research in this area. Specifically, this current study's findings provide a baseline for future EI system research for determining which officer and supervisor demographic and occupational and EI case factors had and likely will have significant impact on EI alerts and interventions. Future EI system

scholars that have access to EI data including the review and execution process of EI alerts and interventions can now make more informed decisions on which factors to include in their own study for further exploration in this area. This dissertation study also demonstrates the need for more research to determine the effectiveness of EI systems in addressing and preventing at-risk behavior.

Policy Implications

In addition to these empirical implications, findings from this current study inform several key policy implications worth discussing, including specifics for the EI system or program, as well as those related to supervision, guidance and mentoring.

EI System or Program Specific. First, the results of this study demonstrated that the type of performance indicator can be significant on the EI policy requirements, and the likelihood of and timing between a subsequent EI alert during this study period. While these findings may be associated with how supervisors handle the execution of EI alerts and interventions, these findings also suggest that agency-defined thresholds must first be appropriately defined and regularly assessed to ensure the EI system is properly identifying the police agency's at-risk officers. Police experts and scholars agree that an agency's thresholds should be based on its history and culture, including a review of the number of past incidents involving the agency and its officers (Alpert & Walker, 2000; Shjarback, 2015). The findings regarding these performance indicators could reveal that the thresholds are not appropriately defined or that supervisors are not executing EI alerts and interventions with officers as appropriately as they could.

Second, given the combination of any five or seven performance indicators was significant for the timing between EI alerts, agencies should consider having an overall

combination type of performance indicator that triggers an EI alert when a combination of various types of incidents meet or exceed a certain threshold. The agency for this current study did have a combination threshold in 2014 and 2015 that they chose to eliminate it due to what they indicated was redundancy. However, these combination thresholds are invaluable to capture at-risk officers that engage across multiple performance indicators in a short time. This is especially key given that prior research demonstrates that a small proportion of officers are responsible for most problematic behavior and high-risk or critical incidents including uses of force, complaints, arrests, officer-involved shootings, among others (Brandl et al., 2001; Christopher Commission, 1991; Harris, 2011, 2014; Kane & White, 2009; McCluskey & Terrill, 2005; McElvain & Kposowa, 2004, 2008; Terrill & Ingram, 2016; Walker, 2001; Walker et al., 2000; White & Kane, 2013).

This particular agency's issue was not with the combination threshold itself, but with the thresholds defined for some of the other performance indicators. For example, the use of force threshold was defined as six use of force incidents in 90 days while the combination thresholds were defined as any five or seven incidents in six months. Given the high number of uses of force required to trigger an EI alert, redundancies would naturally occur between the use of force and the combination thresholds. One recommendation for this agency would be to lower the use of force threshold, for example, to three use of force incidents in a 90-day period. This would not only help elevate redundancies with the combination threshold but lowering the use of force threshold is also important to identify and address at-risk officers early. This is critical given an EI system is non-disciplinary in nature, intended to intervene with officers prior

to more serious incidents occurring. Especially given the broader impact use of force incidents can have on officers, citizens involved, and the community-at-large, such as safety, mental health and wellness, legitimacy, and community trust and support.

Third, this study found that supervisor race, type of performance indicator and year of the initial EI alert during this study period were all significantly associated with the EI memo outcomes handled by the supervisors. In other words, whether the supervisor complied with those EI policy requirements. These findings suggest that agencies must ensure that they have a comprehensive and quality EI program. This includes a clear and concise policy that outlines the EI system's purpose and processes, including identifying the roles and responsibilities for supervisors and managers, and providing agency-wide messaging and training for successful review and execution of EI alerts and interventions. Communicating the EI system's purpose and process, such as performance indicators, thresholds, alerts and interventions, and articulating officers' and supervisors' expectations are essential (Bertoia, 2008; Bouche et al., 2016). For all agencies, it is equally critical to understand the EI system's limitations and the reasoning behind the performance indicators and thresholds (Alpert & Walker, 2000).

Fourth, other policy considerations for this agency and agencies everywhere can be offered. This includes requiring a deadline for the review process and execution of EI alerts and interventions (while this agency provided due dates, many supervisors did not meet the required deadline) to ensure timeliness in addressing at-risk behavior. Given that half of the officers in this study had their subsequent EI alert within eight months of their initial EI alert, supervisors handling EI interventions swiftly and appropriately, including post-intervention monitoring, is vital to prevent repeated misconduct (Gullion & King,

2020; Walker & Archbold, 2013). Furthermore, documenting the details regarding the meeting or conversation with officers including the date for when the supervisor meets or speaks with the officer (for this study, some included this date while most did not) and documenting what was specifically discussed including asking officers about personal or job-related stressors is essential to ensure officers are aware of these EI alerts and to hold supervisors accountable to these EI policy requirements.

Fifth, given the significance in both directions for many of the demographic, occupational, and EI case variables on the likelihood of receiving an EI alert, the likelihood of receiving a subsequent EI alert, and the timing between EI alerts, agencies should take a closer examination at whether these EI interventions are achieving their intended purpose of addressing at-risk officers early, modifying officer behavior, and preventing future EI alerts and interventions. Supervisors must consider whether any informal or formal action should be taken in these EI interventions, especially given the lack of formal action taken with officers in this current study and yet repeated EI alerts are occurring within a relatively short period of time. This is key given EI systems are non-disciplinary and intended to supervisor and mentor officers which may include re-training, enhanced supervision, EAP referrals, or any number of other non-disciplinary actions. Furthermore, managerial oversight of the execution of these EI alerts and interventions by supervisors is also key to understand their decision-making processes and outcomes. Especially given that almost all these EI interventions resulted in no action taken with officers.

Finally, substantial lack of supervisors complying with these policy requirements as found in the EI memo outcomes including supervisors meeting with officers, providing

individual summaries of the incidents that triggered the EI alert, asking officers about stressors and taking any formal action emphasizes the need for managerial oversight of the execution process of EI alerts and interventions handled by supervisors. Either this agency's managers are not conducting periodic reviews of these memos, or the actions taken by these managers to correct supervisors' compliance with this EI policy is not working. Specifically, agencies having managers conduct periodic reviews of EI alerts and interventions handled by supervisors can offer valuable insight into which supervisors are providing appropriate oversight, executing EI alerts and interventions properly, or offering mentorship to their subordinates (Walker et al., 2001). This current study's police agency does produce an annual EI report which assesses the EI program including alerts and interventions, and identifies areas for improvement, which is a best practice for any agency.

Supervision, Guidance, and Mentoring Specific

Specific to this study's results, the demographic and occupational variables including offender gender, officer division, supervisor tenure, and the EI case factors for the type of performance indicator, time to the initial EI alert, and the year of the EI alert were significantly associated with one, two or all three outcomes. These include the likelihood of an EI alert or a subsequent EI alert during this study period, and the timing between an officer's initial and subsequent EI alert during this study period. These findings reveal the opportunity agencies have to provide augmented field supervision, guidance, and mentoring throughout an officer's career. This may consist of enhancing officers' communication skills and de-escalation techniques taught by the training academy and during in-service training, ensuring mental health and wellness, and

adhering to the tenets of procedural justice and fair and impartial policing to improve the outcomes of police-citizen encounters. It is also essential to provide on-scene supervision during high-risk and critical incidents, when possible, especially within the two years of the officer receiving an EI alert and intervention related to high-risk activities. Furthermore, agencies can capitalize on those supervisors who are handling these EI alerts and interventions more appropriately and have them provide mentoring and training to other supervisors in the agency.

Police agencies should also consider implementing a BWC policy and program designed to review BWC footage and identify positive (e.g., good de-escalation techniques and communication skills) and problematic behaviors displayed in police-citizen encounters. That video, in turn, could be used during officer in-service training or in supplemental re-training for officers who have had repeated EI alerts for complaints, proactive stops, or incidents resulting from high-risk activities. This BWC footage review is also key given that much police discretion and many critical incidents including use of force occur in low-visibility situations where supervisors may not observe their actions.

Also, given this study found that officer and supervisor tenure were both significant for the likelihood of receiving an EI alert and subsequent EI alert during this study period and the timing between EI alerts, this suggests the opportunity agencies have to establish a formal mentoring program both for officers and supervisors, to capitalize on the knowledge and experience of those personnel. Older and more experienced officers may mentor younger less experienced officers regarding handling critical incidents and everyday police-citizen encounters including utilizing those communication skills and de-escalation techniques and adhering to the tenets of procedural justice and fair and

impartial policing to improve the outcomes of these encounters. This mentorship should also include those more seasoned officers ensuring the safety, mental health and wellness for the less seasoned officers. Such mentorship among officers may improve officers job performance and health and wellness which may result in a reduction of EI alerts and or may impact the timing between EI alerts if those EI interventions are modifying officer behavior.

For the formal mentoring between supervisors given the significance of supervisor tenure found in this study, such a program may enhance the review and execution of EI alerts and interventions and result in better decision-making processes and outcomes for addressing at-risk officer behavior. More tenured supervisors may impart their knowledge and experience on how to best tailor these EI interventions with officers, and how to identify patterns of officer behavior in the EI alerts that may be problematic rather than based on high productivity. While managerial oversight of the execution of these EI alerts and interventions is still key, a mentoring program among supervisors allows for more accessibility and resources for those younger less experienced supervisors that are navigating the execution of these EI alerts and interventions. Though the communication and training on EI policy is still critical, new supervisors that are putting the EI policy and training into practice would likely benefit from a more tenured supervisor that has had experience executing these EI alerts and interventions with officers. In addition, seasoned supervisors may have also received feedback from their managers on prior EI alerts and interventions that enhanced their method of handling the EI review process that they can share with these new supervisors.

Conclusion

The purpose of this current study was to explore the supervisors' review process and execution of EI alerts and interventions and inform police agencies and scholars about the process and effectiveness of EI systems' alerts and interventions. This is particularly critical given the prevalence of EI systems across U.S. police agencies and the time, money, and resources to maintain them. Few studies have examined EI systems, though most have found a positive effect on officer misconduct and accountability (Bobb et al., 2009; Briody & Prenzler, 2020; Davis et al., 2005; Davis et al., 2002; Lersch et al., 2006; Macintyre et al., 2008; Shjarback, 2015; Walker et al., 2001; Worden et al., 2013). More importantly, EI interventions have not yet been examined in prior EI research. The current study contributes to this gap by examining individual, occupational, and EI case factors affecting EI process and intervention outcomes, as well as the likelihood of and timing between EI alerts.

Specifically, this study demonstrated that factors such as officer gender, tenure, and division have the greatest correlation with an officer receiving an EI alert. For the EI process outcomes, supervisor race and tenure, the type of performance indicator, and the year of the EI alert also had strong associations to supervisors complying with the agency's EI policy for handling EI alerts and interventions with officers. Regarding EI case factors and their impact on the timing between EI alerts, officer race and supervisor tenure were significantly associated with the timing between the officer's initial EI alert and intervention and their subsequent EI alert. Additionally, the type of performance indicator, the timing of the initial EI alert during this study period, and the year of the EI

alert all had a strong correlation to both the likelihood of a subsequent EI alert and the timing between EI alerts.

Additionally, many of the supervisor demographic and occupational factors and the EI case factors had an effect on the process outcomes of the supervisors complying with EI policy. Given the impact of these EI case factors, supervisors must tailor EI interventions based on officer demographic, occupational, and EI case factors that would have the greatest opportunity for preventing future at-risk behavior. Concerning the impact of these supervisor demographic and occupational factors, agencies must ensure these EI interventions receive ongoing oversight to make any necessary modifications with specific officers and with general EI intervention expectations across the agency.

Ultimately, the goal for police agencies is to provide proper supervision, guidance, and accountability within their organization. This current study is a step toward informing agencies how to capitalize on EI systems including how supervisors handle EI alerts and interventions to address at-risk officer behavior. Future research should examine the likelihood of and timing and duration between EI alerts and interventions, repeated misconduct, and other officer activities as this is an unexplored area worthy of examination. The timing component is necessary for the overall picture of the predictors impacting officer behaviors and potential officer misconduct.

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APPENDIX A

Descriptive Statistics for Officers' Initial EI Intervention Resulting in Formal Action

Taken (n = 7)

Variables	n	% or Mean	SD	Range
Demographic and Occupational Variables				
Officer Race				
White (reference)	5	71.43		
Black	1	14.29		
Hispanic	0	0.00		
Other	1	14.29		
Officer Gender				
Male (reference)	5	71.43		
Female	2	28.57		
Officer Division				
Patrol Division (reference)	5	71.43		
Criminal Investigations Division	0	0.00		
Tactical Support Division	2	28.57		
Other Divisions	0	0.00		
Supervisor Race				
White (reference)	7	100.00		
Black	0	0.00		
Hispanic	0	0.00		
Other	0	0.00		
Supervisor Gender				
Male	7	100.00		
Female	0	0.00		
Supervisor Tenure (in months)		153	32	108-192
EI Case Variables				
Type of Performance Indicator				
Use of Force (reference)	0	0.00		
Chargeable Vehicle Accidents	2	28.57		
Combination of Any 5 or 7 in Six Months	0	0.00		
Other	3	42.86		
Unconfirmed Sick Leave	2	28.57		
Time to Initial EI Alert (in months)		107	68	47-227
Year of the EI Alert				
2014-2015	2	28.57		
2016-2020 (reference)	5	71.43		
EI Process Variables				

Supervisor Met or Spoke with Officer		
Yes	5	71.43
No	2	28.57
Supervisor Provided Individual Summaries		
Yes	3	42.86
No	4	57.14
Supervisor Asked Officer About Stressors		
Explicitly Addressed	2	28.57
Implicitly Addressed	1	14.29
Not Addressed (reference)	4	57.14
Formal Action Taken		
Coaching/Mentoring	2	28.57
Letter of Counseling	1	14.29
Memo to File	1	14.29
Referred to EAP	2	28.57
Remedial Training	1	14.29

APPENDIX B

IRB Approval from SHSU on June 9, 2021, for Early Intervention Systems' Interventions

Dissertation Study

Date: 3-11-2022

IRB #: IRB-2021-183
Title: Effectiveness of Early Intervention Systems' Interventions
Creation Date: 5-17-2021
End Date:
Status: Approved
Principal Investigator: Christi Gullion
Review Board: SHSU IRB
Sponsor:

Study History

Submission Type	Initial	Review Type	Expedited	Decision	Approved

Key Study Contacts

Member	Jason Ingram	Role	Co-Principal Investigator	Contact	
Member	Christi Gullion	Role	Principal Investigator	Contact	
Member	Christi Gullion	Role	Primary Contact	Contact	

VITA

Curriculum Vitae
Christi L. Gullion

Sam Houston State University
Department of Criminal Justice and Criminology
816 17th Street, P.O. Box 2296
Office CL-05
Huntsville, TX 77341-2296

EDUCATION

2018-Pres   Doctor of Philosophy, Criminal Justice and Criminology
Sam Houston State University, Huntsville, TX
Expected Graduation, May 2022

1996   Master of Science, Criminal Justice
University of North Carolina at Charlotte, NC

1994   Bachelor of Science, Criminal Justice
University of South Dakota, Vermillion, SD

RESEARCH INTERESTS

Policing; Police leadership and supervision, transparency, and accountability; Police reform and organizational transformation.

PEER-REVIEWED ARTICLES

Gullion, C.L., Orrick, E.A. & Bishopp, S. (2021). Examining the Risk of Recurring Police Use of Force Incidents Among Newly Hired Police Officers. *Crime & Delinquency.* https://doi.org/10.1177/00111287211052445

Gullion, C.L., Orrick, E.A., & Bishopp, S. (2021). Who is At-Risk? An Examination of the Likelihood and Time Variation in the Predictors of Repeated Police Misconduct, *Police Quarterly, 24(4), 519-546.* https://doi.org/10.1177/10986111211013048

Gullion, C.L. & King, W.R. (2020). Early intervention systems for police: A state-of-the-art review. *Policing: An International Journal, 43(4), 643-658.* https://doi.org/10.1108/PIJPSM-02-2020-0027

BOOK CHAPTERS, REVIEWS, AND OTHER PUBLICATIONS

Gullion, C.L. (2021). [Review of the book *Organizational Change in an Urban Police Department: Innovating to Reform*, by B.J. Bond-Fortier]. *Policing: A Journal of Policy and Practice*, PAAB002. https://doi.org/10.1093/Police/PAAB002

ACADEMIC PUBLICATIONS – IN PROGRESS

Gullion, C.L. & Ingram, J.R. (In Progress) Police Accountability Update.

Gullion, C.L., Comer, B.P., & Randa, R. (In Progress). Homicide Hot Spots in Chicago: Examining Spatiotemporal Patterns Longitudinally Across Police Beats.

Shelfer, D., **Gullion, C.L.,** Guerra, C., Zhang, Y., & Ingram, J.R. (In Progress). A Systematic Review of Project Safe Neighborhoods Effects.

PROFESSIONAL EXPERIENCE

2015-2018   Vice President, Law Enforcement Consulting, Hillard Heintze LLC, Chicago, IL.

2014-2015   Senior Director, Law Enforcement Consulting, Hillard Heintze LLC, Chicago, IL.

2010-2014   Western Region Trainer, QC Auditor and Special Investigator, KeyPoint Government Solutions Inc., Los Angeles, CA.

2009-2010   National Internal Compliance Monitor, KeyPoint Government Solutions Inc., Los Angeles, CA.

2003-2009   Senior Director, Kroll Inc., Los Angeles, CA.

2000-2003   Director, Kroll Inc., Los Angeles, CA.

As a national leader in police reform for the past two decades, I have led police agency assessments, served as a subject-matter expert, and provided technical assistance for the Baltimore, Maryland; Beloit, Wisconsin; Calexico, California; Commerce City, Colorado; Memphis, Tennessee; Miami, Florida; Milwaukee, Wisconsin; and Orlando, Florida Police Departments, and the University of Rhode Island Public Safety Department. Furthermore, also served as a Federal Consent Decree Team Leader for the Independent Monitor of the Los Angeles, California and Detroit, Michigan Police Departments. This reform work includes assessing and providing technical assistance for the U.S. Department of Justice (DOJ), Community Oriented Policing Services under their Collaborative Reform Initiative, for the U.S. DOJ Civil Rights Division as the result of two Federal Consent Decrees, while other assessments were independently requested by the city or the police agency. Assessments were conducted in areas including but not limited to accountability, arrests, community policing, conditions of confinement, crime analysis, criminal investigations, discipline, early intervention systems, gang units, internal affairs, recruitment, hiring, retention, and promotion, search and seizure, traffic stops, use of force, and leadership, and organizational transformation. While some projects resulted in published technical reports, others were internally provided technical reports.

RESEARCH AND GRANT EXPERIENCE

2020-Pres   Doctoral Research Assistant, "*Evaluating Project Safe Neighborhoods in the Southern District of Texas Year 2*," awarded by the Department of Justice, Office of Justice Programs, Bureau of Justice Assistance. Dr. Yan Zhang (PI), Drs. Jason Ingram & Williams Wells (Co-PIs). Grant number: 3912302. Award amount: $195,273.00.

2019-2020   Doctoral Research Assistant, "*Evaluating Project Safe Neighborhoods in the Southern District of Texas Year 1*," awarded by the Department of Justice, Office of Justice Programs, Bureau of Justice Assistance. Dr. Yan Zhang (PI), Drs. Jason Ingram & Williams Wells (Co-PIs). Grant number: 3912301. Award amount: $252,105.00.

2018   Doctoral Research Assistant, "*An Evaluation of Proactive Prosecutorial Response to Domestic Violence in Montgomery County, Texas,*" jointly funded by the Sam Houston State University's Office of Research and Sponsored Programs and the Montgomery County District Attorney's Office, Texas. Dr. Ling Ren (PI). Award amount: $28,255.

2018   Doctoral Research Assistant, "*Kansas City Crime Gun Intelligence Center Initiative,*" awarded by the Department of Justice, Office of Justice Programs, Bureau of Justice Assistance. Dr. William R. King (Sub-contractor) with the University of Missouri, Kansas City and Kansas City Police Department. Grant number: 2017-DG-BX-0001. Award amount: $68,624.

2014-2017 Federal Grant Project Lead, awarded by the Department of Justice, Office of Community Oriented Policing Services (COPS) under the Collaborative Reform Initiative – Technical Assistance (CRI-TA) for the Baltimore, Maryland, Calexico, California, and Milwaukee, Wisconsin, Police Departments.

PROFESSIONAL PUBLICATIONS AND TECHNICAL REPORTS

2019 U.S. Department of Justice, Office of Community Oriented Policing Services. (2019). *Law enforcement best practices: Lessons learned from the field.* https://cops.usdoj.gov/RIC/Publications/cops-w0875-pub.pdf

2016 Bouche, K.A., Davis, R.L., Grant, S.C., **Gullion, C.L.,** Heintze, A.F., Johnson III, W.D., & Medrano, E. An assessment of the Calexico Police Department. Collaborative Reform Initiative. U.S. Department of Justice, Office of Community Oriented Policing Services. https://ric-zai-inc.com/Publications/cops-w0804-pub.pdf

2015 Heintze, A.F., Bouche, K.A., **Gullion, C.L.,** Bova, S.M., Casella, E., Boehmer, R., & Tanksley, R. Reform and Renewal: An independent assessment of the Beloit Police Department. Independent Police Department Assessment Report. Hillard Heintze LLC. https://issuu.com/hillardheintze/docs/hh_final_report_for_beloit_pd_maste

2004-2009 Schlanger, J., Robinson, S.L., Buczek J., deBurgh, H., Filak, R., Frazier, T., **Gullion, C.,** Lewis, D., & Tabb, A., et. al., Report of the Independent Monitor for the Detroit Police Department. Quarterly Reports from 2004-2009. Kroll, Inc. https://www.kroll.com/en/insights/publications/monitorship-reports-detroit-police-department

2001-2009 Cherkasky, M. Schlanger, J., Buczek J., Cookson, P., deBurgh, H., Filak, R., Frazier, T., Grillo, K., **Gullion, C.,** & Salazar, R. Report of the Independent Monitor for the Los Angeles Police Department. Quarterly Reports. Kroll, Inc. https://www.kroll.com/en/insights/publications/monitorship-reports-lapd

PROFESSIONAL PRESENTATIONS

2021 **Gullion, C.L.,** Orrick, E.A. and Bishopp, S. (2020). What Are the Odds? Assessing Varied Factors Impacting the Risk of Recurring Police Use of Force. Academy of Criminal Justice Sciences, Orlando, FL. (*Cancelled due to COVID-19).

2020 **Gullion, C.L.,** Orrick, E.A. and Bishopp, S. (2020). Officer and Situational Factors Impacting the Risk of Use of Force Incidents and Misconduct. American Society of Criminology, Washington, D.C. (*Cancelled due to COVID-19).

2020 **Gullion, C.L.,** Orrick, E.A. and Bishopp, S. (2020). Who Will Fail? Examining the Effects of Police Misconduct Utilizing Complaints. Academy of Criminal Justice Sciences, San Antonio, TX. (*Cancelled due to COVID-19).

2019 **Gullion, C.L.** & King, W.R. Policing Early Intervention systems: A Systematic Literature Review. American Society of Criminology, San Francisco, CA.

2019 **Gullion, C.L.** & King, W.R. A framework for the comparative and comprehensive evaluation of police early intervention (EI) systems. Midwest Criminal Justice Association, Chicago, IL.

2018 Bowman, T., **Gullion, C.,** Outlaw, D., & Thompson M. People, policies, processes. Panel Workshop. Annual National Organization of Black Law Enforcement Executives (NOBLE) Conference, Miami, FL.

2017 Bowman, T., **Gullion, C.,** Outlaw, D., & Thompson M. People, policies, processes. Panel Workshop. Annual National Organization of Black Law Enforcement Executives (NOBLE) Conference, Atlanta, GA.

TEACHING EXPERIENCE AND COURSES TAUGHT (FACE-TO-FACE)

2020-2021 Doctoral Teaching Fellow, Sam Houston State University, Huntsville, TX.
Courses Taught:
Police Systems & Practices
Introduction to Methods of Research

2010 Adjunct Criminal Justice Instructor, Westwood Community College, Los Angeles, CA.
2008 Adjunct Criminal Justice Instructor, Wilbur Wright College, Chicago, IL.
2003 Adjunct Criminal Justice Instructor, Los Angeles Mission Community College, Los Angeles, CA.

Cumulative Courses Taught:
Administration of Criminal Justice
Communications for the Criminal Justice Professional
Constitutional Law
Criminal Justice Ethics
Criminal Law
Criminal Procedure
Crisis Intervention
Gangs and Criminal Sub-Cultures
Introduction to Criminal Justice
Introduction to Policing
Issues in Criminal Justice
Juvenile Justice

SERVICE

2020   Co-Lead of Police Reform Group Research Team as part of the Community Peace Coalition
Conducting research including community and police surveys, focus groups and individual interviews to assess community experiences with the Huntsville Police Department and surrounding law enforcement agencies to enhance community engagement and police reform.

2020-Pres   Academic Teaching Mentor
Reviewed and provided feedback for students' personal and research statements. Wrote letters of recommendation for students' graduate school applications and student leadership award nominations. Continue to mentor undergraduate students answering their career path questions, aiding with internships on and off campus, and other areas.

2020-Pres   Reviewer for Peer-Reviewed Journal
Served as a peer reviewer for *Policing: An International Journal*.

2019-Pres   Academic Peer Mentor
Guided criminal justice and criminology graduate students during their time in the doctoral program, including navigating coursework, service, research, and other areas.

PROFESSIONAL ORGANIZATIONS AND MEMEBERSHIPS

American Society of Criminology (ASC)
Academy of Criminal Justice Sciences (ACJS)
International Association of Chiefs of Police (IACP)