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First-Responders and Emergency Department Healthcare Provider Interactions During Emergency Situations: A Grounded Theory Study

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Abstract

Interactions between and among first-responders and emergency department (ED) healthcare providers impact the way in which patients are managed during emergency situations. The purpose of this study was to develop a grounded theory to explain the interactions between and among first-responders and ED healthcare providers during emergency situations. Interprofessional collaboration and teamwork has been extensively studied, however little is known about interactions that include first-responders. This study was guided by Strauss and Corbin's (1990) approach to grounded theory. Data were collected through 256 hours of first-responder and ED observational opportunities and informal interviews with accompanying detailed field notes. As well, in-depth semi-structured interviews were conducted with 15 first-responders and ED healthcare providers. Data were organized using NVivo 10 software. A constant comparative approach consistent with grounded theory was used to analyze the field notes, interview transcripts, and policy documents until theoretical saturation was achieved. The proposed theoretical model, the *Interactional Theory of Emergency Response and Care (ITERC),* explains the interactions between and among first-responders and ED healthcare providers. *Coming together for public safety* is the core category that helps to describe the social processes of interactions of first-responders and ED healthcare providers during emergency situations. The four domains or subcategories provide further explanation of the micro, meso, and macro contexts that facilitate and/or impede interactions during emergency response and care. Factors that support first-responders and ED healthcare providers in their *coming together for public safety* include role clarity, clear communication, IPE, shared policies, and strategies to enhance systems issues such as managing offload delays. Given the importance of interactions between and among first-responders and ED healthcare providers and the effects on public safety, the

ITERC may provide a beginning blueprint to guide educators, administrators, and policy makers in planning strategies to enhance the micro, meso, and macro factors influencing emergency response and care.

Key words: *emergency response, first-responders, interactions, emergencies, teamwork*

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1 Chapter 1: Introduction

Emergencies are incidents that occur suddenly, unexpectedly, and are life threatening (Subramaniam, Ali, & Shamsudin, 2010). Emergencies can include multiple casualties (such as a large multi-vehicle collision on the highway) or a singular patient crisis such as a sudden cardiac arrest. Ultimately, emergencies include the very real possibility for loss of life. Whenever an incident is identified as life threatening (normally by a central dispatcher who receives the call), a "tiered response" is initiated. A tiered response requires the coordinated effort from multiple agencies and receiving emergency departments (EDs). First-responders such as paramedics, firefighters, and police officers must manage patient needs at the scene of emergencies, and then transfer care of victims to ED healthcare providers such as nurses and physicians. Interactions between and among first-responders and healthcare providers influence the way in which patients are managed during emergency situations. Various problems arise when different organizations with different cultures, procedures, processes, and systems attempt to work together (Salmon et al., 2011). The differences between organizations are not surprising given the uni-professional educational approach for training first-responders and ED healthcare providers. Hierarchical, territorial, and other impediments effect communication and cooperation that can create or compound errors (Salmon, et al., 2011).

Opportunities for communication errors and information loss exist at each juncture of care, including when patients move across care boundaries (Evans et al., 2009). Communication errors and poor collaboration between healthcare providers are among the biggest sources of preventable adverse events affecting patient outcomes including increased hospitalization, injury, or death (Baker, et al., 2004; Capella et al., 2010; Carter et al., 2009; Evans et al., 2009; Talbot & Bleetman, 2007; Vilensky & MacDonald, 2010). Communication problems can originate from

the lack of exchange of information and lack of formal organization among emergency responders (Matusitz, 2007; Sloan, 2011) and ED personnel (Sloan, 2011). An understanding of the interactional processes that impact the ability of individuals from a variety of educational and practice backgrounds to communicate and coordinate patient care during emergency situations is lacking. Adequately meeting the needs of the public during emergency situations requires capable and appropriately trained first-responders as well as effectively integrated healthcare providers within the local community (Leikin, Aitchison, Pettineo, Kharasch, & Wang, 2011). In order to promote positive interactions between and among first-responders and ED healthcare providers, action plans, or detailed plans outlining the actions required to meet these goals are required. In the absence of a theory describing interactional processes between and among first-responders and healthcare providers, action plans will be difficult to deliver in meaningful ways. An appreciation of how these various providers interact and communicate will shed light on the current perspectives, challenges, and successes of those involved. Understanding the current social processes between and among first-responders and ED healthcare providers may help to guide educational curricula and practices with regard to interactional processes during emergency situations, enhance collaborative efforts, inform public policy, and ultimately promote patient safety.

The emerging grounded theory presented in this dissertation was conducted to explain the interactions between and among first-responders and ED healthcare providers during emergency situations. This chapter will begin with an explanation of the research questions that were explored in order to arrive at the proposed theory. In addition, I will share a *declaration of self* in order to help explain the motivation that drove this study. Next, background information related to the study topic will be presented. To help promote clarity, conceptual clarification of

some of the terms that are found within the literature related to groups working together is provided. Finally, an overview of the chapters included within this dissertation work is also included.

1.1 Research Questions

The aim of this study was to develop a grounded theory to explain the interactional processes that exist between and among first-responders and ED healthcare providers during emergency situations. The research question was: *How do first-responders and emergency department healthcare providers interact during emergency situations?* Individual (micro), organizational (meso), and systemic (macro) factors were relevant to consider in the development of this grounded theory to explain these interactional processes (Blackstone, 2012). While the research question posed was broad, the intent was for it to be sufficiently flexible and open-ended to enable the theory to be developed (McCann & Clark, 2003a). By creating an initial question that began broadly, the process of grounded theory facilitated it becoming progressively narrowed and more focused during the research process as concepts and their relationships were discovered (Strauss & Corbin, 1998).

1.2 Declaration of Self

As both an educator and a critical care nurse, I have always been intrigued by the management of emergency situations. In my career as an ICU nurse, I spent many years as a part of the 'code team' responding to in-patient cardiac arrests and medical emergencies. Looking back, I took for granted that the team would be a cohesive unit, easily able to interact effectively to meet the needs of patients during high-stakes crises. It did not occur to me to consider what elements affect the abilities of healthcare providers to interact during these situations. Recently, I have become very interested in the conditions under which first-responders such as paramedics,

firefighters, and police officers respond in emergency situations. The transition of patients from the community through the ED, and how first-responders and healthcare providers interact during ongoing critical patient events, intrigues me.

In my role as a faculty advisor to an extracurricular interprofessional (IP) group, I have witnessed students enrolled in police, fire, paramedics, and nursing keen and eager to learn "with, from, and about" each other. Not only do the different groups 'get along', but they enthusiastically request more and more contact with one another. It appears as though any conflict that may exist between the groups occurs after licensure. Perhaps bringing these groups together early in their respective training is the answer. Given the complexities that are associated with IP education (IPE), an educational and practice shift to fully embrace this approach requires deliberate planning. I propose that this planning should be informed with the knowledge of what is actually happening between first-responders and ED healthcare providers. By highlighting the successes and difficulties surrounding the interactional processes of these professionals, meaningful policies and educational strategies can be developed to enhance practices.

I have had the opportunity to plan and execute several large-scale simulation activities that have involved both students and practicing first-responders and healthcare providers. My understanding of, and appreciation for, the different aspects of an emergency response and the players involved, make me an appropriate candidate to conduct this study. I acknowledge that each of the various first-responders and care providers that come together during emergencies make important contributions to the rescue and care of patients. It is my hope that this emerging grounded theory, describing the interactional processes between and among first-responders and

ED healthcare providers, could inform educational activities, orientation of new hires, and policies and procedures governing emergency management and care.

1.3 Background

When different groups come together for a common purpose, challenges often ensue**.** One factor that may impact the ability for first-responders and care providers to coordinate care may originate from the array of disciplinary bodies that govern each of their actions. For example, in the province of Ontario, the paramedic group falls under the statutory regulation of the Ambulance Act, which requires supervision by Base Hospital Programs (BHPs) through performance agreements with the Ministry of Health and Long Term Care (MOHLTC) Emergency Health Services Branch (EHSB) (2003). Paramedics are unregulated professionals that are responsible for providing emergency medical care to patients in the prehospital environment, as well as transporting patients to appropriate care facilities. Paramedic education is the shared responsibility of two ministries, the MOHLTC and the Ministry of Training Colleges and Universities (MTCU). To further complicate matters, there are three levels of paramedics: Primary Care Paramedic (PCP), Advanced Care Paramedic (ACP), and Critical Care Paramedic (CCP) with increasing educational requirements and competencies (Ontario Paramedics Association, 2013). Paramedics licensed through BHPs may assess and treat patients by adhering to approved and accepted protocols, following the competencies found in the National Occupational Competency Profile (Ontario Paramedics Association, 2013). Several of these competencies, including professional responsibilities, communication, health and safety integration, and health promotion, are shared by all health professions (Ontario Paramedics Association, 2013). Diagnostic and treatment modalities are shared by a number of regulated professions such as physicians, nurses, respiratory therapists, and midwives.

Recently, the Ontario Paramedics Association submitted an application for self-regulation under the Regulated Health Professions Act (RHPA) indicating that the evolution of this profession has led to a stronger alignment with health care rather than as a public safety service (Ontario Paramedics Association, 2013). The RHPA is organized to help facilitate the evolution of professions, allowing for overlapping scopes of practice and sharing of controlled acts (Regulated Health Professions Regulatory Advisory Council [HPRAC], 2013). The Ontario Paramedics Association (OPA) suggests that the lack of paramedic self-regulation in Ontario acts as a barrier to effective interprofessional collaboration with other healthcare providers. Furthermore, the OPA suggest that inclusion of the paramedic group in the RHPA would allow paramedics to engage with other regulated professionals to assist in the development of best practices in the performance of controlled acts and other clinical treatments (OPA, 2013). While inclusion in the RHPA may facilitate a shared understanding amongst paramedics and care providers, it is unclear what the implications may be amongst other first-responders, such as police and fire, who would not be regulated under the same legislation. Position statements offered by union groups in fire-fighting and paramedic services suggest that tensions already exist between these two groups (The Association of Medical Emergency Medical Services of Ontario [AMEMSO], 2011; Ontario Association of Fire Chiefs and Ontario Professional Fire Fighters Association, 2008). It remains to be seen if these tensions exist between front-line first-responders and the affect that this has on interactions during emergency situations.

It is imperative that first-responders perform tasks with one another as efficiently as possible to mitigate efforts in the reduction of loss of life and property (Subramaniam & Shamsudin, 2010). First-responders generally do not have a shared educational or practice history and they may interact for the very first time at the site of an emergency. Under these

circumstances, they cannot rely on their past experiences working alongside one another to develop the trust necessary to facilitate collaboration (Kostoulas, Aldunate, Pena Mora, & Lakhera, 2007).

In 2010, federal, provincial, and territorial (F/P/T) government officials committed to developing the *communications interoperability strategy and supporting action plan* in an effort to improve public safety by standardizing approaches and enhancing communication between and among first-responders (Public Safety Canada, 2012). Currently, a nationwide system to develop, promote, or evaluate Standard Operating Guidelines (SOGs) for first-responders does not exist. This means that each fire department develops SOGs based on local needs, focusing on each area's most common or highest risk operations (Government of Ontario, 2013). As such, a standardized approach for communication among first-responders does not exist in Ontario. Furthermore, the various professionals involved in first-response to emergencies do not have the ability to communicate and share vital information with one another via radio outside of their own professions (Public Safety Canada, 2012). This is problematic given that in many emergency situations, the various first-responders are often performing different tasks in different locations, and are unable to communicate face-to-face. Appropriate decision-making requires information exchange across a broad landscape of systems, agencies, and jurisdictions (Public Safety Canada, 2012). The action plan calls for the development of standardized information exchange models and protocols to be used by first-responders. It seems likely that these models are intended for use in the field; whether they will be shared with ED personnel is unknown. While the coordination of emergency response teams such as paramedics, firefighters, and police officers and even civil defense is vital (Subramaniam & Shamsudin, 2010), a more inclusive model of communication is required. There is very little literature describing how first-

responders currently navigate through communication issues across professions during emergency situations in the absence of the ability to communicate by radio. Knowledge about current social processes between and among first-responders, such as what is presented through this research, could be an important driving force in the development of policies that will enhance communications and efficiencies in emergency situations.

It seems clear that communication problems could easily emerge out of the chaos inherent at the scenes of emergencies in the prehospital environment. It is likely that this is also true in the ED setting. Given the diversity of individuals involved in emergency situations, and that they are expected to perform collaboratively, but are rarely trained to do so, it is not surprising that healthcare lags behind other high-risk industries (such as aviation) in maintaining safe environments (Hamman, Beaudin-Seiler, & Beaubien, 2010; Williams, Rose, & Simon, 1999). Healthcare providers, such as nurses and physicians employed in the ED, are expected to graduate from their entry-level education program with interprofessional collaboration (IPC) competencies (Oandasan et al., 2009). The Canadian Interprofessional Health Collaboration (CIHC) has developed a National Framework that clearly articulates the elements necessary for effective collaboration (2010), however it is focused entirely on IPC in healthcare. To date, researchers have not investigated first-responders; the applicability of an IPC framework designed specifically for healthcare may be limited with other professions that fall outside of this domain. The complex nature of emergency situations and the critical requirements of providing multiple providers with information despite interruptions and other distractions have an impact on the ability for paramedics to deliver, and hospital staff to receive, complete and accurate reports during patient handovers (Evans et al., 2009). If receiving staff are unable to get vital information early and effectively, information loss may then influence subsequent patient

treatment and management in the ED (Jenkin, Mitchell, & Cooper, 2007). In order to promote public safety, communication strategies that extend beyond the initial response to emergency situations are required. An investigation of the social processes between paramedics, firefighters, police officers, and ED personnel led to the development of an emerging theory that identifies processes that may need to be addressed or changed in order to promote positive collaborative practices.

1.4 Conceptual Clarification

The semantics used to describe the interactions between different groups serve to confuse, rather than clarify, our understanding of these processes. Authors often use the terms *interdisciplinary* and *interprofessional* interchangeably despite that, conceptually, they mean very different things (Reeves, Goldman, & Zwarenstein, 2009). This is problematic given that precise and consistent language is necessary to enable government and other planners to communicate clear program (Reeves, et al., 2011) and policy goals. For the purposes of this study, the term *discipline* refers to the field one is associated with, such as psychology, medicine, anthropology, economics, geography, or political science (to name a few) (Reeves, Lewin, Espin, & Zwarenstein, 2010). While there are many accepted definitions, *profession*, within the context of this study, is meant to capture the label attached to the outcome of specific training or education such as nurse, fire-fighter, police, paramedic, or physician.

To fully understand what is meant by interactional processes between various professions, an understanding of the differences between *interprofessional*, *multiprofessional*, and *transprofessional* practice is important. Very often, the terms interprofessional and multiprofessional are used in place of one another despite having very different meanings (Jessup, 2007). A multiprofessional approach occurs when team members assess and treat

patients independently of each other before sharing information (McCallin, 2001). Essentially, the prefix "multi" denotes the retention of role boundaries by professions with individuals that are practicing alongside one another (Coyle, Higgs, McAllister, & Whiteford, 2011). In contrast, interprofessional teams involve individuals from diverse specialties, disciplines, or sectors, who aim to provide integrated and complementary services (Canadian Collaborative Mental Health Initiative, 2006). Definitions of interprofessional care can be confusing as they can mean a number of things such as sharing roles on the one hand, and conversely, retaining boundaries while working together (Coyle et al., 2011). Ultimately, interprofessional denotes a deeper level of collaboration where team members pool their knowledge to meet a common goal through collective action (McCallin, 2001). Gilbert (2013) suggests that definitions of the term interprofessional focus on three key aspects of interaction: "a) learning with, from, and about other professions, b) for the purpose of enabling effective collaboration, and c) to improve the quality of care/health outcomes" (p. 283). The prefix "*trans"* falls at the opposite spectrum to multiprofessional care. Its emphasis is on shared roles, role blurring, and even role exchange (Coyle et al. 2011). It is unlikely that first-responders would find themselves in a transprofessional model as there are many actions that would be inappropriate to share (e.g. firefighters are unlikely to involve paramedics in battling a blazing fire). Where first-responders and ED healthcare providers fit in the spectrum is unknown at this time.

Leever et al. (2010) indicate that collaborative practice, team, and teamwork are common surrogate concepts for interdisciplinary collaboration. Interactional processes are inherent in each of these concepts. While the words teamwork and team are used interchangeably, they mean different things. Teamwork is about performance and how to achieve a primary objective, whereas team is the structural unit; that is, the *means* toward this end (McCallin, 2001). Manion,

Lorimer, & Leander (1996) suggest that teams are comprised of consistent people that are committed to a relevant shared purpose with common performance goals, complementary overlapping skills, and common approaches to their work. The Canadian Health Services Research Foundation (CHSRF) (Oandasan et al. 2006) suggests that teamwork is "the interaction or relationship of two or more healthcare professionals who work interdependently to provide care for patients" (p. 3). A recent concept analysis of teamwork identified several necessary antecedents and attributes of this construct (Xyrichis & Ream, 2007). Antecedents included the need to have two or more health professions involved, open communication and information sharing, an understanding of the various roles and common goals among team members. The attributes that they considered paramount to teamwork were concerted effort, interdependent collaboration, and shared-decision making. Teams may be assembled when the problem is complex and will require more than one set of skills or knowledge; the amount of required knowledge or skills is so great that one person could not possess it all; assembling this team with varied knowledge and skills will enhance the solution of the presenting problem; in the solution of the problem, the possessors of the knowledge and skills are considered to be equally important; and all of the individuals are working toward a common goal and are willing to sacrifice some professional scrutiny (Tsukuda, 1990). However, not all groups are teams, and too many teams are simply groups.

1.5 Overview of the Chapters

This dissertation is organized according to the university monograph specifications containing a series of chapters. Chapter 1 set the stage for the dissertation. In this chapter a brief introduction, background information and conceptual clarification of concepts relevant to the topic were provided. In addition, I offered evidence to support my suitability to engage in this

research in my declaration of self. Chapter 2 includes a review of various theories that are relevant to group interactions, as well as descriptions of pertinent empirical studies found within the literature. The methodology employed in this study is described in Chapter 3. I followed Strauss and Corbin's version of grounded theory, and as such, explanations of the procedures supported by their philosophies are shared. The findings of this research study are provided in Chapter 4. In Chapter 5, I will link these findings to 'the field' through a discussion of the implications of these findings.

2 Chapter 2: Literature Review

2.1 Introduction

In order to develop a grounded theory, the researcher should consider literature that is pertinent to the area of concern (Strauss & Corbin, 1998). This literature may act as a springboard from which to plunge into the question of interest. The contained literature must necessarily enhance, rather than constrain, theory development (Strauss & Corbin, 1998). The information contained within this review of the literature is intended to provide insight into the current understanding of interactional processes during emergency situations. In this chapter I present the search strategy employed to choose the literature contained within this review. Next, some of the existing theories that examine the nature of groups will be discussed. I have provided an examination of four of the theories most commonly used to describe group interactions in healthcare. Critique of these theories will serve to support the development of a grounded theory that explains interactional processes between and among first-responders and Emergency Department (ED) care providers in emergency situations. Finally, an exploration of published studies pertinent to the phenomenon of interest will also help to illuminate the current state of evidence regarding interactions between and among first-responders and ED healthcare providers during emergency situations.

2.1.1 Search strategy. In my search for literature to support an examination of some of the theories used to explain interprofessional interactions, I specifically chose four theories that are cited often in the IP literature. Combining the titles of each of the theories with other key words such as *interprofessional, groups, teams* and *teamwork* led to the inclusion of three theoretical texts as well as 45 published articles within peer-reviewed journals.

Empirical literature published since 2000 describing aspects of interactions relevant to those between and among first-responders and ED healthcare providers will be examined, paying particular attention to the gaps in understanding that pertain to this research study. The search strategy for empirical literature began with an examination of several databases including CINAHL, Proquest, MEDLINE, Scopus, Web of Science, PubMed and PsychINFO. Key words such as *emergency response, first-responders, collaboration, teamwork, emergency, emergency department, communication, transfer of care, healthcare provider, fire-fighter, paramedic*, and *police* were keyed in separately and in various combinations within the aforementioned databases. In addition to considering only those references published within the last 15 years, I chose to include only studies written in the English language. This search strategy yielded thousands of potential studies. In addition to the inclusion criterion described above, I included only those studies that examined interactions during emergency situations with some reference to healthcare which decreased this number significantly. In order to select only those articles most relevant to this investigation, I omitted editorials and focused on empirical data in the form of research studies. My initial goal was to include only those articles that included first-responders and ED healthcare providers, but found that empirical studies including first-responders were scant. As a result, those studies that, upon consideration, were most applicable to interactional processes in emergency situations were ultimately chosen. In all, 22 studies are included within the empirical section of this literature review. The reference pages of relevant articles provided additional resources for review. In this review of reference pages, some grey literature was included. I consulted the worldwide web using search terms such as *first-responders, firefighters, paramedics, police, union, report, position statement,* and *emergency response* to locate useful documents pertinent to emergency response and care. I chose to include grey

literature such as policy documents, reports on research, and relevant union statements in order to examine the topic in a comprehensive manner. In all, 12 documents were retrieved and helped to inform both this chapter as well as providing background information for Chapter 1.

2.2 Theoretical Literature

Theories exploring the nature of social interaction, and how one identifies with oneself, others, and the world are numerous. I was most interested in the interactional processes that occur between and among the professions associated with emergency response and care. While there are several potential theories that could have been examined, I limited this investigation to the theories most often cited in the healthcare literature. Thus, four theories that begin to explain aspects associated with group formation and interactions between groups are included in this review. These are Social Identity Theory, Intergroup Contact Theory, Realistic Group Conflict Theory, and Negotiated Order Theory each of which fall within the domain of social psychology. This is a good fit for this work because each of these theories aim to describe how different groups come together. At first glance, these theories may appear to have explanatory power, but each falls short of fully describing important aspects of the interactions among professionals involved in emergency response and care, thereby lending support for the development of a grounded theory.

2.2.1 Social Identity Theory. Despite wide acknowledgement of the value of teamwork and collaboration to promote quality care, tensions between professionals involved in emergency situations remain (Blanchet, 2010; Bost, Crilly, Wallis, Patterson, & Chaboyer, 2010; Capella, et al., 2010; Carter, et al.,, 2009; Corfield & Cowan, 2011; Hendel & Flanagan, 2009; Pruit & Liebelt, 2010; Salmon, et al., 2011; Sexton, Thomas, & Helmreich, 2000; Williams, et al., 2010). Perhaps this results from the expectation that these groups are to work together as a

team, but they may not conceive of themselves in this way. Instead, they may consider themselves a collection of groups with distinct professional identities (Weller, 2012). Turner (1987) suggests that the process through which individuals become team members is a behavioural, cognitive, and emotional process of alignment within a social category (Lembke & Wilson, 1998). Social identity seeks to describe the identification of individuals within a social group or category (Lembke & Wilson, 1998). Social identity emerges through an active process whereby an individual chooses to align with a group (in-group) that is found to have positive distinctiveness when compared with other groups (out-groups) (Lembke & Wilson, 1998). The basic premise of Social Identity Theory (SIT) is that "pressures to evaluate one's own group positively through in-group/out-group comparisons lead social groups to differentiate themselves from each other" (Tajfel & Turner, 1986, p.16). The uni-professional educational approach leads to in-depth exposure of individuals to one another, promoting alliances and the development of in-groups (Orchard, 2010). Ultimately, the three general preconditions for achieving and maintaining a positive self-concept and differentiation are internalization of group membership as a part of one's self-concept (identification); the existence of relevant evaluative and relational aspects for intergroup comparisons; and the relevance of the out-group for comparison. These comparisons are as much about who one *is* as about who one *is not* (Dovidio, Gaertner, Pearson, & Riek, 2005). While the initial comparisons may be neutral, conflict arises when these comparisons become derogatory (Burford, 2012). Ultimately, one group perceives itself to be better, or at least not worse than another (Insko et al., 1992). Group membership can be associated with positive attitudes towards in-group members (in-group favouritism) and negative attitudes about out-groups (out-group derogation) (Burford, 2012), the latter leading to stereotyping.

SIT may have distinct effects on intergroup communication. Social identity affects how information is transmitted and received (Burford, 2012). The development of a unique language for each group will lead to communication patterns that may not be well understood by others (Orchard, 2010). Information passed from the in-group to out-group members may be encoded differently leading to communication problems and lost recall (Burford, 2012). Ultimately, information that would be identified as vitally important by one group may be seen as irrelevant by another (Orchard, 2010).

While SIT seeks to explain how in-groups are formed, and accounts for conflict between groups, it is insufficient to fully describe the interactions between and among first-responders and ED care providers. First, problems with communication during emergency situations are likely to arise from a multitude of factors such as the nature of the calls, professions deployed, patient considerations, and environmental conditions, not explained by SIT. An examination of the context in which intergroup interactions occur is absent from the theory, yet, may be relevant. Furthermore, social groups are viewed as a holistic identity with organization, goals, norms, roles, and values, which occur independently of the particular properties of individuals (Bornewasser & Bober, 1987). Differences between individual members may be important to consider when exploring the interactional processes of first-responders and ED personnel. Thus, SIT does not help explain positive interactions that occur both at the scene of emergencies and within the ED.

2.2.2 Intergroup Contact Theory. Intergroup Contact Theory (Allport, 1954) has been studied by several researchers in their quest to understand the nature of prejudice between groups. In this theory, members identify with their own group (in-group) at the detriment of their relationship with others (out-group) (Barr, Koppel, Reeves, Hammick, & Freeth, 2005).

These categorizations lead to distrust and conflict between groups (Tajfel, 1982) impacting their ability to work cohesively as a team. In Intergroup Contact Theory, it is hypothesized that contact between members of different groups could foster the discovery of mutual similarities and help alter stereotypical attitudes toward each other (Hind et al., 2003). Allport (1954) insists that contact *per se* is insufficient to promote collaborative practice and attention needs to be given to support interaction, challenge, and change. For contact between groups to have the desired impact on prejudices and attitudes, four key conditions must be met (Allport, 1954). Prejudice reduction requires equality amongst the groups, a goal-oriented approach with cooperation, not competition, and authority support. Hewstone and Brown (1986) suggest three further factors are needed to ensure success in such encounters: positive expectations of all participants, a concern for, and understanding of, group differences as well as similarities, and the perception that other members (the out-group) are *typical* rather than merely exceptions to the stereotypes. Several researchers have found that programs that incorporate the aforementioned favourable intergroup contact conditions have led to positive intergroup relations, attitude change, and diminished negative stereotypes (Carpenter, 1995; Carpenter & Hewstone, 1996; Mohaupt, van Soeren, Andrusyszyn, MacMillan, Devlin-Cop, & Reeves, 2012). Participants enrolled in interprofessional (IP) programs that do not include these elements have reported perceptions of unequal status among groups, negative stereotyping, and poor self-esteem (Ajjawi, Hyde, Roberts, & Nisbet, 2009).

While Intergroup Contact Theory may provide direction on the conditions necessary to support positive interactions (Hean & Dickinson, 2005), this perspective does not fully explain the interactional processes between and among first-responders and ED healthcare providers. While some of the research does include healthcare providers, paramedic, firefighters, and police

groups have been excluded. The studies that were located included IP programs where participants in the learning experience volunteered their time. Pettigrew (1998) suggested that the changes observed in these studies may not be "real". In other words, those most prejudiced would be unlikely to become involved in these extracurricular events. A further issue with Contact Theory is the number of conditions that have been specified to facilitate these positive interactions. Specifying too many conditions ensures that the *Contact Hypothesis* will always be met without really narrowing down on which conditions were most pertinent (Pettigrew, 1998). Finally, Intergroup Contact theory does not get to the heart of what leads to prejudice and neglects to illuminate how the process of change occurs.

2.2.3 Realistic Group Conflict Theory. Realistic Group Conflict Theory (RGCT) suggests that intergroup hostility is produced by the existence of conflicting goals between groups (Campbell, 1965) rather than as a result of social comparisons. Sherif (1979) defines *group* as a delineated social unit with measurable properties, which have consequences for the behaviour of its members. Groups include at least one structure or organization which is a power dimension regulating the behaviours of the group (Jackson, 1993). Specifically, competition over real or perceived scarce resources, where one group *wins,* and the other *loses,* leads to negative relations (Whitley & Kite, 2005). It has been posited that this competition leads to prejudice and stereotyping of the out-group; in-group solidarity; in-group identity; and internal cohesion (Sidanius & Pratto, 1999). The overall favourability of the intergroup interactions is determined by the reciprocal interests (such as economic interests, political advantage, or social status) of the groups involved (Sherif & Sherif, 1979). Often one large issue (of a negative nature) becomes the dominant influence in these interactions called the *Limiting Factor* (Jackson, 1993). According to RGCT, positive intergroup relationships arise from superordinate goals (Jackson,

1993). Superordinate goals are "goals which are compelling for members of two or more groups and cannot be ignored, but which cannot be achieved by the efforts and resources of one group alone" (Sherif & Sherif, 1979, p.11).

RGCT represented a major departure from other theories describing the origins of prejudice. For example, Bobo (1983) sought to analyze white people's opposition to integrated bussing in United States. His central thesis was that the opposition to integrated bussing by white Americans was not an example of symbolic racism (attitudes that are the product of pre-adult socialization), but rather, was better explained by RGCT. Bobo suggested that racial attitudes reflect the economic, social, and political relationships between black and white Americans. He further suggested that white Americans were resistant to bussing because they viewed integration as a threat to their life-styles, valued resources, and accepted way of life. While RGCT helps to explain tensions between groups, this theory is insufficient to understand interactional processes between and among first-responders and ED care providers. First, RGCT fails to consider the impact of hierarchies or third parties on intergroup conflict (Jackson, 1993). Critics of RGCT have also indicated that intergroup hostility can be just as readily aroused by competitive instructions with newly formed groups of strangers as with well-established groups (Rabbie, Schot, & Visser, 1989). They also found that intergroup hostility was similarly aroused by superordinate goal instructions, and that hostility could be spontaneously present in the absence of competitive goals (Rabbie et al., 1989). One of the biggest concerns with the theory is that it does not address how, and under what circumstances, superordinate goals are developed (Jackson, 1993). Furthermore, how groups negotiate crossing perceived boundaries is also not well described. This negotiation has applicability to both first-responders and healthcare providers. Presumably, the superordinate goal of saving a life should help to bring these groups

together. Given this is not always the case, a more comprehensive theory uncovering interactional process during emergency situations with an expansive lens is required.

2.2.4 Negotiated Order Theory. The consideration of a theory that attends to how individuals negotiate across professional barriers may help to illuminate interprofessional interactions. According to Strauss (1978) negotiation involves the "continual working out, together, of who [is] to do what, how and with whom" (p. 107). Negotiated order theory was developed to provide an explanation of organizational life in which the role of individual interactions and negotiations takes precedence in the creation and maintenance of social order (Reeves, Rice, Gotlib Conn, Miller, Kenaszchuk, & Zwarenstein, 2009). The theory was developed to provide an explanation of the structural and social conditions under which negotiations are made (Miller & Kontos, 2013). Strauss (1978) suggests that negotiated order can be cooperative or conflictual and includes properties such as; making trade-offs, getting kick-backs, compromising to the middle ground, paying off debts and reaching negotiated agreements.

Several studies have used Strauss' negotiated order theory to examine interprofessional collaboration in healthcare (Goldman, Reeves, Wu, Silver, MacMillan, & Kitto, 2015; Miller & Kontos, 2013; Milne, Greenfield, & Braithwaite, 2015; Mischo-Kelling et al., 2015; Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010; Reeves, et al., 2009). Reeves et al. conducted an ethnographic study in Canada. Data were gathered through 155 hours of observation on two general internal medicine wards in Canada, as well as 47 interviews with nurses, physicians, administrators, and other allied health staff. The researchers observed examples of both formal and informal IP interactions. Formal interactions included IP rounds led by physicians and were meant to be an opportunity for IP exchange. Informal interactions included those negotiations observed in shared areas and were unplanned in nature. Those

interactions that included physicians tended to be unidirectional and terse. Observations between nurses and other allied health staff however were characterized by the mutual exchange of information and often had a social element.

The observations of non-negotiation between physicians and other care providers has been observed elsewhere (Milne et al., 2015; Nugus et al., 2010). Goldman et al. adopted an ethnographic approach to investigate factors that shape interactions between medical residents and other healthcare providers when planning for discharge. Their data was compiled after 65 hours of observations and engaging in 23 interviews with nurses (n=5), residents (n=2), attending physicians (n=3), social workers (n=2), patient discharge planners (n=2), physiotherapist (n=1), community care access worker (n=1) and spiritual care provider (n=1) at one medical floor in Canada. In this study, researchers were most interested in examining the interventions planned to enhance IP interactions. One such strategy was the implementation of an orientation day where the other team members (aside from nursing) described who they were, their roles and how residents could refer patients to them. This site also offered IP rounds each day that were led by the residents and offered a formalized time for interaction. Attending physicians (senior physicians) role modeled IP interactions and often discussed the importance of getting information from other professions. Finally, some of the attending physicians organized social get-togethers as a strategy to enhance IP relationships. Ultimately the strategies meant to enhance negotiation were met with varied reactions. Many didn't feel that the strategies were effective given the unidirectional method of communicating, the transient nature of medical residents on the floor and competing agendas and time constraints during IP rounds.

The negotiated order theory helps to illuminate the importance of micro-level interaction in the broader scheme of social order within organizations. While this theory has been applied to

members of the healthcare field, it has not been considered in the context of emergencies beginning in the prehospital environment. It is unclear how hierarchies within emergency response and care might intersect to enhance or impede interprofessional communication. The inclusion of multiple agencies and locations may further complicate the applicability of negotiated order theory.

2.3 Empiric Literature

While reviewing literature associated with interactional processes, searches most often yielded studies associated with teamwork. As such, this section of the literature review begins with a discussion of teamwork and alternative versions of interprofessional work. The reviewed studies were grouped based on three levels of factors (micro, meso, and macro) that influence interactional processes. What is currently known about some of the micro (individual) factors that impact interactional processes (positively and negatively) is explored. Next, a collection of the meso (organizational) and associated macro (systemic) factors that may be influencing interactional processes between and among first-responders is discussed.

2.3.1 Teamwork. The advantages of teamwork in healthcare have been widely acknowledged, and include increased quality of care (Oandasan, et al., 2006 McCallin, & McCallin, 2009; Savic, Pagon, & Robida, 2007; Xyrichis, & Ream,2007); increased patient safety (Oandasan et al. , 2006; Ferguson, 2008; Makary, et. al., 2006); decreased workload (Oandasan et al., 2006); increased job satisfaction (Makary, et. al., 2006; Xyrichis, & Ream, 2007); enhanced efficiency (Ferguson, 2008) and diminished cases of burnout (Oandasan et al., 2006; Makary, et. al., 2006; Xyrichis, & Ream, 2007). There is not a clear definition of teamwork as it relates to the healthcare setting. Also problematic in the literature is that researchers tend to vary considerably in their account of those dimensions that are most relevant

when measuring teamwork (Cooper, Cant, Porter, Sellick, Somers, Kinsman, & Netel, 2010; Guise, Deering, Hanki, Osterweil, Mori, & Lowe, 2008; Small et al., 1999; Steinemann et al., 2016; Williams, Lasky, & Dannemiller, 2010). Even if the existing scales to measure teamwork were more consistent, they have been developed to measure teamwork in the hospital setting, and fail to shed light on the contextual factors surrounding the interactions of first-responders at emergency scenes and interactions in the ED that include both healthcare providers and these first-responders.

Several researchers have sought to describe how the nature of collaborative relationships is promoted by individual, team, or organizational factors (Douglas et al., 2016; West & Markiowicz, 2004; Gillespie, Chaboyer, Longbottom, & Wallis, 2006). Gillespie et al. utilized a grounded theory approach to attempt to identify the individual and organizational factors associated with teamwork in the operating room. With their purposive sample of 16 participants, the researchers conducted one-on-one interviews and focus groups to arrive at three main themes. First, they found that interdisciplinary diversity in teams contributed to complex interpersonal relations (Gillespie et al., 2006). Specifically, teamwork was affected by the influence of professional culture and mores. For example, nurses saw themselves as a part of the OR nursing team rather than a member of the neuro-team. The fact that teammates were often interchanged also had an effect on teamwork in this Australian setting. Nurses identified feeling frustrated when faced with a new surgeon because they were not sure what this particular member wanted. The second theme was about the influence of the organization on teamwork. Participants shared feelings surrounding a culture of blame and cited the need to write out incident reports rather than having open discussions. Surgeons were often affected by the haphazard implementation of new protocols such as pre-briefing, and identifying this as affecting

teamwork in the setting. Finite resources were also articulated as an organizational influence on teamwork in the OR. The final theme identified by the researchers was that education is viewed as the panacea to improving team communications and teamwork. Participants were unanimous in their declaration that education about working in teams early on in the schooling of all members was vital to changing culture, improving communication between members and enhancing professional understandings (Gillespie et al., 2006).

In their study, Peller and colleagues (2015) adopted a phenomenological approach to address the nonclinical skills required for effective teamwork in a Canadian study specifically addressing disaster medical assistance teams (DMATs). These teams are comprised of a variety of professional and paraprofessional personnel that are trained to provide medical care and relief following a disaster (Peller et al., 2015). The authors conducted 10 interviews and their analysis identified three core competencies for effective teamwork: austere environment skills (including improvisation, self-care, flexibility and adaptability); interpersonal skills (cultural competency, leadership, communication, sense of humor and education); and cognitive skills (critical thinking, creativity, problem solving and situational awareness). Unfortunately, very few details about the study participants were provided in the manuscript, only that the composition of participants was interprofessional in nature and "represented all healthcare professionals on the team" (p. 396). The omission of these details make it difficult to ascertain the relevance of these findings to first-responders and ED healthcare providers.

The concept of role clarity has been identified as important to effective teamwork. Douglas et al. (2016) undertook a single-site study using cross-sectional surveys to investigate nurses' and physicians' perceptions of teamwork and communication within a rapid response team (team of healthcare providers called to emergencies within the hospital setting). The results

indicated that the majority of nurses (89%) and physicians (78.4%) were clear about their roles during emergencies. This finding is contradicted in a separate study undertaken by Steinemann et al., (2016). These researchers found that trauma surgeons (n=9) and nurses (n=42) differed significantly in their perception of the responsibility of resuscitation tasks. Completed surveys indicated that both surgeons and nurses each felt that their own profession were most responsible for giving prophylactic medications, and providing the hand-off communication to the intensive care unit. It is clear that the level of role clarity during emergency situations is unclear in the hospital setting. This may also be true of the prehospital/ED environment.

Many researchers have indicated that collaboration across professions or other job-related boundaries have led to negative outcomes such as information withholding, conflict, and poor team outcomes (Adams, 2004; Caldwell & Atwal, 2003; McNair, 2005). Unfortunately, all of these studies were conducted within the hospital environment and do not include first-responders in their sample populations. In fact, none were conducted within the ED. While the growing body of empirical studies in this area may help to generate some useful insights into the nature of teamwork and interdisciplinary relationships, the above studies are largely a-theoretical. The application of theory to research is vital as "theories provide complex and comprehensive conceptual understandings of things that cannot be pinned down: how societies work… why people interact in certain ways" (Reeves, Albert, Kuper, & Hodges, 2008, p. 631). Theories provide perspective that allow researchers to critically examine complex problems (Reeves, et al., 2008) and may guide practitioners engaging in new health and social care practices or reflect on existing/habitual practices (Hean, Craddock, & Hammick, 2012). At present, it is unknown whether or not first-responders interact in the same way as do doctors, nurses, and other care providers.

2.3.2 Interprofessional Work. In their scoping review study of the literature on the key concepts, theories, and sources of evidence found in the interprofessional field, Reeves et al. (2011) critically examined 104 studies. The authors acknowledge that the concept of teamwork is defined in various ways; however, they assert that teamwork possesses the following elements: shared identity, clear roles/tasks/goals, interdependence, integration of work, and shared responsibility. They suggest that many groups that come together do *not* engage in teamwork, but rather other IP work. Other IP work to consider is collaboration, coordination, and networking (Reeves, et al., 2011). Collaboration is a different form of IP work than teamwork, where shared identity and integration are not necessarily required. Some interdependence and role clarity would still be necessary to perform this work (Reeves et al., 2011). At first glance, this appears to be a suitable alternative for first-responders working at the site of emergencies. However, the authors suggest that collaboration is most appropriate when tasks are unpredictable, complex, and *less urgent* than work requiring IP teamwork (Reeves et al., 2011). It would be difficult to imagine an emergency situation that could be identified as non-urgent in nature. Coordination includes similar elements to collaboration, but occurs in situations that are more predictable and less urgent (Reeves et al., 2011). This form of IP work is also unlikely due to the nature of emergency situations. Finally, networking does not require high levels of shared team identity, clarity of roles, interdependence, or shared responsibility in order to perform tasks effectively (Reeves et al., 2011). Networking does not necessitate face-face interactions and has the flexibility for changing memberships, which could be advantageous given the distributed nature of emergency response. However, the chaotic, unpredictable, and critical nature of emergency situations both at the scene of emergencies and in the ED is not congruent with the definition associated with this IP work. The proposed grounded theory research will help to shed

light on the interactional processes in which first-responders and ED care providers engage and how that might, or might not, relate to IP work.

2.3.3. Enabling Micro Factors of Teamwork. It is suggested in the literature that there are a number of strategies and cognitive structures that positively impact the abilities of groups to work together. In this section, studies reporting on micro factors that enable groups to come together to work effectively will be discussed in the context of crew resource management and shared mental models.

2.3.4 Crew Resource Management. Crew resource management (CRM) was initially designed as a program to train flight crews to acknowledge human fallibility and measure leadership abilities to incorporate team competencies in an atmosphere of open communication (Oriol, 2006). Literature concerning error in healthcare is often compared to evidence from the field of aviation. Both aviation and emergency care have well-intentioned, highly trained personnel at their core (Corfield & Cowan, 2011). Error patterns in highly dynamic areas such as the operating room, ED, and Emergency Medical Services (EMS) environments are similar to those found in the cockpit (Williams, Rose, Simon, & Med Teams Consortium, 1999). Physical challenges such as weather, debris, austere environments, and lack of medical facilities plague both the aviation industry and prehospital care (Corfield & Cowan, 2011). The parallels between aviation errors and those occurring at the scene of emergency situations and within the ED are clear. In each of these settings, personnel must function within time-pressed situations. In many cases, the stakes are high (including death or significant injury), and individuals must work in groups and make critically important decisions (Williams, et al., 1999).

Several authors have suggested that healthcare providers are much like aviation crews that face critically important decisions that impact the safety of others (Hamman, et al., 2010;

Kaji, Langford, & Lewis, 2008; Sexton et al., 2000). The healthcare literature often adopts CRM as a model to address safety and communication (Gore et al., 2010; Morey, et al., 2002; Pruit & Liebelt, 2010; Sexton et al., 2000; West, et al., 2012). Researchers agree that human factors such as communication patterns, team functioning, workload, and coping mechanisms have a huge impact on decision making during critical situations (Lyndon, 2006). Literature that examines CRM in environments prone to high acuity situations may be relevant within emergency situations first-responders and ED healthcare providers interact.

In one study, Sexton et al. (2000) surveyed healthcare providers from the United States of America, Israel, Germany, Switzerland, and Italy working in the operating room and the intensive care unit about their attitudes concerning error, stress, and teamwork and compared these attitudes with those of airline cockpit crews. This was a large cross sectional study including 1033 healthcare providers (nurses, surgeons, residents, and anaesthesiologists) and more than 30 000 cockpit crew members (captains, first officers and second officers). The authors suggested attitudes about errors, teamwork, and the effect of stress and fatigue affect medicine just as they do in the aviation field (Sexton et al., 2000). In the results, intensive care unit (ICU) staff (94%), like pilots (97%), rejected steep hierarchies (Sexton et al., 2000). Interestingly, this attitude was shared with only 55% of surgeons. This may account for the fact that a mere 28% of surgical nurses, 25% of anaesthetic nurses, and 10% of anaesthetic residents reported high levels of teamwork. Most surgeons (64%) and surgical residents (73%) felt that high levels of teamwork *were* present in the operating room. There appears to be a relationship between perceptions of teamwork and status within teams; more senior care providers seemed supportive of steep hierarchies and considered team communication to be of a higher quality than those in positions of less authority. In environments such as these, an open culture that

accommodates questioning and recognizes human limitations is difficult to achieve. When specifically questioned about errors, only one-third of respondents indicated that errors were handled appropriately at their institution. Furthermore, 33% of staff in the ICU suggested that they did not make errors at all. Half of all respondents indicated that the culture of their institution made it difficult to discuss errors (Sexton et al., 2000).

Cole and Crichton (2006) adopted an ethnographic approach to explore the culture of a trauma team located in the ED in teaching hospital in London, England in relation to human factors. The researchers engaged in six periods of observation followed by 11 semi-structured interviews of trauma team members employed in a teaching hospital. A limitation of this study is that details about trauma team members in terms of their professional designation were not shared with the reader. The researchers suggested that human factors, such as those described by Sexton et al (2000), affect a team's performance regardless of how clinically skilled the members were. Informants specifically identified the value in a good leader when managing a trauma. Effective leadership was defined as: incorporating deliberate strategies to involve all members; offering support; and the appropriate use of humour (Cole & Crighton, 2006). Leaders that used power and authority to influence care were detrimental to team functioning. Members also suggested that role competence was often viewed as helpful to trauma management. This was enhanced when the team was familiar with one another and role clarity was present.

The applicability of the findings from the aforementioned study may be limited. First-responders often do not have the luxury of familiarity as they may often find themselves working alongside personnel from other departments that they have not previously encountered. It is unknown how this affects the human factors associated with emergency management. The aviation industry has made a great deal of progress in creating an atmosphere that deals

effectively with errors; it is possible that prehospital care and the ED could benefit from the same approach. While it may be helpful to identify similar human factors in healthcare personnel as those in the aviation industry, determining the efficacy of a CRM approach in emergency situations is essential. Other researchers have moved beyond identifying human factors to developing interventions to address those factors that negatively impact teamwork.

Morey et al., (2002) incorporated a prospective, quasi-experimental, untreated control group design with one pre-test and two post-test measurements over a one-year period. Nine hospitals in the United States were included in the study (six in the experiment group and three in the control group). The first objective of the study was to develop a course from aviation-oriented teamwork curriculum adapted to meet the needs of the ED. The course, Emergency Team Coordination Course, ETCC, included five dimensions: team structure and climate; application of problem-solving strategies; communication within the team; execution of plans; management of workload; and improvement of team skills. The second objective was to evaluate the effectiveness of the formal teamwork training program, Emergency Team Coordination Course (ETCC), by measuring team behaviours, attitudes and opinions, and ED performance. The researchers reported improvements in each of these three areas when comparing periods one and two. Teamwork, attitudes, and the perception of management support significantly increased. Perhaps most importantly, the observed clinical error rate was dramatically reduced in the experimental group (30.9 in period one, compared with 4.4 in period two, p=0.039). The participants indicated that incorporating teamwork strategies did not affect their perception of workload in the ED. While the results of these studies are compelling and support CRM training in the ED, the feasibility of a strategy such as this with first-responders is unknown. Prior to developing programs that might strengthen teamwork and collaboration, it is

important to first understand the interactional processes that exist. Given the lack of literature examining these processes, developing a grounded theory of the interactions between and among first-responders is timely.

While several researchers have adopted a CRM approach to investigate teamwork, there is disagreement regarding whether this approach is appropriate within the healthcare system. First, the measurement of changes observed with a CRM approach are ambiguous. Generally, these outcomes are subject to the recall of trainees and are not connected to measures of competence in actual situations (Reeves, Kitto, & Masiello, 2013). These authors suggest that the impact of CRM on knowledge acquisition and behaviour is inconsistent; negating the claim that there is sufficient evidence to suggest that this training enhances safety outside of the aviation industry (Salas, Wilson, Burke, & Wightman, 2006). Furthermore, the staff in aviation operate as crews throughout an entire shift: flight deck crew, cabin crew, and a ground crew. Each flight consists of these fixed crews; they have defined boundaries for tasks and simple shared goals to which the crew is committed (Reeves, Lewin, Espin, & Zwarenstein, 2010). First-responders, nurses, and physicians respond to and treat patients during emergency situations; they come together briefly to manage individual crises. The brevity of interactions may affect the teams' abilities to develop the skills necessary to promote CRM. Another problematic issue is the fact that personnel responding to medical calls deliver care in less structured, geographically separated settings, unlike the environment in aviation (Reeves, Kitto, & Masiello, 2013). Furthermore, the crises to which first-responders and ED personnel attend vary widely, every call is unique; CRM may be too simplistic to explain interactions during these emergency situations (Scott, et al., 2013).

2.3.5 Shared mental models. Teams working in high-risk environments coordinate their

actions efficiently when team members are able to anticipate and predict one another's requirements and adjust strategies based on changes in the environment (Espevik, Johnsen, & Eid, 2011). Effective communication and team cohesion are foundational for effective information-exchange, co-ordination, monitoring, and providing feedback (Gillespie & Chaboyer, 2009). Shared mental models (SMMs) are socially constructed cognitive structures that include shared knowledge or beliefs about an environment and its expected behaviour (Druskat & Pescosolido, 2002). Many researchers suggest that SMMs are an integral component of effective teamwork (Banks & Millward, 2000; Espinosa, 2001; Kalisch, 2009; Millward & Jeffries, 2001; Patterson, et al., 2012; Petrosoniak & Hicks, 2013). When teams effectively incorporate SMMs in their work, members are able to coordinate without the need for explicit communication and predict one another's needs in the absence of discussion (Petrosoniak & Hicks). SMMs are especially important when a team's work is enacted in unpredictable environments where frequent communication is not possible (Druskat & Pescosolido, 2002). Gillespie and Chaboyer (2009) suggest that there are several models that come together to form a shared mental model. The first involves knowledge of the technology or equipment utilized by the team (Gillespie & Chaboyer, 2009). When time is of the essence, members must be able to manipulate necessary equipment in order to accomplish their collective tasks. Second, the team must share an understanding about how to accomplish the task by considering procedures, strategies, likely contingencies, and environmental conditions (Gillespie & Chaboyer, 2009). This is likely very true in emergency response and patient care; team members must constantly be looking for changes in the environment and patient status. Next, team members must share the same idea about how members collaborate. This involves shared perceptions of role responsibilities, communication channels, interdependencies, and information sources (Gillespie

& Chaboyer, 2009). The final model, the team model, is concerned with team member colleagues, appreciating their knowledge, skills, attitudes, preferences, strengths, and limitations (Gillespie & Chaboyer, 2009).

There are a number of methods suggested to measure SMMs (Carley, 1997; Cooke, Salas, Cannon-Bowers, & Stout, 2000; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), all based on knowledge similarity. During emergency situations timely decisions must be made and are often dependent on the coordination of others and communication involving several members. Teams whose members have shifting schedules, or are comprised of geographically separated members (distributed teams) may have difficulty with SMMs (Espevik, et al., 2011). Further, familiarity amongst members could also have an effect on SMMs and team performance. While I was unable to find empirical literature examining distributed teams and SMMs involving first-responders or ED healthcare providers, one study examining military personnel was located. Espevik et al. (2011) tested whether navy teams that were familiar with one another had different levels of shared mental models when compared with teams that were unfamiliar. SMMs were measured by performance, communication, and physical arousal while cadets (n=100), in teams of three, (n=100) participated in scenarios in high-fidelity simulation suites of naval operations rooms. In this study, familiar teams rated higher in performance levels, had faster reaction times, better accuracy and greater mission success. While communicating, the familiar teams had less task-irrelevant dialogue, and provided more information to the team before others requested the information. The researchers also indicated that familiar teams performed well during periods of high workload, and responded better to new situations (Espevik et al., 2011). Espevik et al. agreed with other researchers who suggested that communication and performance accomplishment were indicative of shared mental models

(Mathieu et al., 2000). They acknowledged that further research should focus on the nature of such mental models. Given that first-responders may have never worked together in the past, it may be that SMMs are difficult to achieve, and thus have an impact on the ability of these members to work synergistically.

Smith and Dowell (2000) published a case study of inter-agency coordination during response to a railway accident in the United Kingdom to highlight the importance of SMMs. Specifically, they sought to examine the extent to which SMMs were held between personnel in different agencies and whether this affected coordination between these individuals. They also sought to illuminate which factors in the disaster management system facilitated or inhibited the construction of SMMs. The authors interviewed six informants with key managerial responsibilities from the fire brigade, police, and ambulance services 18 months following the incident. They also examined documents pertaining to the accident. Briefly, the incident comprised of a train derailment and subsequent collision in a remote location that resulted in one death and 27 hospital admissions (six requiring treatment beyond 48 hours). Rescue efforts were complicated by torrential rains, cold, darkness, location, and communication delays (Smith & Dowell, 2000). Rescuers had three choices for transporting the casualties including: carrying each person up a muddy embankment to waiting ambulances; using a third train as a *rescue train* to transport victims to a station closer to one of the local hospitals; or carrying patients along a fairly straight line of track to the next road juncture to waiting ambulances. Communication problems led to divergent SMMs, which had a negative effect on the timing of rescue efforts. The second option was ultimately chosen, however, many rescuers were unaware of this. Without a SMM surrounding the rescue choice, profession-specific tasks and collective tasks suffered. None of the responders knew when the rescue train would arrive and a hospital that

was put on stand-by was not informed that all patients would be directed to a different institution (in close proximity to the train station). Paramedics had been dispatched to the site of the crash rather than the train station where they would be required to transport patients to the hospital for treatment. Finally, police did not provide protection from the media to the injured because they were unaware of the plan (Smith & Dowell, 2000).

While it would appear that effective communication and coordination necessitates SMMs from rescuers "on the ground" during crisis situations, this may be too simplistic an explanation. Kozlowski and Ilgen (2006) suggest that mental models in teams may be much more complex than is described by SMMs. The literature regarding SMMs does not address the fact that while effective teams may not have identical knowledge structures (Kozlowski & Ilgen, 2006), they may function efficiently. The accuracy of SMMs is also relevant (Espinosa, 2001). It is not sufficient that team members share the same mental model, rather, this representation must be accurate to the situation, or the actions of members may hinder, rather than support, rescue efforts. It is currently unknown what, if anything, SMMs first-responders and ED healthcare providers share during emergency situations.

2.4 Disabling Micro Factors

While it is important to recognize enabling factors for positive interactional processes, acknowledging those micro factors that prevent positive IP exchanges is equally important. The perceived inequality of professions in terms of power, status, and hierarchy negatively impacts the ability of groups to work cohesively. Additionally, poor communication is often at the root of negative intergroup relations. The section that follows addresses the research regarding each of these issues.

2.4.1 Power, status, and hierarchy. The perceived (or real) inequality of status between members on the same team can have an effect on interactional processes. Atwal and Caldwell (2005) engaged in an observational study of multidisciplinary team meetings comprised of occupational therapists, physiotherapists, social workers, nurses, and physicians to examine whether or not healthcare professionals interacted equally at team meetings. They suggested that for teams to work effectively, its members must be competent to collaborate (Atwal & Caldwell, 2005). In this study, physicians were dominant in meetings while nurses and other allied health personnel did not significantly contribute to team discussions. Perceived status and hierarchy impacted interactional processes between these care providers (Atwal & Caldwell, 2005).

Reeves et al. (2009) utilized an ethnographic approach to understand how inter-professional communication was undertaken in two general internal medicine settings in Canada. The researchers engaged in 155 hours of observational opportunities and facilitated 47 interviews. They examined both planned IP communication opportunities *(bullet rounds)* and unplanned IP communication instances with health professionals including physicians, medical residents, pharmacists, dietitians, physiotherapists, occupational therapists, social workers, nutritionists, chaplains, and nurses. It was revealed that the interactions were disproportionately one-way (physician dominated) during bullet rounds. Nurses and other allied health professionals indicated reluctance to offer input during these planned interactions due to feelings of intimidation. Additional problems of missing clinical information, poor attendance, and the attitude of low priority were also cited. Furthermore, both nursing and medicine indicated that the information shared during these sessions was generally unhelpful and/or superficial (Reeves et al., 2009). Unscheduled IP interactions that involved physicians with other personnel were generally terse, brief, and involved questions, requests, or orders. On the other hand, interactions

among allied healthcare providers (that did not include medicine) were much more collaborative and included a social element (Reeves et al., 2009). Again, hierarchy seemed to have a large impact on communication amongst team members. It is important to note that the above studies included hospital personnel exclusively. No literature could be located to explain the relationships between and among first-responders and ED care providers. In fact, it is unknown if there is a perceived hierarchy between first-responders and what effect, if any, this has on the interactions of these professionals during emergency situations.

2.4.2 Poor Communication. One of the key elements of interaction is communication. In any emergency situation, first-responders, paramedics, and other healthcare providers must communicate information about the patient and environment when transferring care *(handover)* from one provider to another. If these moments of communication are ineffective, errors and omissions can occur (Hendel & Flanagan, 2009; Hussain, 2010; Nagpal et al., 2010). An investigation of the current state of handover during emergencies is important.

It seems that the handover of care among paramedics, ED nurses, and physicians is wrought with communication failures, resulting in potential points for error to occur (Carter et al., 2009; Evans et al., 2009; Jenkin, Mitchell, & Cooper, 2007; Talbot & Bleetman, 2007). Despite the fact that patient handover is a crucial part of initiating care in EDs, documented problems with the loss of vital prehospital information through inaccurate reports and poor retention of this information by ED staff is problematic (Talbot & Bleetman, 2007). Scott, Brice, Baker and Shen (2003) measured the verbal communication between paramedics and physicians in an ED trauma room before and after an educational intervention. The paramedics received a web-based educational intervention aimed at enhancing their communication skills while reporting traumas. The intervention had no effect on physician recall of the report provided by

the paramedics. It appeared that communication problems between physicians and paramedics might be more complicated than initially hypothesized. The results of subsequent studies confirmed a discordance between what paramedics report at the time of handover, and the information actually documented (especially information pertaining to prehospital care interventions) (Carter et al., 2009; Evans et al., 2009; Talbot & Bleetman, 2007). Given that many of the errors were captured in single-patient scenarios, the implications for data loss in situations with multiple casualties or disasters are clear.

Jenkin et al. (2007) further examined the problems of information transfer between ambulance staff and ED staff during patient handover. They suggested that active listening is required by ED staff in order to avoid frustration of ambulance staff. They further indicated that in emergency situations, paramedic staff should be prepared to repeat their report and suggested using a two-phase approach when transferring care. In a critical review of clinical handovers between paramedics and ED providers, researchers agreed that information loss may be improved by more structured reporting processes and the use of a shared language (Bost, et al., 2009). An examination of the current interactional processes between and among various emergency responders and clinical healthcare professionals could uncover discrepancies in the use of terminology and other issues that influence the ability for them to respond to patient needs in emergency situations. What is lacking in the literature is an examination of the origins of the initial patient interaction. During emergencies, paramedics often must rely on their memory of events when verbally reporting to ED staff. This, coupled with the fact that multiple players were likely involved in the emergency response, and that some of the information delivered may not be first-hand knowledge, will affect the quality of handing over care (handover) from one group to another in the hospital environment. By investigating the interactional processes of

first-responders and healthcare providers, strategies to effectively address verbal reporting during emergency situations may emerge.

The research in the area of transfer of accountability (or handovers) has been largely quantitative and, while the methodology highlights incidences of information loss, it does not capture the context and processes surrounding handovers. A few qualitative studies were located addressing handover in the ED. Researchers in Australia used a focused ethnographic approach including participant observation, interviews and document review to examine clinical handover of patients in the ED arriving by ambulance (Bost et al., 2012). Paramedics (n=26), nurses (n=30) and medical officers (n=10) were observed over a one month period in the ED. In addition, 31 interviews were conducted to triangulate data. Study results indicated that the quality of handover is dependent on personnel's expectations, work experience, workload and working relationships. Interview data confirmed that interruptions and confusion about when transfer of care actually occurs impede the handover process. Familiarity between individuals of different professions aided in the smooth transition of care from one provider to another. One limitation of this study is the discrepancy between the participant numbers volunteering for interviews. While 20 paramedics agreed to an interview, the researchers were only able to recruit six nurses to participate in this portion of the study. This variation may have skewed the results. In addition, this was a single-site study and the applicability to other regions is unknown.

In another qualitative study, Bruce and Suserud (2005) endeavoured to uncover the daily reality of the emergency nurse and gain an understanding of the phenomenon of handover using a descriptive phenomenological design. Six informants (ED nurses with more than three years of experience) were interviewed. These nurses shared their perceptions of both ideal and non-ideal

handovers in the ED. One thing that nurses in the ED appreciated was when ambulance personnel called ahead to inform them of a patient's condition as this did not always happen. The informants agreed that the ideal handover often occurred when patients had clear, identifiable medical problems. Furthermore, the quality of the report was generally related to the amount of experience of both the prehospital care provider and the ED personnel. Respondents suggested that reports were enhanced when delivered at the patient's bedside. Conversely, ED nurses in this study indicated that non-ideal handovers occurred when patients presented with ambiguous, diffuse problems or when prehospital personnel did not feel that the patient truly required emergency care (Bruce & Suserud, 2005). Problems arose when prehospital care providers attempted to move beyond the scope of their roles and diagnose patients' problems. Nurses noted that if they did not agree with the assessments, problems such as conflict between professions and confusion for patients resulted. While this study helped to explain the experiences of ED nurses, the perceptions of prehospital personnel were excluded. The study was conducted in Sweden, at a site that incorporates a different mix of prehospital care providers (nurse attendants work with ambulance attendants) than are practicing in Ontario. The lived experience of first-responders remains absent in the literature to date, a gap that will be addressed by the proposed research study. Appreciating the experiences of both first-responders and ED healthcare providers may help to address initiatives aimed at optimizing interactional processes during emergency situations.

2.5 Meso/Macro Factors

Interactional processes are impacted by more than individual (or micro) factors. It is reasonable to assume that organizational, union, (meso) and governmental/systems (macro) implications directly influence the interactions of professions during emergency situations. This

section includes an examination of a series of multi-center before-after clinical trials looking at various aspects of prehospital care. How the findings of these studies are connected to the politics associated with first-responders such as paramedics and firefighters is explained.

2.5.1 Political climate. Unions representing both firefighters and paramedics have issued position papers based on the results of the Ontario Prehospital Advanced Life Support Study (OPALS), the largest prehospital study in the world to date (Stiell et al., 1999b). This 3-phased controlled clinical trial was conducted over an 8-year period (1994-2002) and included data from more than 25,000 patients (Stiell et al., 2007). Tensions arose between the fire and paramedic groups with the published results of phases one and two. In phase one, investigators examined the factors that may be optimized in an Emergency Medical Services (EMS) system. They found that minimizing EMS response times enhanced outcomes (Stiell et al., 1999a). Furthermore, survival of patients improved three-fold if CPR was initiated by bystanders, and doubled if initiated by fire or police responders. The authors indicated that this study was the first to "unequivocally demonstrate the beneficial effect of fire or police CPR before the arrival of ambulance vehicles" (Stiell et al., 1999a, p.47).

In the second phase of the OPALS study, investigators were most interested in examining the survival of out-of-hospital cardiac arrest patients following the introduction of a rapid defibrillation program (Stiell et al., 1999b). In an effort to achieve response times of eight minutes or less, multiple measures were implemented including: defibrillation by firefighters; base paging; tiered response agreements with fire departments; continuous quality improvement for response intervals; and province-wide revision and implementation of standard dispatch policies. They found all aspects of survival were improved in this phase (Stiell et al., 1999b). Based on the results of this study, the Ontario Health Technology Advisory Committee

(OHTAC, 2011) recommended that automatic electrical defibrillators (AEDs) be provided to paramedics *as well as* firefighters and police officers. Both the union and management of fire services enthusiastically agreed. In their position paper, the Ontario Association of Fire Chiefs & Ontario Professional Fire Fighters Association (2008) suggested that despite the fact that funding to paramedic services has increased significantly, their service has not improved and critical response times of responding to emergencies in less than six minutes continue to go unmet. They suggested that the results of the OPALS study demonstrated the importance of timely response for life threatening calls, and contend that they have the ability to respond to *all hazards* including fires, motor vehicle accidents, hazardous materials (haz-mat) disasters, terrorist attacks, and life-threatening medical calls (Ontario Association of Fire Chiefs & Ontario Professional Fire Fighters Association, 2008). To strengthen their argument, they indicated that life-threatening emergencies may often require life-saving treatment, physical rescue, and protection from the elements through scene safety, all of which they are well-positioned to do. For example, the fire-fighting group boasted response times to calls of six minutes (or less in large urban centers) when compared to paramedic response times of 13.1 minutes. In summary, firefighters argued for a better communication system that would notify paramedics and fire *simultaneously* to ensure Ontarians receive prompt services.

The Association of Municipal Emergency Medical Services of Ontario (AMEMSO, 2011) responded to the claims made by the fire service regarding response times. They indicated that part-time firefighters could not possibly respond in less than six minutes, and indicated doubt that urban departments could respond as quickly as claimed. They did not offer any evidence to the contrary. AMEMSO also indicated that the 13.1 minute response time published by the fire group was inaccurate, and suggested that the *real* response time was closer to 10.5

minutes for emergency calls. Indicated in the position paper was that firefighters have a lot of "down time" related to successful fire prevention programs and building code improvements, and their desire to function as part of tiered responders in prehospital medical calls is directly related to this. While AMEMSO admitted that there is evidence to include fire and police as a part of a tiered response in cases of cardiac arrest, this constitutes a small percentage of their calls. "…Fire response to all Code 4 calls is not supported by science, would carry significant fiscal impacts, and would generate public safety risk in terms of fire apparatus collision incidents" (AMEMSO, 2011, p. xii). In times of fiscal restraint, it is not unusual to see professions protecting their turf and marketing their respective competencies. It is unknown if the expanded role of the fire department has, in fact, had an impact on interactional processes between and among first-responders at the scene of emergencies. These factors will be important to uncover and may act as a springboard for educational and training initiatives.

2.6 Chapter Summary

In summary, although many theories have been proposed to explain interprofessional teamwork, a more inclusive theory is required to explain the interactional processes of first-responders and ED healthcare providers in emergency situations. Existing theories may begin to explain some of the elements that impact these interactions, but lack the complexity that is likely to influence collaborative efforts during emergency situations. While it appears as though intergroup collaboration may be achieved by articulating authority support, maintaining equality of status, and promoting cooperation and a goal-oriented approach, the literatures examining these elements are limited to healthcare professionals employed within the hospital setting. Examining the interactions between and among first-responders and ED care providers should provide insight into the level of interdisciplinary teamwork in emergency situations.

Furthermore, empirical literature examining communication between paramedics and ED nurses and physicians clearly indicates that information loss may inadvertently negatively affect patient care. The political agendas of different professional groups may have direct bearing on the interactions between and among first-responders and ED personnel. Missing from the empirical literature is an examination of the broader contextual factors that impact interactional processes during emergency situations. Given the paucity of evidence describing the interactional processes in emergency situations, this proposed research study will address this gap in the research literature.

3 Chapter 3: Methodology

In this chapter the research methodology used for this study and how it has guided data collection, analysis, and the development of a theory aimed at explaining interactional processes between and among first-responders and emergency department (ED) healthcare providers is introduced. First, a discussion of grounded theory, in particular the version supported by Strauss and Corbin (1990), is presented to support the author's choice in research design. The subsequent sections describe the data collection phases used in this study, which included participant observations and interviews. An explanation of the analytic approaches used to manage the study data is provided, and concludes the chapter.

3.1 Grounded Theory

A qualitative research design was best suited to answer the research question because there is little known about this phenomenon. While there are several qualitative methodologies that could be used to explore first-responders and ED healthcare providers, it was important to ensure that the chosen method was most appropriate to answer the question, *"how do first-responders and ED healthcare providers interact during emergency situations?"* In the event that the focus had been the "meaning, structure and essence of the lived experience of this phenomenon for this… group of people", phenomenology would have been the most logical choice (Patton, 2002, p.125). In ethnography, the epistemological assumption involves understanding behaviours within the cultural context within which they occur (Omery, 1988). Had an ethnographic approach been chosen, the inquiry would have been focused on the culture of emergency response, a valid and reasonable direction. Grounded theorists attempt to explain the main concern (core category) *and* the surrounding context of participants engaged in the activity of study. Specifically, the inductive qualitative methodology embedded in grounded

theory allowed me to uncover the varied contexts that surround the process by which first-responders and healthcare providers interact during emergency situations. Birks and Mills (2011) suggest that a grounded theory approach is most appropriate when: little is known about the area of study; the generation of theory with explanatory power is a desired outcome; and an inherent process is embedded in the research question. All of these conditions were met by the topic of interest. Furthermore, grounded theory is most appropriate when the researcher wishes to learn *from* the participants to understand a process (Richards & Morse, 2007). In this case, I was unaware of the processes in which individuals from a variety of care provider roles and educational backgrounds engage while interacting with one another during emergency situations. One way to unravel this mystery was to gain understanding by observing and interviewing members of these diverse groups.

The definition of 'theory' adopted in this dissertation work originates from Strauss and Corbin (1998) where theory is "a set of well-developed concepts related through statements of relationship, which together constitute an integrated framework that can be used to explain or predict phenomena" (p. 15). There are 'types' or levels of theory including; Grand, Mid-Range and Micro level theories (Reeves, Albert, Kuper, & Hodges, 2008). Grand (or 'macro') theories are the most abstract, wide ranging and non-specific (Reeves et al., 2008). By contrast, Micro (or 'practice') theories are the most specific with a narrow context (Reeves et al., 2008). Through this grounded theory research, it is my goal to contribute to a Mid-Range theory that explains how the basic social dilemma (in this case emergency response and care) is enacted (Munhall, 2007).

Grounded theory is a research methodology developed from the perspective of symbolic interactionism, which explores the processes of interaction between people's social roles and

behaviours (Chenitz & Swanson, 1986; McCann & Clark, 2003a). Symbolic interactionism necessitates understanding the meaning attached to these social situations (McCann & Clark, 2003a). The theory of symbolic interactionism states that individuals behave and interact according to the meaning or interpretations of symbols they encounter in an environment (Streubert et al., 2009). The interpretations of these symbols help facilitate understanding about aspects of social processes. Grounded theory differs from other qualitative methodologies in that the primary goal is to develop a theory about social processes rather than to describe a particular phenomenon (Speziale & Carpenter, 2009). In this study, I was interested in explaining the social processes in which various first-responders and ED healthcare providers engage during emergency situations and using grounded theory methods best supported this interest. Both first-responders 'in the field', and healthcare providers in an ED are exposed to a variety of symbols (equipment, various uniforms, communication devices, physical environments) and language patterns (acronyms, documentation, verbal reports) that are often unique to emergency situations. Gaining an understanding of the meanings attached to these symbols will help to contribute to a theory that considers interactional processes during emergency situations.

3.1.1 Why Strauss and Corbin? There are a range of approaches in grounded theory (GT), I carefully reviewed each approach and ultimately decided that the version espoused by Strauss and Corbin (1990) was most suitable to the particular research questions chosen (McCann & Clark, 2003b). Ultimately, the goal of this research study was to develop a grounded theory to explain the interactions between and among first-responders and ED healthcare providers during emergencies.

'Classic' grounded theory was initially developed by Barney Glaser and Anselm Strauss in the 1960s as a means for inductively generating theory (Patton, 1990). Glaser (1992) defined

grounded theory as "a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area" (p. 16). As GT became more popular as a legitimate research method, a divide between the two creators, Glaser and Strauss, became apparent as Strauss instituted a number of changes in this approach (Evans, 2013). Some of the main changes that Strauss and Corbin incorporated in their version of grounded theory were the additions to the structure of a three stage coding methodology of open, axial, and selective coding (Evans, 2013). The clear identification of this more prescriptive approach and the illustration of the procedures to follow, attracted me to what has been referred to as, Straussian GT.

I considered other versions of grounded theory such as feminist grounded theory and constructivist grounded theory before ultimately settling on Straussian GT. It is important to note that I am not arguing that Straussian GT is the superior version, only that it is the version that I felt was most suited to my research inquiry. Feminist grounded theory was initially developed to ensure that the disempowered were given voice in the research community (Wuest, 1995). In developing this theory I was most interested in ensuring that each of the professions were recognized. While issues of hegemony and power may have been relevant in understanding interactions between and among first-responders and ED healthcare providers, this consideration of hegemony and power did not drive the current research study. Constructivist GT has been identified by Charmaz (2006) as an alternative to both classic and Straussian GT (Breckenridge, Jones, Elliott, & Nicol, 2012). Constructivist GT does not tend to focus on one main concern or category; rather, proponents of this approach suggest that one should consider multiple perspectives that reassembles subjects' lives (Charmaz, 2003). I was attracted to the idea of finding a core category in order to explain the interactions between and among first-

responders and ED healthcare providers during emergency situations aligning with Straussian approach to GT.

Both Glaser (1978) and Charmaz (2006) stressed in their approaches to GT that a research problem statement is not preconceived, while Strauss and Corbin (1998) suggested that research problems can originate from the literature or from a researcher's personal or professional experience. As such, my professional interest with the topic of how first-responders and ED healthcare providers interact during emergency situations provided the impetus for the study. This interest prompted a review of relevant literature (Chapter 2). It quickly became clear that there is very little empiric literature examining the topic of interactions between and among first-responders and ED healthcare providers. Given the vital role that prehospital and emergency care has on the health of communities, investigation into this field seemed warranted. Strauss and Corbin (1990) emphasized the importance of identifying structural as well as contextual, symbolic, and interaction phenomena (McCann & Clark, 2003b). These influences were considered from micro, meso, and macro contexts in the hopes of arriving at a theory that addressed these interactive processes. This is consistent with Strauss and Corbin's (1998) version in GT, "if a researcher wants to build theory, then it is important to understand as much as possible about the phenomenon… locating a phenomenon contextually or within the full range of macro and micro conditions in which it is embedded" (p. 181-182).

Strauss and Corbin's approach to grounded theory originated from the social constructionist ontology and poststructuralist paradigm, "where reality cannot be known but can be interpreted" (McCann & Clark, 2003b, p. 23). Through active observation of paramedics, firefighters, police, and ED healthcare providers during emergency situations 'in the field' interpretations would be made regarding the interactions of first-responders and ED care

providers. Interviews with first-responders and ED care providers would help confirm or refute these interpretations. I acknowledge that one cannot truly *know* the process by which various participants develop collaborative relationships during emergency situations, but through careful observation and analysis, I will begin the identification, and interpretation of many of these complex social actions. Corbin (2009) stated that theories are constructed from the stories told by participants that help to make sense of their experiences and/or lives, "out of these multiple constructions, analysts build something they call knowledge" (Strauss & Corbin, 1998, p.39). In this study, I developed a grounded theory that helps to explain the interactional processes between and among first-responders and ED healthcare providers by: observing exchanges between these key players; listening intently to stories told by individuals in each of the groups; and engaging in multiple interviews.

3.2 Methods

3.2.1 Sample and sampling strategy. In a grounded theory investigation, participants are selected based on their experiences with the social processes in question (Streubert et al., 2007). As such, purposive sampling was used initially to identify participants using predetermined criteria for member recruitment. For the purposes of this study, all first-responders (including paramedics, police and firefighters) currently employed within in one Canadian region in mid-Western Ontario were eligible to participate. In addition, inclusion criteria included the ability of participants to communicate verbally in the English language. I did not exclude participation based on age (as all employed personnel were above the age of 18), experience, or rank within the various services.

The region was chosen specifically for a few reasons. First, through previous networking activities, I was familiar with many of the administrators responsible for decision-making in paramedic, police, and fire services. This familiarity undoubtedly made approvals to enter these

services much more likely. Additionally, I live within the region, making this a very convenient place to engage in ride-along and observational opportunities.

First-responders generally arrive to emergencies in crews or teams. Generally, paramedics and police officers arrive in pairs, and fire fighters in groups of four. I was successful in recruiting six police officers, six teams of paramedics (n=12), and two platoons of firefighters (n=16) to observe in ride-along opportunities during various shifts. 'Ride-alongs' refer to opportunities for individuals not employed by a service (such as paramedics, fire, or police) to accompany the emergency service vehicle and shadow the first-responder. The person riding along (in this case, me) is meant to take an observational role only and is not to become involved in the situations attended to by the first-responders. As well, I was paired with seven nurses (in the 'Charge Nurse', or triage role) at three different hospital EDs located within the region (see Table 1). Spending this time with each of the groups allowed for approximately 256 hours of informal interviews and information gathering. I ultimately followed Strauss and Corbin's (1998) advice by carefully considering the groups or sites I was interested in observing, the data I would be considering, and how many shifts I would ride-along (initially I had considered 2 shifts/team). In keeping with Straussian GT (1998), each of these decisions were dependent on gaining access, my research goals and the time that I was able to spend gathering data. These decisions were modified as the theory evolved.

Following these observational opportunities, it was essential for me to shift to theoretical sampling to ensure that the theory was built with conceptual depth (Benoliel, 1996). According to Strauss and Corbin (1998), theoretical sampling is:

> "data gathering driven by concepts derived from the evolving theory and based on the concept of "making comparisons," whose purpose is to go to places, people, or events

> that will maximize opportunities to discover variations among concepts and to densify categories in terms of their properties and dimensions" (p. 201).

Theoretical sampling is defined as sampling on the basis of concepts that appear to be significant because they are repeatedly present or noticeably absent when comparing multiple incidents (Strauss & Corbin, 1990). Thus, theoretical sampling was determined by the generated data. This sampling strategy is important when examining a new area of interest such as, in this case, the process by which interactional practices occur in emergency situations, because it enables the researcher to choose those avenues of sampling that provide the greatest theoretical return (Strauss & Corbin, 1990). Strauss and Corbin (1998) suggest that the researcher must sample along the lines of properties and dimensions, varying conditions. For example, in this study participants identified that 'off-load' delays in the ED impact emergency response and care. While it was helpful to hear about this phenomenon, it became apparent that it would be important to observe this first-hand. As such, I was able to negotiate additional ride-along opportunities (beyond what was initially identified) in order to observe a few night shifts over a weekend. This also impacted the shifts that I negotiated to observe within the ED. It seemed important to vary the timing to observe similarities and differences during interactions in the ED. Another example can be taken from my negotiated ride-alongs with the fire department. I was initially assigned to follow one crew at the fire department. After hearing about the impact that individual personalities can have on interactions during emergency response, it seemed wise to observe the interactions with a different crew. Additionally, decisions about who to interview were made based on questions that arose during ride-along shifts, ED observations, and preceding interviews. Interviews were ultimately conducted with one ED director, one ED

nursing manager, four registered nurses, one respiratory therapist, three paramedics, one police officer, and four firefighters.

3.2.2 Recruitment. Following receipt of approval to conduct the study from the Western University Health Sciences Research Ethics Board, I contacted key informants who played essential roles in the daily operations, management, and education of first-responders and ED healthcare personnel, by telephone, at a police department, a fire station, and an ED located within a region in mid-Western Ontario. A meeting with each group was conducted in order to explain the proposed research and to seek administrative permission to send a letter of invitation for participation via email (Appendices A, B, and C) to providers who met the predetermined criteria (e.g., first-responders and ED healthcare providers). Additionally, flyers (Appendix D) which included a brief explanation of the study, and contact information for those that wanted more information were dropped off at the various institutions such as fire stations, paramedic base, police stations, and hospitals. Prior to the initiation of this research study, preliminary informal conversations with various administrators in the selected region associated with emergency response indicated that the information collected during this research study would be valuable in helping them understand some of the issues impacting the interactions of various personnel during emergency situations. This administrative support proved to be quite valuable in gaining access to each of the institutions involved in this study. Additionally, those in leadership positions in both the paramedic services and fire department submitted letters to support the feasibility of this study as requested by the University Research Ethics Board.

3.2.3 Ethical Considerations. In addition to the University Ethics Board (Appendix E), permission was also provided by the Research Ethics Board (REBs) of the three hospitals within the study region. Finally, approval was also obtained at various institutions including: the fire

station, police departments of two of the cities contained within the region, and a paramedic station. All potential participants were provided with a letter of information (Appendix F and Appendix G) and a consent form (Appendix H) was signed prior to their inclusion in this study. Coded data and emergent themes did not include identifying information of observed first-responders, patients, or healthcare providers. Pseudonyms were assigned to all research participants to protect their identity. All data were secured in a locked filing cabinet in my home office and will continue to be housed for a period of seven years as per REB policy, after which time all written data and audio-tapes will be destroyed and disposed of.

One of the potential ethical concerns associated with this study was that I found myself in a position where I was interacting with personnel in 'the field of study' who had not provided informed consent. To mitigate these concerns, I shared with all first-responders and health care providers the reason for my attendance in the field and within the ED. Interested parties then provided verbal consent to participate in the proposed study, filled out a consent form, and were given the letter of information following the encounter. Those that chose not to participate were assured that I would not include any information obtained specifically from these interactions within the study results. Furthermore, it would have been inappropriate to obtain informed consent from the patients that were attended to and cared for in this study. Given the emergent nature of calls, patients were often not able to give consent given their medical conditions. In those situations that patients, or community members were alert, I shared my role as a researcher when it was appropriate. Ultimately, in these instances, I was able to obtain verbal consent to ride-along with, or observe interactions surrounding, these patients. In this study, there were not any patients, (or citizens as was the case with police) that refused my participation during their encounters with first-responders or ED healthcare providers. Ultimately I was interested in

observing the first-responders and ED healthcare providers in their interactions with one another, not the relationship between patients and participants. To this end, I included only vague references to the nature of calls and all patient information was excluded from study findings.

3.3 Data Collection Methods

The objective of grounded theory is to develop theory from data by unravelling the core category and related sub-processes from the perspective of the participants (McCann & Clark, 2003a). When a researcher uses grounded theory methodology, a wide range of data collection methods may be used, such as interviews, observations, videos, questionnaires, and documents (McCann & Clark, 2003c). This has been referred to as *slices of data* (Glaser & Strauss, 1967). Utilizing a variety of techniques in gathering data allows for a multi-faceted, more comprehensive examination of the generated theory (Glaser & Strauss, 1967).

3.3.1 Participation observation. Participant observation was one of the main data collection techniques used in this study, yielding detailed field-notes that were vitally important in the analysis phase. Participant observation is closely linked with fieldwork. It is a technique for data gathering through processes that combine observation, questioning, and listening (Borbasi, Jackson, & Wilkes, 2005). Corbin and Strauss (1998) indicate that observation is necessary as "observations put researchers right where the action is, in a place where they can see what is going on" (p. 30). In the current study, I successfully sought out invitations to "ride-along" with first-responders and observed interactions in three different EDs (see Table 1 for details).

Table 1

Ride-along and Observational Experiences

Professional Group/Institution	**Number of Ride-alongs/ Observation Dates**	**Total Number of Participants**	**Number of Hours**
Paramedic services	6	12	72 hours
Fire, platoon 1	6	8	72 hours
Fire, platoon 2	2	8	16 hours
Police, city 1	2	2	20 hours
Police, city 2	2	4	20 hours
Hospital 1	3	3	24 hours
Hospital 2	2	2	16 hours
Hospital 3	2	2	16 hours
Total	**25**	**41**	**256 hours**

When participating in ride-alongs, I remained with the participant(s) for the duration of their shifts (10-12 hours). These ride-along opportunities allowed extended informal interviews to take place and ensured first-hand observations of interactions in the specific field of interest. Other researchers have suggested that ride-alongs enhance understanding of social processes through the observation of participants' work to develop a greater understanding of these practices (Taber, Plumb, & Jolemore, 2008). I shadowed the different first-responders during various shifts (day and night) and rode-along on all calls to which the teams were dispatched.

Permission was also granted to observe the interactional processes between and among paramedics, police officers, nurses, and physicians involved in the transfer-of-care of patients originating from the scenes of emergency situations within the ED.

I followed the advice of Corbin and Strauss (1990) who suggest that the researcher "watch for indications of all important concepts in every observation" (p. 9) by sitting back and observing events as they unfolded in the field, both at emergency sites and within the ED. I was concerned with carrying over concepts observed from previous observations as well as ones that emerged in every new situation (Corbin & Strauss, 1990). Extensive field notes and audio-taped descriptions about the stories that were told by participants, interactions observed at the scene, and the conditions under which these occurred drove data collection and analysis. Note-taking began in the field when it was appropriate, and then extended in the hours post-observation to ensure that the notes captured the richness of the interactions observed during each shift. Observations made in the field were recorded in the form of field-notes allowing me the opportunity to reflect on details of the physical environment, record immediate responses to interactions, and to capture participant non-verbal behaviour that could not be revealed through transcription alone (Birks & Mills, 2011). Often I wrote field-notes by following a loosely structured observation guide while located in the field of interest, such as at the scene of emergencies, and within the ED (Appendix I). The observation guide in this study was used to ensure that I paid particular attention to things such as: the location of the interaction, the conditions under which the interaction was taking place, the participants involved, as well as some of the contextual factors that may have been impacting those interactions. As potential concepts began to emerge in the formal data analysis, the field-notes evolved to include the relevance of observations to the concepts, and the properties and dimensions that they shared. It

was important to consider the relationship of the concepts and their properties in terms of the micro/meso/macro factors that impact interactional processes in emergency situations. Furthermore, my reactions to observed interactions were captured in audiotaped field-notes when note-taking proved to be too difficult or inefficient. These observations led to insights that helped to inform me about important questions to ask and concepts to explore during in-depth interviews.

3.3.2 In-depth interviews. While observational data provided an opportunity for me to examine the activities of interest, interviews with participants also allowed me to hear multiple perspectives, which proved to be vital in the investigation of interactions between and among first-responders and health care providers. Corbin and Strauss (1998) encourage the use of interviews in the quest for information, alongside other methods of fieldwork. I was guided by the Strauss and Corbin (1998) approach to developing interview questions. While it was important to allow the evolving theory to guide the questions asked in interviews, a loosely structured guide containing sensitizing, theoretical, practical, and guiding questions was very helpful in the earliest interviews (Appendix J). Sensitizing questions were useful and guided me to what the data might be indicating (Strauss & Corbin, 1998). Sensitizing questions helped yield a meaningful picture to enable me to grasp the reference in terms of one's own experiences (Glaser & Strauss, 1967). Participants were often asked to share stories from their past, which helped me shape concepts and gain an overall mental picture of interactions discussed. Questions regarding who the key players were, what they were doing, and the meaning they gave to these actions were included in the interviews. Theoretical questions helped in the emergence of connections between/among concepts by confirming or refuting these connections (Strauss & Corbin, 1998). Theoretical inquiries served to ask participants about the connections they saw

between concepts of interest, or to confirm or refute those connections that I was considering. Early in my research, one of the firefighters spoke about paramedics holding up their hand upon firefighters' arrival indicating they were not needed at the scene. Subsequent questions about how this gesture impacted interactions between the two groups, and other times that this gesture was observed ultimately led to the evolution of the sub-category, *dismissing.* Practical questions were often asked as a means of determining which path to take next (Strauss & Corbin, 1998). As in most qualitative inquiries, guiding questions were dependent on the research questions identified for this study and the responses gained with in-depth interviews.

There are several factors to consider when planning in-depth interviews in qualitative research (Patton, 2002). Issues such as length of the interview, equipment, location, and choice of questions are important to consider. Interviews in this study took place in several locations such as private offices, classrooms, coffee shops, and even an arena change room. Multiple perspectives were considered in an effort to understand interactional processes. As such, participants from each of the professions (paramedic, fire-fighter, police, and ED care providers) were interviewed for 60-90 minutes at a location of their choosing. These interviews were audio-taped and transcribed verbatim. Some of these interviews were conducted with participants that I had already questioned during ride-alongs to clarify observations or to follow-up on questions that I had during review of field notes. Ride-alongs provided excellent opportunities for extended informal interviews to question participants about their perceptions of interactive processes during emergency situations in the field (Taber et al., 2008). Detailed field-notes aided in data collection by capturing reactions of the participants as well as my own for later reflection.

3.3.3 Document review. Nontechnical literature such as organizational reports, education, policy, and government documents can be an important source of data in grounded theory studies (Strauss & Corbin, 1990). I intended on analyzing policies and procedures (P&Ps) and standard operating guidelines (SOGs) as data in the development of the theory. While I was granted full access to these documents, the P&Ps and SOGs included content related to the daily operations guiding each of the professions, but did not include information relevant to interactions with other professionals; these omissions were important to note. Policy manuals and organizational documents revealed information about roles and responsibilities (Birks & Mills, 2011) of the professions involved in emergency care. It was important to reflect on whether or not these documents were reflected in the day-to-day running of the organization. As such, I analyzed government, and policy documents that specifically addressed coordinated responses of first-responders and EDs during emergency situations. Many of the other written data used in this study was located as a result of discussions with participants. For example, union position statements, regional reports and competency guidelines contained important pieces of information that helped to supplement interviews and observations. The researcher also reviewed relevant pre-licensure educational materials and new employee training procedures in an effort to further understand the context within which these interactional processes occur (Appendix K)**.**

3.4 Data Management and Analysis

One of the most important facets of grounded theory is the open-endedness that is evident in constant comparative analysis. Constant comparative analysis dictates that data collection and analysis are closely connected and occur simultaneously (Blaikie, 1993). In grounded theory, each concept "earns its way" into the theory by repeatedly being present in interviews and

observations (Corbin & Strauss, 1990). Once concepts were established, they were further developed and their relationships considered in order to arrive at categories. The concurrent data analysis provided this researcher with the appropriate "next steps" such as developing new interview questions, and identifying additional potential participants throughout the study.

Corbin and Strauss (1998) indicate that analysis must begin with a microscopic examination of the data. As such, analysis of the in-depth interviews began with verbatim transcription of the recordings. I opted to transcribe all recordings myself using a voice recognition software, Dragon®. Taking on this task, rather than hiring a professional transcriptionist, allowed me further opportunities to become intimately connected to the data. All interviews and field notes were transcribed into word documents in Microsoft Word. Once data were transcribed, open coding followed (see section 3.4.1.1). This line-by-line analysis is crucial at the beginning of grounded theory to generate initial categories and to begin to suggest relationships between these categories (Strauss & Corbin, 1998). While many have suggested that Strauss and Corbin dictate a prescribed, rigid approach to data analysis, they defend their process as "a free-flowing and creative one in which analysts move quickly back and forth between types of coding, using analytic techniques and procedures freely and in response to the analytic task before analysis" (Strauss & Corbin, 1998, p. 58). Meticulous attention to memos, field-notes, and transcribed interviews led to greater understanding through these coding procedures.

Field-notes written during observational experiences were analyzed using loosely constructed guides as described above (Appendix I). Memos written during the analysis of these field-notes were key to the development of categories. Memos in grounded theory research are records of thoughts, feelings, insights, and ideas in relation to the research study (Birks & Mills,

2011). A useful mnemonic for understanding the functions of memoing is *MEMO*: mapping research activities; extracting meaning from the data; maintaining momentum; and opening communications (Birks, Chapman, & Francis, 2008). Memoing allows researchers to dissect the data with the aim of developing abstract concepts necessary for the theory (Birks & Mills, 2011). I was careful to capture initial thoughts and feelings in memos while reading interview transcripts and field-notes. These thoughts were revisited regularly, and acted as a springboard for further reflection during theory development. In addition to this reflective process, I met regularly with committee members to share emerging concepts. This process of explanation and brain-storming was crucial to the ongoing creative development of the emerging theory.

3.4.1 Coding

3.4.1.1 Open coding. Strauss and Corbin (1998) identify several forms of coding for grounded theory including open coding, axial coding, and selective coding. The coding process in this study began with open coding of transcripts and field notes, which required the investigator to fragment or break down the data (McCann & Clark, 2003c). Open coding refers to the process of discovering concepts that emerge during observation and intensive interviewing (Strauss & Corbin, 1998). Initially, line-by-line coding was done by highlighting text in Microsoft Word, with identified gerunds captured down the right hand column on the document (see Appendix L for an example). Open coding necessitated attaching conceptual labels to almost every line to capture what is being said by, or observed of, participants. Corbin and Strauss (1990) refer to these codes as concepts.

Next, these same verbatim transcripts were loaded into the qualitative software NVivo 10 (QSR International Pty Ltd., 2012) and recoded (with an eye on previous codes) for greater depth. This process was replicated with field-notes and memos. In vivo codes were directly

related to the language of the data and contributed to the imagery and meaning of this data (Strauss, 1987). Once the data were coded in NVivo 10, they became the coding template that helped to guide subsequent data analysis. During this process of open coding, focused codes were applied to several lines or paragraphs of each transcript or field-note. This forced me to choose amongst the codes that truly represented the phenomenon of interest (see Appendix M). Focused coding helped to verify the adequacy of initial concepts identified in the early analysis process. (Corbin & Strauss, 1990). After the text was *opened up* and I had identified usable concepts, these concepts were then grouped into categories. Corbin and Strauss (1990) explain that "the important thing to remember is that once concepts begin to accumulate, the analyst should begin the process of grouping them or categorizing them under more abstract explanatory terms, that is, categories" (p. 14). One example from my research study was the development of the sub-category *coordinating within policies and procedures* (see Appendix N). Upon examination of focused codes, it became clear that what these concepts had in common was *coordinating within policies and procedures*. Categories such as this have analytic power due to their potential to explain or predict the area of interest (Corbin & Strauss, 1990). During the process of open coding each of the sub-categories and categories were developed. Once all of these categories were identified, I analyzed these for patterns and variations. This led me to take into account nuances not yet considered during observations and interviews. This process of constant comparison was ongoing throughout the analysis process. Once sub-categories and categories were identified, I would incorporate new questions into subsequent interviews, and ensure to pay particular attention to incidences during ride-alongs, to consider the relevance of said categories. This process required special attention to the constant comparative method, in other words, moving back and forth between new and previous data.

3.4.1.2 Axial coding. Strauss and Corbin (1998) introduced the process of axial coding which is defined as "the act of relating categories to subcategories along the lines of their properties and dimensions" (p. 123). Axial coding was utilized in this study to begin the process of reassembling data that were purposefully fractured during open coding (Strauss & Corbin, 1998). In axial coding, sub-categories are related to their categories through the *paradigm model* (Strauss & Corbin, 1990). In following the paradigm model, researchers must consider causal conditions, the phenomenon, and context. *Causal conditions* refer to the events or incidents that led to the creation of a phenomenon. In the quest for understanding the interactions between and among first-responders and the ED, an example may be a tiered-response to a motor-vehicle collision, or the arrival by the ambulance at the ED. The *phenomenon* is the central idea, or event about which a set of actions/interactions are directed (Strauss & Corbin, 1990). In this case, the *Responding* of firefighters and paramedics to the scene of an accident while trying to attend to a victim may be an example of a phenomenon. Strauss and Corbin (1990) suggest that a single causal condition rarely produces a phenomenon, and indicate that the properties of the causal conditions also need to be included. The *context* represents the specific set of properties, such as *coordinating within policies and procedures* and *ensuring patient movement*, that pertain to the phenomenon. It is also the particular set of conditions within which the phenomenon occurred such as *managing chaos, establishing command* and *traversing through time*. Intervening conditions may be thought of as the broader structural context pertaining to a phenomenon. They may either facilitate or constrain the action/interaction strategies within a specific context (Strauss & Corbin, 1990). Strauss and Corbin (1990) indicate that action/interaction is processual, purposeful, and goal oriented. Finally, action/interactions taken as a response to a phenomenon have certain outcomes (Strauss & Corbin, 1990). These outcomes may not have

been predictable, or intended, but were important to uncover. In this study, I chose to put each of the categories and sub-categories on coloured post-it notes (four copies). These post-it notes were then arranged in different configurations on four white poster boards. I intentionally used various causal links in an effort to describe the phenomenon of interest in different ways. Verifying the strength of these associations took place during multiple committee meetings where members asked pointed questions about causal conditions, context, and observed actions/interactions. While the text provided clues regarding the relationship of categories, the actual linking did not take place descriptively, but rather at a conceptual level (Strauss & Corbin, 1998). "The actual conceptual names placed on categories will not necessarily point to whether a category denotes a condition, action/interaction, or a consequence…the analyst has to make this distinction" (Strauss & Corbin, 1998, p. 129). The exercise of describing the hypothetical relationships among the categories and subcategories was a useful one and allowed me to truly analyze if these proposed relationships were verified repeatedly by the data. This process also allowed me to consider important questions that should be asked in subsequent interviews.

One important thing to note is that, while it may appear that open and axial coding are sequential acts, this is not the case. The constant comparative method requires that the two proceed throughout the study hand-in-hand. In essence, I began axial coding as soon as categories were identified through open coding, and returned to the field of interest with an eye on filling in the missing pieces to build a robust theory. This iterative coding technique continued until no new categories were discovered.

3.4.1.2 Selective coding. Selective coding is the process of integrating and refining categories (Strauss & Corbin, 1998). Selective coding was used in this analysis to discover the central category that is essential in theory development. The central (or core) category has

analytic power as a result of its ability to put all of the other pieces together to shape the puzzle that forms the whole (McCann & Clark, 2003a). The discovery of the central category was the first step in integrating categories. Techniques that aided in the integration of categories to begin theory development included telling the storyline, using diagrams, and reviewing and sorting through memos and transcripts (Strauss & Corbin, 1998). During committee meetings, I sought to describe the central category by sharing my findings in a few sentences. Considering what all observed actions/interactions and transcribed interviews were about, helped to identify the central category of *Coming Together for Public Safety*. The process of developing the theoretical model (discussed in Chapter 4) was especially helpful in forcing me to ensure that each category and sub-category had earned its place in the model and contained sufficient conceptual depth. The process of coding in order to arrive at the generated theory as conceptualized is provided in Figure 1.

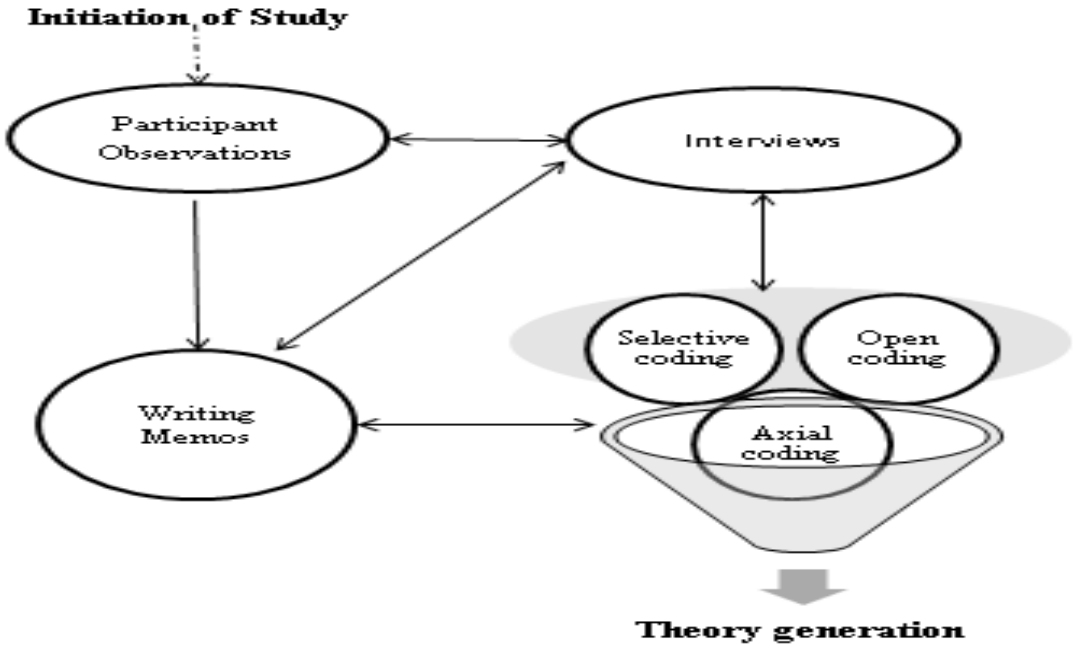

Figure 1 Model of Data Analysis

This model is meant to depict the iterative nature of data gathering and analysis that occurred throughout the duration of this study.

3.5 Authenticity

Critics of qualitative research methodologies suggest that inductive reasoning negates scientific credibility. Strauss and Corbin (1998) disagree:

> "we are inducing what is going on based on data but also based on our reading of that data along with our assumptions about the nature of life, the literature that we carry in our heads, and the discussion that we have with colleagues. (This is how science is born). In fact, there is an interplay between induction and deduction (as in all science)… that is why it is important that the analyst validate his or her interpretations through constantly comparing one piece of data to another" (p. 136-7).

Authenticity in grounded theory is gained by adhering to the methods and techniques provided by Strauss and Corbin (1998). The goal of authenticity is ensuring that the conduct and evaluation of research are credible. In order to ensure dependable and authentic findings it was necessary for me to establish clear and repeatable procedures for this study and reflect on the positions (Cooney, 2011) I took when I performed them. As such, the methodological chapter is meant to provide a clear description of how I followed Strauss' version of grounded theory during data collection, analysis and developing concepts and categories. Reflexivity, or engaging in examining my own reactions, and how they contributed to the analysis, was an integral component of the analysis strategy. I regularly considered the impact the study had on me, and the impact I had on the study, by including a section of reflexivity on each of the observational guides that aided in the development of field-notes. The constant comparative method of data collection and data analysis were used to clarify the emerging concepts and

categories with participants to ensure that my interpretations were recognizable to them. Strauss and Corbin (1998) insist that an emerging grounded theory can only be credible if it is recognizable to the people who had the experience. In order to determine how recognizable the emerging concepts were, it was important to cross-check these concepts against participants' meanings (Cooney, 2011). This member checking was meant to ensure that my interpretation of the meanings of observations were accurately represented. Re-interviewing informants was sometimes necessary as concepts developed throughout the study, when I required clarification, and as the theory began to take shape. As the theory began to take shape, I approached participants from the study as well as other first-responders and ED healthcare providers and asked questions about whether or not the model captured the essence of interactions during emergency response and care and whether or not it was coherent. To further ensure credibility of the research, the investigator engaged in peer review with experts. Specifically, experienced researchers who sit on the investigator's dissertation committee were provided with verbatim copies of the transcripts from the interviews, as well as copies of the proposed codes, categories, and emerging themes to review and revise as a group.

I took measures to minimize the intrusion of subjectivity into the analysis (Hall & Callery, 2001). Reflexivity, or engaging in examining my own reactions and how they contributed to the analysis, was an integral component of the analysis strategy. I regularly considered the impact the study had on me, and the impact I had on the study, by including a section of reflexivity on each of the observational guides that aided in the development of field-notes. The ongoing scrutiny of self was meant to ensure that the categories that emerged did so from the data rather than from my own perspective or biases.

Chapter Summary

In this chapter the choice of Strauss and Corbin's (1990, 1998) version of grounded theory as a suitable research method for this study was introduced and discussed. The phenomenon of interest, interactions between and among first-responders and ED healthcare providers, is particularly well suited to this type of qualitative inquiry.

Within this chapter, the modes of data collection, specifically ride-along observational experiences documented through rigorous field-notes, and in-depth interviews were described. In addition, the analyses strategies employed throughout this study were also provided. In Chapter 4, provided is a comprehensive overview of the developed theory, including a thematic diagram that pictorially represents the central or core concept/process, the four categories and the interconnected sub-categories. A discussion of the implications of this research study is provided in Chapter 5.

4 Chapter 4: Findings

In this chapter a detailed description of the study's findings are presented. These findings were drawn from the analyses described in Chapter 3, which included field notes taken during the 256 hours of ride-alongs and observational experiences in the ED, fifteen interviews of first-responders and ED healthcare providers, as well as various documentary resources such as policies, educational materials, and other literature. In order to personalize the interview data, participants were given pseudonyms. These data were analyzed and categorized, making evident the relationships among the concepts. According to Strauss and Corbin (1990), "the phenomenon is the central idea, event, or happening at which a set of actions/interactions is directed" (p. 100). The phenomenon for this study, *coming together for public safety* was the core concept of the proposed theoretical model, the *Interactional Theory of Emergency Response and Care* (Figure2). The proposed theoretical model depicts the interactional processes that occur in emergency response and care among the many first-responders and ED healthcare providers that come together to promote public safety. According to the paradigm model, intervening conditions are broad and general conditions that impact upon action/interactional strategies demonstrated by participants (Strauss & Corbin, 1990). These conditions either facilitate or hinder the action/interactions that ultimately influence outcomes or consequences (Strauss & Corbin, 1990). In this study, four domains; *learning, positioning, communicating, and responding* were identified as influencing the *coming together for public safety* of first-responders and ED healthcare providers during emergency situations. The proposed model is intentionally fashioned as a kaleidoscope to illustrate the complex interplay and among the multiple dimensions inherent to the four domains. A kaleidoscope operates on the principle of multiple reflections; as one turns the tube, colours and patterns blend in different ways. When

one looks through the eyepiece and turns the tube this leads to ever-changing patterns and designs. The domains do not act singularly on the ability of first-responders and ED healthcare providers coming together for public safety, but rather blend together to influence the core phenomenon. Within each of the four domains are a further five sub-categories that are influenced by, and connected with, one another.

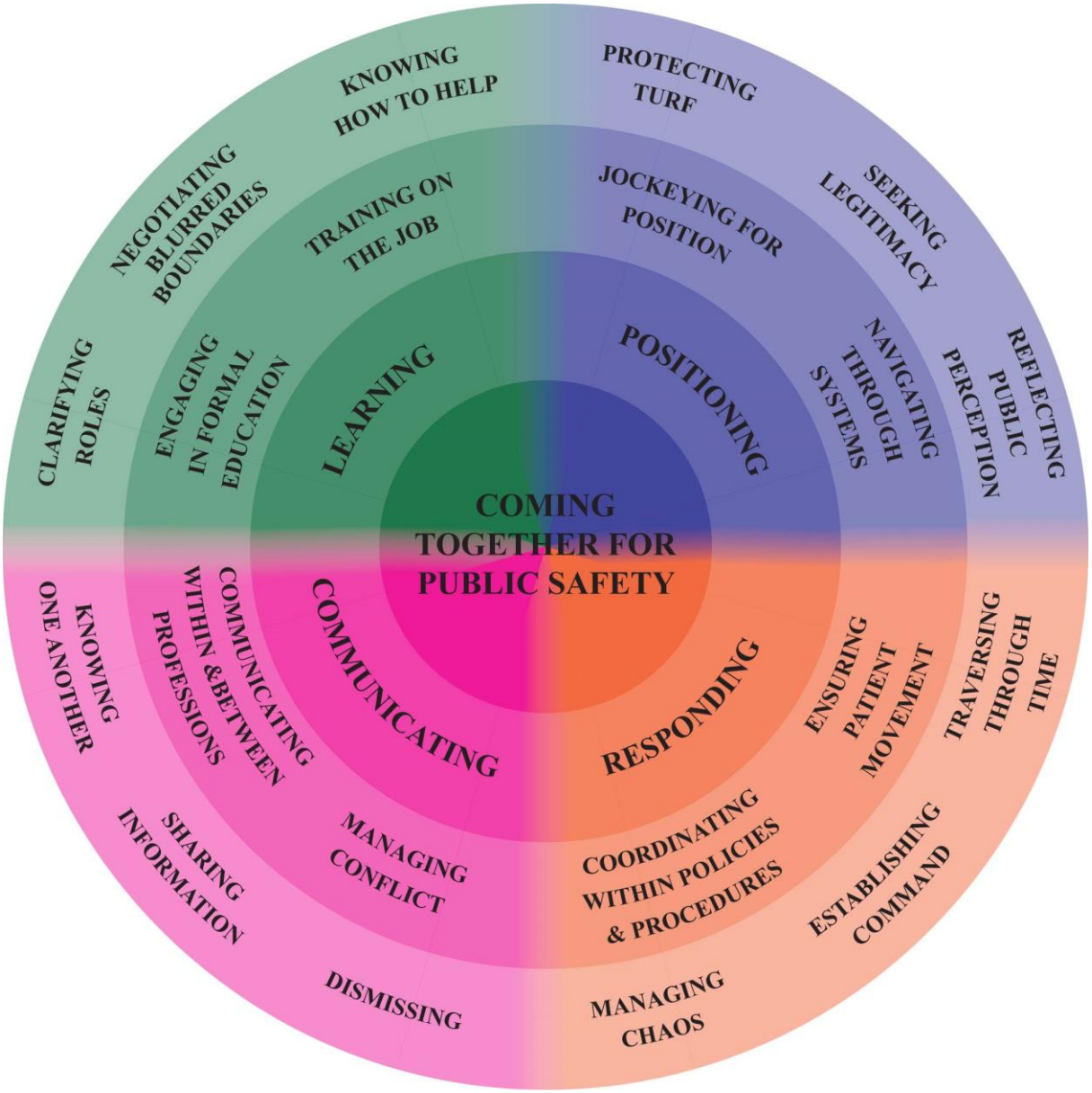

Figure 2. Interactional Theory of Emergency Response and Care (ITERC)

Emergency response and care are dynamic, ever-changing phenomena; the domains and sub-categories that influence *coming together for public safety* interrelate in many different ways. Figure 3 illustrates an example of the fluidity of the sub-categories of the four domains included within the theory of emergency response and care.

In this chapter, a close examination of the concepts that led to the development of the model as well the domains sub-categories, and the relationships among them is presented. The core social process, *coming together for public safety,* will be described first, followed by a description of the four domains: *Learning, Positioning, Communicating,* and *Responding.* The corresponding subcategories within each of the four domains will be discussed specific to that domain. Further, the relationships of the subcategories to the other domains will be addressed in order to illustrate the fit of the kaleidoscope metaphor.

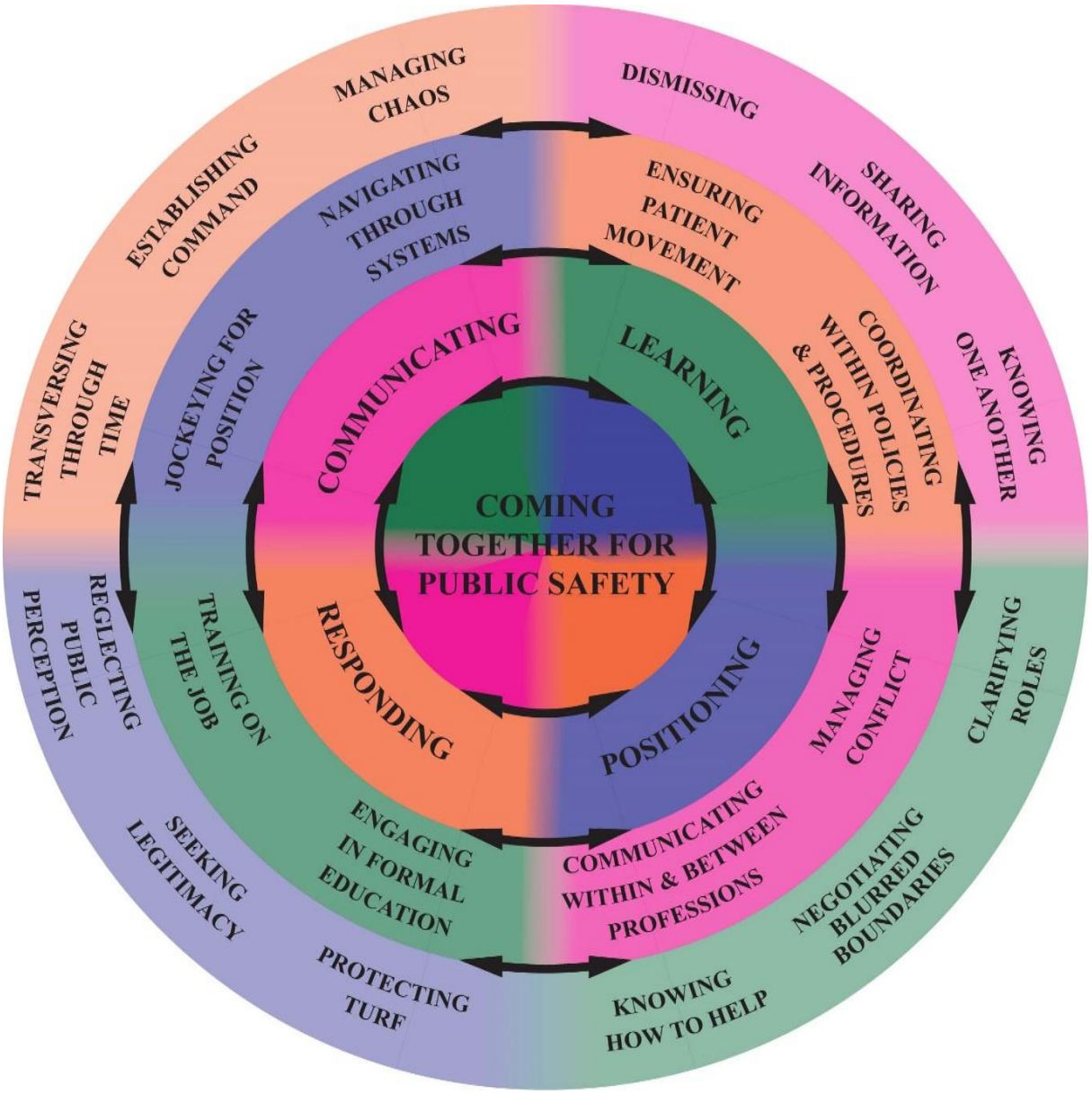

Figure 3. Interactional Theory of Emergency Response and Care: When the Kaleidoscope Turns

4.1 Coming Together for Public Safety

Through in-depth observations and interviews with participants, it became evident to me that the reason that first-responders and ED healthcare providers ultimately *come together* is to promote *public safety*. The physical act and the social process of coming together, to collectively enact each of their roles during emergency situations is the central phenomenon to which all actions/interactions are directed during emergency response and care. In arriving at the

language of the core phenomenon, it was important to recognize how different groups identified the individuals who were the focus of their *coming together*. While healthcare providers and paramedics typically use terminology such as 'patient' or 'client' to label the recipients of their care, firefighters might use the word 'victim', and police officers might assign the label 'civilian' or 'citizen'. Each participant interviewed in this study agreed that regardless of individual labels, the ultimate goal of emergency response and care is to promote *public safety.*

First-responders and ED healthcare providers *come together* both physically and through their various interactions during emergency situations. The physical coming together of first-responders and ED healthcare providers occurs at multiple locations. When a tiered-response is initiated, first-responders such as paramedics, firefighters, and police are dispatched to the scene of an accident or medical emergency. This process necessitates each of the groups coming together physically to enact their respective roles. Sarah, an Ontario Provincial Police (OPP) officer suggested that first-responders go about their work to promote *public safety* regardless of any other outside influences:

> "…we put our hats on and we go out there and do our jobs. Whether or not there are people that don't get along… that is not important. We know that there may be people who are suffering… whether or not there may be dead people; as first-responders we go out there we put on our hats and we do our job".

Observational data in the field helped to support the concept of *coming together,*

> 'The second call of the day had us responding to a parking lot… Code 4, VSA (vital signs absent). When we arrived, firefighters were already working on the patient. They were in the process of doing compressions and defibrillated (shocked) the patient as we approached. In the background, firefighters and police officers were talking to the

> patient's family member; I presume they were getting the story. This all transpired like a 'well-oiled machine'… Directions seem to come from the ACP, but everyone seemed to know what to do. The transition to the ED went smoothly. One of the firefighters came in the ambulance to continue compressions… this seems like a stellar example of efficient emergency response!' [field note, paramedic ride-along, 1].

From the prehospital environment, first-responders are often required to transport patients to the ED. Here, ED healthcare providers and first-responders physically come together to meet the needs of these patients and/or to transfer care.

The concept of *coming together* also includes social processes. In order to meet the needs of the public, the various first-responders and ED healthcare providers often must work together. John, a firefighter, indicated that while there are several factors that promote successful resolutions of emergency situations, remembering the goal of *public safety* is vital, "Clear, concise communication … everyone operating smoothly and doing their own job, letting everyone do their tasks that they are there to perform. And everyone knowing that the customer is why we are there… right?" Within the hospital environment, dialogue between professions is often vital to enhance the well-being of patients in the ED and promote their safety. Kyle, a respiratory therapist shared an example:

> "I made my concerns known to the physician and a nurse who was going on transport. I told him that this was very risky, that this was an airway that we could very easily lose on transport, it was not stable, so we actually ended up changing this airway together".

While *coming together for public safety* may be situated in the centre of the model, it is directly influenced by four domains: *Learning, Positioning, Communicating, and Responding*. Each

domain includes five subcategories that are influenced by, and interconnected with one another. In the next part of this chapter, the four main categories and their sub-categories are explained.

4.2 Learning

The domain of *Learning* is defined as all of the education and training that each of the professions require in order to have the competencies (knowledge, skills, and judgment) to respond to emergency situations. The various sub-categories that impact this learning are also included within this domain. Education for each of the groups included in emergency response and care takes a variety of forms, ranging from *engaging in formal education*, to *training on the job*. Within this domain, participants specifically identified the following three sub-categories as particularly important aspects for consideration when *coming together for public safety*: *clarifying roles*, *negotiating blurred boundaries* and *knowing how to help one another* (Figure 4). While each of the sub-categories were originally associated with *Learning*, a turn of the kaleidoscope might situate each of them in any of the other three domains. The relationship these categories share with each domain is included within this discussion.

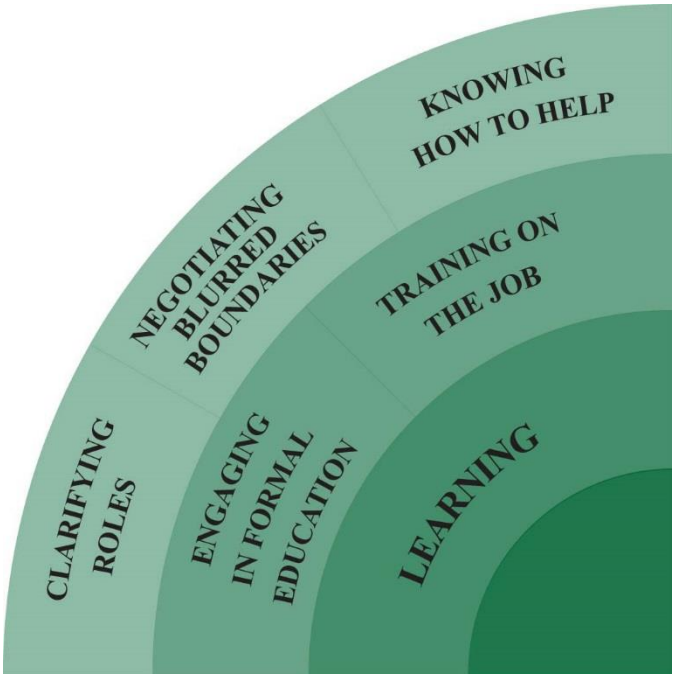

Figure 4. Learning Domain

4.2.1 Engaging in formal education. There are a range of educational requirements for the different first-responders and ED healthcare providers both within and among the professions. For example, there are different levels of paramedics that respond to emergency situations. Personal care paramedics (PCPs) attend college for two years to obtain a diploma while acute care paramedics (ACPs) engage in further education that allows them to perform enhanced skills such as intubation, the administration of additional medications, and intravenous management. Kelly, a paramedic, compared the educational levels of paramedics to those in nursing:

> "I'm assuming that you understand that there are different levels of paramedics? There is a PCP, which is kind of like what an RPN is in nursing… and if you were to relate to nursing, an ACP [advanced care paramedic] would be very much like the RN and finally the critical care paramedic, which I guess would be like an extended class RN. When I am acting as a supervisor of the region of paramedics it is kind of like being the charge nurse".

The level of expertise of first-responders attending to emergency situations can have an impact on how they *come together for public safety.* For example, when an ACP is in attendance, actions such as intubation and administration of medications can occur in the prehospital environment. The ability to engage in these activities when *Responding* may extend the call in the field and have an impact on how much assistance is required by other first-responders. In addition, if these skills are performed outside of the hospital environment, it decreases the immediate needs of patients within the ED. While participating in one ride-along with paramedics, I noted the following:

> '…there are several ACPs employed in this region. Often a partnership will include one ACP and one PCP… this seems to work well. At times two PCPs will be working together, I assumed that this could be problematic at serious calls; the paramedic that I am riding with indicates that this is rarely a problem, often the supervisor or another ambulance will meet them at the scene of serious calls' [field note, paramedic ride-along 1].

The availability of expertise, whether it be an ACP in the prehospital environment, or a medical specialist in the ED affects the *Positioning* of different professions during emergency situations. The education of all first-responders and ED healthcare providers directly impact *coming together for public safety.* For example, the education of each of the professions includes the psychomotor skills that might be required when *Responding* to emergency situations,

> "…all of our training has been geared generally towards the vehicle, or auto extrication; you know taking off the roof or popping the door and things like that. So in this case, our tools were being put to the test because we are talking about a heavy, reinforced, transport truck" (Les, firefighter).

When first-responders and ED healthcare providers *come together for public safety* each must have engaged in formal educational activities to ensure that they are able to perform their various roles during emergency situations.

While each of the participants acknowledged the importance of formal education, many indicated that one problem was that most of this is done in a uni-professional context:

> 'Despite the fact that everyone I have talked to espouses the virtues of IPE (interprofessional education), it seems that very few people have lived this experience. Even the faculty say that learning with, from and about one another is so important… how do we move from talking about the value to enacting it?' [memo].

Most of the participants included in this study had not had the opportunity to engage in interprofessional educational activities in their formal education. Some indicated that this uni-professional approach affects *coming together*, "from an interoperability sense, you know, truthfully, we still are living in our silos; fire is doing their thing, EMS is doing their thing, and of course police is doing their own thing" [Les, firefighter]. In the presence of silos, *Communicating* between professions may be negatively affected. This is especially true when different groups use profession-specific jargon. When opportunities do exist to bring the groups together, learning about one another is often enhanced. Interprofessional Education (IPE) activities allow students to learn with, from, and about one another during formal education. One of the paramedics interviewed in this study also teaches at the college level, "I think that comes across when we do interprofessional activities with the other student levels….Students in medical, students in social work, students in physiology…The comments always come out that we didn't know the paramedics could do that" [Cory, paramedic]. A more complete understanding of one another helps to dispel stereotypes groups may have of one another and

might negate the need for groups to become preoccupied with political maneuvering or *Positioning.* Many of the first-responders and ED healthcare providers indicated that learning together positively contributed to competencies of all involved during emergency situations as well as enhanced positive relationships between professions. "I really think that one of the most wonderful things we can do in those groups might be those activities where we come together as students to work towards a common goal" [Kelly, paramedic]. The theoretical knowledge and psychomotor skills learned during the formal education of first-responders and ED healthcare providers aid in these participants *responding* while *coming together for public safety.* Participants were unanimous in their declarations that an IPE approach is one strategy to enhance relationships of first-responders and ED healthcare providers during emergency situations.

4.2.2 Training on-the-job. While on-the-job training occurs within all professions, the importance of this mode of *Learning* may be heightened in roles such as firefighting and policing. The educational requirements of paramedics and ED healthcare providers are generally very specific and require formal diplomas or degrees; the same may not be true of first-responders such as firefighters [Les, firefighter]. While many of the recently hired firefighters employed within the region examined for this research attended a college program, this is not always the case, and is rarely the case for volunteer firefighters:

> "there may be a guy that just started six months ago and he really hasn't had any formal training, but we're bringing him out to calls so that he can gain some experience. They don't have to have the formal training that comes with the college… The skill set is all over the map" [Les, firefighter].

Ultimately, the education of all first-responders and ED healthcare providers extends beyond formal education. When first-responders and ED healthcare providers are first employed

at an institution, on-the-job training is often required. Furthermore, the introduction of new policies and procedures as well as new equipment also necessitates this type of learning. Firefighters, in particular spend time during a shift training:

> 'today we had the opportunity to go to the auto wreckers (like a boneyard for cars). Firefighters from different platoons came together to practice removing doors and roofs from cars. I would guess that proficiency in auto extraction would be an important skill to keep up. How fortunate that they can take the time to do this as a part of a regular shift… wondering if it would ever be feasible to invite other first-responders like paramedics and police? Would they find this as interesting as I did?' [field note, firefighter ride-along, 6]

Participants in paramedics, fire, and nursing have indicated that many of the skills required during emergency response and care are demonstrated infrequently and are mastered only with experience. Betty, an ED nurse remembers what it was like when she was first employed by the hospital,

> "We forget what it was like when we started. I didn't learn how to triage sick patients in my education… that sixth sense when you know that something is just not right… that all comes with experience… I know that I am a stronger team member now than I was then… we learn by doing it."

Just as participants have espoused the value of IPE during formal education, participants also felt that ongoing joint training with others would have a positive impact on *coming together for public safety*. As an example, firefighters indicated that they would appreciate learning how to properly use equipment housed on the ambulance, "building trust would occur if they came in to train us on their equipment; we would get to know each other and I think that would enhance

our relationships" [Jessica, firefighter]. Learning how to use one another's equipment may allow more efficient *Responding* to emergencies in the community and within the ED. Despite the fact that each of the participants agreed that joint training would be a positive thing to do, they also acknowledged the difficulties associated with planning such activities. "… I know there are logistics because we are two different entities amongst ourselves, there are seven different fire departments from one region, so it is really hard to do joint training all the time" [Les, firefighter]. The cost of such training, and determining which service would be responsible for planning, enacting, and paying for these sessions would impact the political domain of *Positioning.* On-the-job training, whether it is focused on the logistics of enacting one's role, gaining experience, or working with new equipment was articulated by participants as enabling first-responders and ED healthcare providers to come together during emergency situations to promote public safety. Many participants further agree that joint training would help to build trusting relationships, and promote effective *Communicating* that might positively impact the social process of *coming together for public safety.*

4.2.3 Clarifying roles. Without exception, each of the participants indicated that *clarifying roles* was an important element when *Learning* to coordinate care during emergency situations. First-responders and ED healthcare providers begin to learn about their own roles early in their formal education. In order to enact their roles when *Responding* to emergency situations, first-responders and ED healthcare providers must learn about what it means to belong to their respective professions. Educators employ several strategies to ensure that first-responders and ED healthcare providers are clear about their roles;

> "we talk about their roles and responsibilities…our goal is for them to recognize who they are in the first term and what their responsibilities are. We try to… ensure that they

> understand what their professional role is, we have them wear professional uniforms, begin to recognize that their equipment is part of their uniform, we really try to instill who they are as a professional" [Charlie, paramedic].

All participants agreed that when professions were clear about their respective roles and operated within them, *Responding* to emergencies was enhanced. In essence, they indicated that understanding one's own role positively affected *coming together for public safety,* because these situations were handled most effectively,

> "I would say on that day we all worked very well together at that scene. We all seemed to know what our roles were…all multivehicle collisions, and fires, where police fire and ambulance are there together typically run like that" [Charlie, paramedic].

Clarifying roles also involves the understanding and appreciation of others' professional roles. Strategies involved in learning about the roles of others were shared by various participants. Kelly, a paramedic who teaches in the college setting shared,

> "one of the things that I do here at the college, is that I often will go to the pre-service fire classes as a guest speaker to share with them what it is to be a paramedic. I will certainly be very clear with my students the differences between the two professions as well".

During one interview, a nurse indicated that learning about other roles during formal education had a positive impact on team functioning during emergency situations post-graduation,

> "it is so beneficial for undergraduate students to understand the roles of the allied health profession so that they begin their career with this understanding rather than it be an 'on the job' kind of learning. You know your 'team' before you even get out there" [Betty, ED nurse].

It may be that ‘knowing the team’ might positively affect how the members begin *Communicating* with one another, which, in turn, positively impacts *coming together for public safety*.

It became clear during ride-along opportunities with firefighters that a lack of role clarity can have deleterious effects on the ability of first-responders to come together during emergency situations. For example, when ‘issues occur when first-responders don't know their 'place'…when firefighters [were] trying to act as though they are the medics…if a paramedic were to pick up a hose and start putting out a fire, this would not go over well’ [field note, firefighter ride-along, 3]. Ultimately, conflicts between groups are minimized when all first-responders and ED healthcare providers clearly understand their own roles and the roles of others involved in emergency response and care. In many ways, *clarifying roles* inherently means ‘setting boundaries’ between professions. When first-responders and ED healthcare providers are clear about roles, they are less likely to infringe on the roles of others.

4.2.4 Negotiating blurred boundaries. While *clarifying roles* and operating within one’s role, was identified as being important while responding to emergencies, respondents suggested that *Learning* about blurring roles and boundaries is also essential. First-responders and ED healthcare providers articulate the need to know when they must set boundaries and when *negotiating blurred boundaries* is appropriate. Firefighters take on a variety of roles depending on the nature of the call to which they respond. “So our roles kind of… as fire we change them throughout the entire call; sometimes we are the primary, sometimes we are responsible for traffic, or sometimes we are in charge of the scene entirely” [Jessica, firefighter]. If firefighters are first to the scene, they must assume the typical roles of others (such as healthcare for paramedics, traffic control for police) until the other responders arrive, in order to promote

public safety. During ride-alongs it became apparent that other professions do the same. For example, paramedics often assume an 'investigative' role when they arrive at a scene in advance of police. Paramedics will carefully note the state of the environment as they attend to their patients. *Communicating* this information to police officers or medical staff is often important to help them understand the context of the patient's situation.

At times, it is also necessary for *blurring of boundaries* between professions and across care locales. For instance, once paramedics report to the healthcare team, their patient care duties are typically finished. However, at times they may be asked to perform tasks outside of their particular domain:

> "We brought our patient in, and we are watching the activity that was going on in the medical crisis room… the nurses couldn't get a line, and the doctors couldn't get a line, and she is a paramedic and so he said well so and so could you give this a try?...he was able to get the line" [Cory, paramedic].

Betty, an ED nurse, corroborated this idea,

> "… at our facility once paramedics arrived on scene, they really weren't supposed to do 'skills', they were supposed to be there for TOA [transfer of accountability] for the patient…I remember having multiple traumas come in… and we needed IV's on everybody. So, our ACP paramedics were tasked with that skill… we had to do other things … Having somebody else that we could assign that task to was incredibly helpful… so this is kind of a role blur, and kind of a bending of our own policies and procedures".

Some of the research participants were trained in more than one profession. Two firefighters were also employed as paramedics in other regions, one paramedic had also been

employed as a registered nurse in the ED, and one of the nurses had previous experience as a paramedic. These 'dual' roles appeared to promote respect in other professions when *Responding* to emergencies,

> 'The captain of this platoon also works as a paramedic in a different region. He has been around for a long time, and it seems that all of the paramedics in this region know him well. We were dispatched to a medical call (shortness of breath) and arrived in advance of the paramedics. When they arrived I was surprised at the attention they paid him as he gave report (I have heard that often this is not the case)… according to this group of firefighters, they listen to him because they respect his experience' [field note, firefighter ride-along, 4].

Along with supporting positive interactions with others, these dual roles affected the way in which these individuals approached emergency situations, "I remember thinking about it when EMS arrived; now I may have been thinking it more than others… and I remember thinking to myself, I wonder what it is the paramedics are thinking…what do they think is going on?" [Les, firefighter. *Communicating* between professions is enhanced when the individuals involved understand each other's jargon by virtue of having dual roles. Many participants in this study acknowledged that while they were familiar with the language of their own profession, sometimes they didn't understand the terminology of others:

> "…. We aren't always speaking the same language. I have to say that sometimes I don't even know what they [paramedics, nurses] are getting at. We don't really use a lot of those short forms or terminology. Maybe this is something that should be included in our education… and maybe they should learn our language too" [Joe, firefighter].

As researcher, I found it difficult, at times, to follow conversations, 'I am going to have to learn the language… have been hearing about coloured zones from fire, code response numbers from paramedics… I need clarification on meanings with each ride-along' [memo].

Most participants indicated that *negotiating blurred boundaries* is necessary and supports public safety. Often blurring boundaries is most helpful either when one of the other first-responders or healthcare providers are unavailable, or when the available resources are insufficient to meet the demand of the situations. Knowing when *negotiating blurred boundaries* is warranted requires flexibility and situational awareness. It is not helpful for one profession to take on the roles of another if they are available to do so themselves. Recognizing and respecting the expertise of each first-responder and ED healthcare provider enhances interactions.

4.2.5 Knowing how to help. An important aspect of *Learning* is *knowing how to help* one another during emergency situations. First-responders and ED healthcare providers often need to learn *how* to help each other in order to meet the needs of patients when *coming together for public safety*:

> "in those more dynamic calls, even if it is as simple as a paramedic saying, can you hold the IV bag, it may look like you're not doing very much… you're there to help out. Very often, these things help to make it faster for the patient to get out of there" [Les, firefighter].

Paramedics mirror this perspective,

> "numerous, numerous times when I've been out on calls, fire has been helping out; they help with holding up the IV, they might help with CPR, and all that kind of stuff…

> sometimes they are out there blocking traffic, I've been in situations where they have been driving the ambulance so the paramedics can work in the back [Cory, paramedic].

When *Responding* to crisis situations in the ED, as researcher I observed the idea of helping on many occasions. In those situations, paramedics would remain in the ED to help during resuscitative efforts, 'a firefighter and the paramedics stayed in the resusc [resuscitation] room throughout the code blue. Everyone took directions from the doc [physician]… working together… helping out…' [field note, hospital 2, day 2]. Participants agreed that, ultimately, when first-responders and ED healthcare providers are open to helping one another during emergency situations, their *coming together* is streamlined and contributes to public safety. Beyond the willingness to help, first-responders and ED healthcare providers must understand *how* they are able to assist others. Firefighters indicated that they are not only willing, but are eager to help paramedics; however, they often did not know *how*:

> "If there is something new having a SOG [Standard Operating Guideline] or an orientation where maybe EMS comes in to train or share with us what they would find to be helpful to them. Or to share what we can and cannot help with and why; like we can't have you help us with the backboard because of our health and safety; then if you were to hurt yourself… so guidelines that identify when and what kind of help they are looking for" [Jessica, firefighter].

In contrast, while it may be difficult to know how to help when new equipment or procedures are introduced, it is also problematic when dealing with different groups: "actually I have seen that different paramedics have different expectations about what fire should do. And so fire is commonly confused about what it is they can do to help" [Charlie, firefighter]. During ride-alongs with firefighters, I noticed that 'if the firefighters are at a scene with paramedics who

have previously rejected their offers of help, they stand aside while paramedics do their own thing… they say it isn't worth the fight' [field note, firefighter ride-along, 7]. Not *Responding* by not knowing how to help those individuals led to inefficiencies, impacted *Communicating,* and delayed arrival at the hospital setting. When paramedics observed firefighters standing aside, some of them articulated their frustration stemming from a perceived lack of support and assistance. These situations had a negative impact on *coming together for public safety* of these first-responders during emergency situations.

4.3 Positioning

The domain *Positioning* includes sub-categories that contain aspects of physical navigation through the system as well as political maneuvering for prestige, power, and/or legitimacy. The subcategories include *jockeying for position, navigating through systems, protecting turf, seeking legitimacy, reflecting public perception* (Figure 5). Each will be addressed.

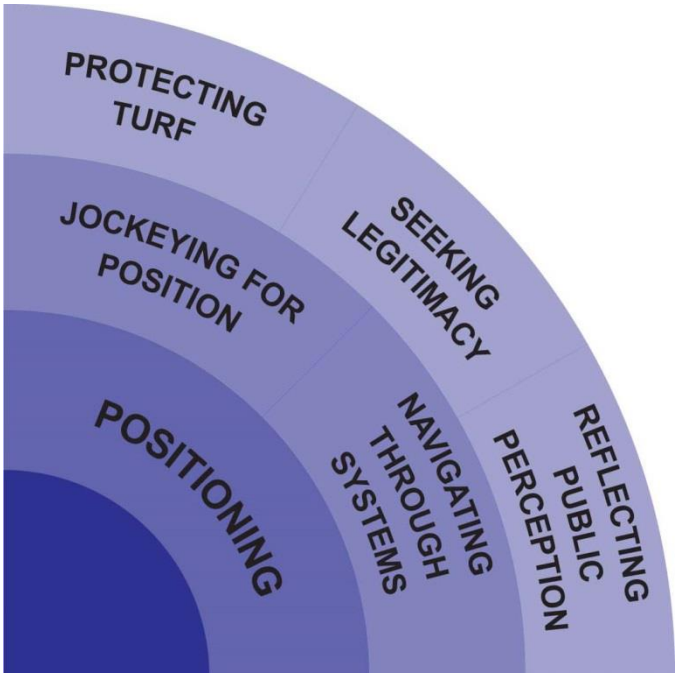

Figure 5. Positioning Domain

4.3.1 Jockeying for position. On some emergency calls, first-responders must physically *jockey for position* to *come together for public safety*. Les, a firefighter, shared a story that specifically illustrated this point:

> "…because it was on a steep embankment, it made it really tricky for all of the people, police, fire, EMS to physically get to the truck. We were slipping and sliding, and we actually had to set ladders up… these pellets were everywhere; plus, the diesel tank ruptured…was actually melting the pellets. This was making it even more slimy, [with] everybody was slipping and sliding everywhere. This made it very tricky. So anyway, it was just a long extrication, but I remember it…"

During the situation Les described, the *Positioning* required of firefighters, paramedics, and police officers when *coming together* to assist the person entrapped within the transport truck despite the difficulties associated with physically navigating the environment. Many other stories shared by first-responders and ED healthcare providers during ride-alongs illustrated difficulties in access or physical positioning in the midst of chaotic situations. Ultimately, first-responders and ED healthcare providers may need to utilize creative strategies to *come together for public safety*.

The sub-category *jockeying for position* was more metaphorical. For example, depending on the emergency, different agencies could *jockey for the position* of leadership when *Responding* to the scene. In the ED, leadership may change depending on the type of situation:

> "…in a chaos situation like this, it is absolutely essential that somebody be in charge. It doesn't necessarily have to be a physician, but in our case, that was often the case…There were cases when someone like RT might be situated at the head of the bed

> really leading the situation because it was more suited to their wheelhouse or their skillset" [Betty, ED nurse].

From the perspective of these participants, *jockeying for position* of leadership was a fluid and ever-changing process:

> "I think that under our role it is all so dynamic. We are constantly changing… we are chameleons; we might be in charge… think about the damn rescue that we had here in town. We were definitely in charge of that one, even though it was people we were pulling out. We had been there for a long time before police and divers showed up. We were in charge until they arrived… for a long time we were in command" [Jessica, firefighter].

At times, it appears as though some first-responders and ED healthcare providers were *jockeying for position* of authority when they should not. Jody, a nurse manager, shared an instance that had occurred between first-responders, the healthcare team, and one specific paramedic. In this case, the paramedic was attempting to make care decisions and direct all of the other first-responders and ED healthcare providers to immediately transport the patient by air ambulance to another region. The other professionals felt that it was important to take the time to assess the situation carefully, stabilize the patient, and ensure that the patient had an established airway:

> "I had quite an interaction with this … paramedic. He was trying to run the scene here, and I needed to get the right information to try to figure out everything that was happening… even had to put forward a formal complaint to [name of company] because he is really being very obstructive here; he wasn't just obstructing us from doing our job, but it was even the EMS too; he was trying to get us to do things that really weren't safe" [Jody, nurse manager].

According to study participants, sometimes it is necessary to block the "wrong" person from assuming a leadership role. In these cases, *Communicating* amongst the various professions is key to determining who is best suited to take charge.

The idea of *jockeying for position* is similar to functioning within a hierarchy. In the ED, hierarchy is determined by profession, experience, and the area in which one is working:

> "Physicians are always on top of the food chain and they run the show…socially and culturally there is kind of a pecking order between the nurses depending on how long you worked there, and in what area you worked in. Those of us that worked in the trauma area, and in the cardiac areas were seen as more senior than those that worked in the lower acuity areas" [Betty, ED nurse].

In essence, it seems that hierarchies in which the ED physician sits atop the pyramid, still exist in this region. During emergency situations, this is likely advantageous, 'during the code [resuscitation effort] the physician was clearly in charge… the roles seemed very clear… looked to her for direction and next steps…ended well…she seemed like the conductor in a symphony of saving a life' [field note, hospital 2, day 2]. In addition, those nurses that hold 'advanced' certifications that qualify them to care for critically ill patients and assume the role of 'Charge Nurse' or 'Triage Nurse' are seen as more competent. *Jockeying for position* is also impacted by situational factors such as the environment, the nature of the call, and established hierarchies. If more than one profession is *jockeying for position or attempting to jockey for position*, this could have a negative impact on the *coming together for public safety* during emergency situations.

4.3.2 Navigating through systems. Navigating how patients move through the healthcare system can also affect *Positioning* between and among first-responders and the ED healthcare staff. At times some first-responders feel they are competing while *Positioning* to fight for their

early attendance at calls. Ensuring that emergency calls are attended to quickly, that the right first-responders are dispatched at the right time, and that patients are transported to the appropriate facilities, help to promote *coming together for public safety*. It is clear that patient flow through the ED was a priority, '…a tour of the ED… it is very apparent that the entire layout is designed to move patients quickly through: get them treated and out, or admitted. It appears as though the goal is not comfort, but efficiency' [field note, hospital 3, day 1]. In the region in which this study was conducted, each of the hospitals had their areas of specialty. One ED nurse indicated that their institution has made great strides in developing policies that allow the streamlining of services, which enhances the ease with which patients are moved throughout the system:

> "Now we have changed some things, even with strokes, the stroke protocol; they have to go straight to CT so we are offloading them right away… there is absolutely no delay there. I know that they're [paramedics] willing to work with us" [Jody, nurse manager].

There are times, however, when patients are transported to a hospital that is not as well situated to meet their needs and this can cause some frustration and may affect *Communicating* between professions:

> "the paramedics who know that they are bringing a patient to the hospital that cannot provide the services that the patient needs and sometimes they will stick up for us too, and they will say this person shouldn't go to this hospital, but then dispatch will say 'I don't care, this person is going to hospital A" [Kim, ED nurse].

Participants indicated that receiving patients who should have been transported to other agencies caused tensions between nursing and paramedics. Once the nurses understood that decisions about where patients were transported fell outside of paramedics' control, these conflicts became

less frequent in the ED. Here issues related to *jockeying for position* and *navigating through systems* intersect to cause conflict between first-responders and ED healthcare providers negatively impacting *coming together for public safety.*

> "I have to say that I think that the relationship as far as butting heads [is] about [who] is coming through the door has gotten better. Once the nursing staff, and medical staff got their heads around the fact that it isn't in the paramedics' control over where they are sent. They used to have some control, but they don't anymore" [Kim, ED nurse].

During observations within the ED, there were times when paramedics were forced to bring a patient to a facility that was not the ideal choice, 'should have gone to the other hospital… both paramedic and Charge Nurse rolled their eyes… nothing said, but there seemed to be an agreement of sorts' [field note, hospital 1, day 2]. Ultimately, efficiently *navigating through the system* has a positive influence on *coming together for public safety.* Problems between the professions occur when factors ultimately negate these processes; beyond the inevitable conflicts that may occur, these inefficiencies may also negatively impact patient outcomes.

4.3.3 Protecting turf. Prior to 2008, the majority of the calls that firefighters were dispatched to were fires, motor vehicle collisions, and hazardous materials spills (Ontario Association of Fire Chiefs Ontario [OPFFA] & Professional Firefighters Association [OAFC], 2008). At that time concerns about the time it took paramedics to arrive at serious medical calls prompted firefighting union groups to engage in *Positioning* to advocate for changes to the nature of calls which firefighters respond. They indicated that,

> "In many cases, patients only require immediate life-saving treatment, but they may also require physical rescue, protection from the elements, and protection in the way of scene safety. The fire service is structured to address all of the above simultaneously and is

> perfectly positioned to complement and enhance a struggling EMS delivery system across Ontario, thus significantly improving patient outcomes" (Ontario Association of Fire Chiefs & Ontario Professional Fire Fighters Association, 2008, p.1).

In 2015, the vast majorities of the calls firefighters attend are medical in nature this impacted the *Positioning* of both firefighters and paramedics. Given that medical emergencies were traditionally viewed as within the purview of paramedics, this has led to *protecting turf.* The following example illustrates the intersections of sub-categories, for example the paradox between *clarifying roles* and *negotiating blurred boundaries,* and the impact that each of these sub-categories has on one another, and ultimately *coming together for public safety.* The expanded role of the firefighter to include *Responding* to and providing care during medical calls seems to affect the interactions between this profession and paramedics, "firefighters are promoting medical calls to get a higher budget, and we are trying to do the opposite in the paramedical field" [Cory, paramedic]. While everyone interviewed in this study acknowledged that dispatching firefighters to calls requiring early defibrillation is warranted, "[and] there is literature to support firefighters being dispatched to certain calls such as a patient found vital signs absent" [Kelly, paramedic], not everyone agreed upon the degree of medical intervention in which firefighters should be permitted to engage. As firefighters are attending more and more medical calls, some question the need to enhance their abilities to provide medical interventions, "you know in some places… for sure in the bigger centres, firefighters can give a few of the important drugs like ASA and nitro[glycerine] while waiting for the medics to arrive… why can't we do that?" [Les, firefighter]. Kelly, a paramedic, disagrees:

> "in many regions, there is a push for firefighters to have more responsibility at medical calls. So, some are arguing that firefighters should be able to start an IV [intravenous

> line], maybe push epinephrine, give Nitro[glycerine]… The evidence does not support this. So basically, having a firefighter trained as a paramedic does not work. There was a study done in Toronto…. It would be much easier to train a paramedic to be a firefighter than it would be to train a firefighter to be a paramedic".

Ultimately, *managing the conflict* between *clarifying roles* and *negotiating blurred boundaries* leads to professions' feeling the need for *protecting turfs.* During ride-along opportunities with firefighters, I was told by firefighters that one of biggest sources of conflict stems from the idea that fire is stepping on the toes of paramedics by *Responding* to so many medical calls. Study participants indicated that this is a misunderstanding by paramedics, potentially caused by mis-*Communicatin*g. The platoon indicated that "they have no interest in taking over the job of paramedics, but know that they can get there faster to at least begin caring for the public" [memo, ride-along 3, fire]. Les, a firefighter, indicated that conflicts between firefighters and paramedics on issues related to *protecting one's turf* are complicated and often neglect the role firefighters play in the development of the ACP program:

> "everybody knew that the reason we were getting the defib [defibrillation] program was to really assist with the OPALs [Ontario Prehospital Advanced Life Support] study. And at the time, everybody knew that that was also going to assist paramedics going to the advance care paramedic stage. And you know, everybody knew that we played a part in that; it was a part of that formula. So that kind of stuff gets left out in the history of some of these problems".

Issues related to *protecting turf* were not limited to paramedics and firefighters. These were also identified by ED healthcare providers such as nurses. Betty, an ED nurse, suggested that there

are times when nurses also feel as though they need to *protect their turf* in the ED when they are not clear about the roles of others:

> "I think when teams don't know the individuals and aren't familiar with the IP [interprofessional] models and what other professions do, I think that is when you run into those situations where everyone is trying to protect their silo and saying things like, 'that is a nursing skill, stay away'… I think that no one is trying to take your job, they are not trying to steal your thunder; usually they really are trying to assist in the case".

In this case, *Learning* about other professions' roles may decrease the need for protecting turf. When first-responders and ED healthcare providers are preoccupied with *protecting turf,* this can have a negative impact on different professions *coming together for public safety.* Not all examples of protecting one's turf were identified as deleterious. For example, one nurse participant suggested that sometimes the act of *protecting turf* can lead to effective, strong relationships within a profession:

> "I think that nurses have an unwritten understanding… I don't know if 'sisterhood' is the right thing to say because now there are a lot of male nurses; and I don't want to give the impression that they aren't included… but you know what I mean… that family feel, that protecting our own" [Betty, ED nurse].

4.3.4 Seeking legitimacy. Paramedics, firefighters, police officers, and ED healthcare providers engage in *seeking legitimacy* in different ways. This need to prove themselves is directly related to each professions' desire for *Positioning* of their respective field in emergency response and care. Since March 2013 paramedics have been actively seeking recognition as a recognized profession under the Regulated Health Professions Act (RHPA) (Ontario Paramedic Association, 2013). In order to become a profession regulated under the RHPA, an application must be sent

to the Health Professions Regulatory Advisory Council (HPRAC) for consideration. Decisions are made based on primary and secondary criteria. The primary criterion includes the following: actions of the profession pose a risk to the public, the profession delivers services under the direct or indirect services by another regulated or unregulated healthcare provider, and finally, the decisions made by those in this profession have a significant impact of patients' physical or mental health (HPRAC, 1991). Paramedics seem to meet each of these conditions when *Responding* to medical emergencies. The secondary criterion is focused on profession specific factors, and assessing whether or not the RHPA is the most appropriate regulatory body. Most paramedics believe that this is a vital step towards growing their profession:

> "I think it is absolutely necessary for paramedics to be viewed as a profession and ideally as self-regulating professionals. There are certain criteria that are required before somebody falls under the regulated health professions act, and it is my opinion that paramedics fit perfectly. Of the 13 delegated acts, I would suggest that paramedics do most of them. Right now, we do them under the auspices of a base hospital" [Kelly, paramedic].

Cory, a paramedic, further suggested that having a distinct regulatory body would enhance *reflecting public perceptions;*

> "…yes a college [regulatory body] would help that, the base hospitals certainly don't heavily promote paramedics; the Ministry of Health does not heavily promote paramedics and the services locally do what they can, but they don't have a huge impact on overall perception. A college will have a much bigger impact".

Charlie, another paramedic, suggested that the image of paramedics would be enhanced through professional regulation,

> **"**I think it would be more of a recognition that paramedics are healthcare professionals and you know the people have their stigmas about what a professional really is… Whether they are regulated. I think it would help the layperson to understand that in fact they are healthcare professionals".

Paramedic study participants suggested that gaining legitimacy by becoming self-regulated would have a positive impact on *public safety*. None of the participants was certain about the impact of becoming regulated under the Regulated Health Professions Act might have on *coming together* of first-responders. They were very clear that they felt much more closely aligned with healthcare than with emergency response. While paramedic respondents felt that this *legitimacy* would have a positive impact on the *coming together* of paramedics and ED healthcare providers, it may be that regulation would have a negative effect on interactions between paramedics and other first-responders. Regulation may, on the one hand, enhance *legitimacy* of a profession, but it also promotes hierarchies and if denied (as was the case for paramedics) may act to strengthen negative attitudes and stereotypes.

While some of the participants viewed *legitimacy* in terms of becoming self-regulated, others suggested that legitimacy occurred in different ways. Some participants from firefighting and nursing suggested that *seeking legitimacy* is often about having other first-responders and ED healthcare providers recognize their abilities. One nurse said, "we need to stand up for what we do, like 'no no we can do that, we are capable of that'… just having others know that we are capable of certain things as team members can be so important" [Betty, ED nurse]. Firefighters also indicated interactions between themselves and paramedics are enhanced when others recognize their capabilities, "… it just felt so good when the paramedic said I should keep doing what I was doing… like he trusted my judgment and was confident in my abilities to

manage so that he could attend to the other patient" [Joe, firefighter]. *Communicating* this acceptance and recognition of competency enhances relationships and fosters *coming together.*

4.3.5 Reflecting Public Perception. First-responders and ED healthcare providers interact with one another during emergency situations in order to ensure *Public Safety.* All of the participants agreed that the way in which the public view their respective professions has a large impact on the way in which they go about doing their work during emergency response and care. The way in which the public view each of the professions involved in emergency care *Positions* them in the team and has an impact on the interactions between and among first-responders and ED healthcare providers. If first-responders and ED healthcare providers do not perceive that they have public support where another profession does, this leads to *jockeying for position* and may cause tensions and difficulties *Communicating* between the groups. Undeniably, firefighters are held in high-esteem by community members, "the fire department has a really good reputation... Year in and year out we are seen as the profession that is the most trusted" [Les, firefighter]. During their training, firefighters spend time *Learning* about what the public expects from them, and how they must demonstrate these actions in the public domain. It is clear that firefighters intentionally promote their public image:

> '…was surprised to learn that we would be going to a camp for special needs children today… when things are quiet they will go to communities and ask residents about fire detectors (and have them in the truck and will install them for those that need them)… they do fundraisers for the community too. Interesting to see their engagement with the kids… teaching them to run to, not from firefighters in an emergency… great PR [public relations]!' (field note, firefighter ride-along, 5].

Other professions do acknowledge how successfully firefighters have marketed themselves, but remain unsatisfied with their own public image:

> "we saved this life, they say; here's a picture of us saving a baby, here's a picture of us carrying a child out of the fire. So I think that sometimes the medics kind of look at that, because the medics are really still kind of a new entity. I think that as far as a political association, or public image it is only in the past 15 or 20 years that we've begun to say, 'hang on, we do have a brand, we do have a face for the public, we do have a face for emergency services'. We have always …been a little brother, because we didn't have the publicity, we didn't have the things that they did" [Cory, paramedic].

When one profession feels that another group is held in higher esteem in the public's eye, this directly affects other sub-categories such as *seeking legitimacy* and *jockeying for position.*

According to the police officers in this study, public perceptions of their profession and its *Position*ing in emergency response and care vary greatly. Keith (police officer) suggested that it may be time to consider replicating some of the branding that firefighters have incorporated:

> 'you have to hand it to them, fire fighters have marketed themselves very well… when the public see us, they are distrustful or running away from us (catching people, typically at their worst). When the public see fire fighters they clap them on the back and thank them for their service to the community...' [field note, ride-along police, 1].

Those members of the public who have had very little to do with police officers are thankful for their presence and respect police officers; others that have had repeated interactions (repeated traffic stops, arrests, or interrogations) do not view the profession positively thereby *Positioning* some police officers in low regard . Sarah (police officer) suggested,

> "people that have a lot of contact with us generally… don't really have that great of an opinion. But I think it really depends about what they are seeing on the news; if there is an issue, a wrong-doing by police officer, even if it is in another country, people are affected by that and they will draw their own conclusions".

It stands to reason that consistent encounters with individuals that hold negative attitudes toward one profession can become frustrating:

> 'It is shocking to me how rude community members are to police officers. Young people, older people… it seems there is no limit to the disrespect these officers deal with on a daily basis. I don't know how they are keeping their composure… they are polite despite all of the swearing.' [field note, ride-along police, 1].

At the micro level, this frustration can leak into interactions between and among first-responders and ED healthcare providers, "sure… if I have had one of those days… everyone lying to you… swearing… eventually it gets under my skin and I can get short with the nurses… paramedics and firefighters" [Sarah, police officer].

The ED nurse participants felt confident that the public had very positive impressions of their profession, *Positioning* nurses in high regard. Kim [ED nurse] said,

> "I think that we are regarded quite well---people have a lot of respect for us. Whenever I tell someone that I am a nurse, they are always, like, 'wow, I could never do that'… especially when they hear that I work in emerg [ED]".

In order to facilitate positive *reflecting of public perceptions*, nurses and paramedics agree that presenting a professional deportment during transfer of accountability is important when patients are within 'ear-shot', "… sure, we can be a bit familiar… always careful if the patient is nearby

and able to hear us… important to remain professional, give the right impression" [Betty, ED nurse].

Shelley, a paramedic, shared a story about how *reflecting public perception* had a direct impact on her ability to *come together for public safety.* She recalled an incident from early in her career when she was enroute to a code four (tiered-response emergency) call identified as a potential suicide. She was following a police cruiser that she felt was traveling too slowly. She admitted that she wanted to pass the police car, but didn't because of her own misconceptions about her *Positioning* in relation to police. Shelley said, "it was the police… you just don't pass the police". She indicated that after the incident the police officer asked why they hadn't gone ahead, and told her that she should have. The police officer told her that this was a medical emergency and the role of the police officer would be to control the scene, the priority would be to attend to the patient; the role of the paramedic. Shelley identified that her perception of police officers as the authority in every situation changed after that day.

4.4 Responding

The category *Responding* includes the actions in which first-responders and ED healthcare providers engage in as well as some of the contextual factors that surround these actions. Typically, the goal of the actions that first-responders and ED healthcare providers engage in together during emergency situations is removing a person from a situation of harm and getting them to a safe location (whether that be in the field or to the hospital); ultimately, *coming together for public safety*. These actions are influenced by several sub-categories including *coordinating within policies and procedures, ensuring patient movement, managing chaos, establishing command,* and *traversing through time* (Figure 6).

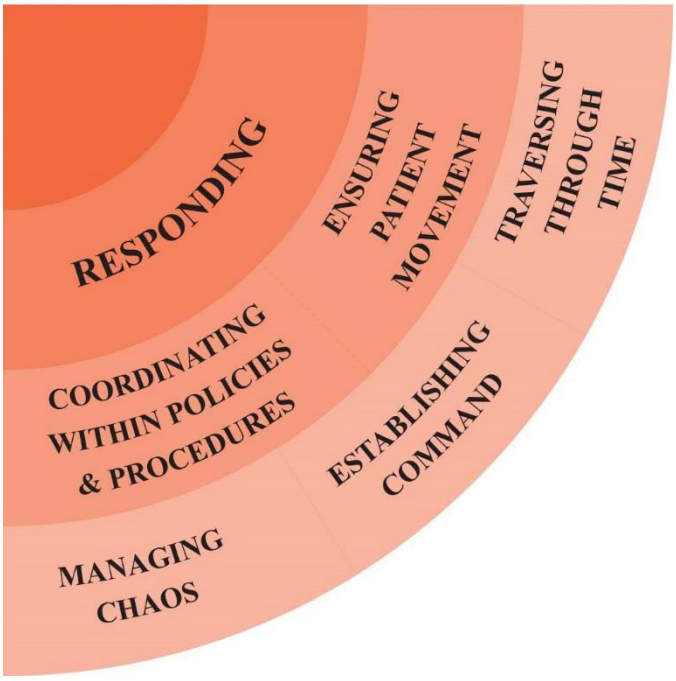

Figure 6. Responding Domain

4.4.1 Coordinating within policies and procedures. Policies and procedures govern the ways in which first-responders and ED healthcare providers respond during emergency situations. I found that while policy and procedure (P&P) manuals and Standard Operating Guides (SOGs) were easily accessible, content relevant to interactions between the professions was, in most cases, noticeably absent. According to Les, a firefighter, the roles of first-responders are not well defined by protocols:

> "since I first got that training in …1991, and now it's 2014, those roles have never really been defined. You know, like at a medical call, what is fire's responsibility? At a fire call, what is EMS supposed to do? You know, it is the same for police as well. We do this day in and day out and people interpret it, or they use their own discretion, but at the same time where are the policies?"

When firefighters are *Learning* about what it means to be a member of their profession, the role of SOGs is to define *how* they go about doing the work of firefighting in different circumstances; "SOGs that speak about stabilizing a car, patient care… they …give us guidelines so if we are doing a water rescue or high angle rescues, but um… how we interact? No, nothing like that" [Jessica, firefighter]. While SOGs may not explicitly detail how firefighters should interact with other first-responders, Joe, a firefighter, acknowledged that following SOGs do, in fact, aide in these interactions by virtue of allowing paramedics and firefighters access to the scene, "a lot of these kind of things are clearing the pathway for EMS, and those kind of things". During ride-alongs with paramedics, each participant echoed the sentiment that P&Ps were designed to map how to perform psychomotor skills or manage medical conditions, and were not meant to influence interactions or relationships. Not all participants felt that the absence of policies and procedures was problematic:

> "…in some ways it can also be isolationist. If you stick strictly to policy, then only certain professions will be in the know and sometimes peripherally there are other players that could be utilized. So what I'm saying is that perhaps some professions will not be included in situations if you follow the policy to the letter. But if you were to use the policy as a guideline, that could help you communicate to the team effectively" [Kyle, RT].

It seems that some P&Ps can negatively impact the interactions between and among first-responders and ED healthcare providers by virtue of blocking one profession from doing its work. In these cases, one profession may incorporate *Positioning* to assert their role. Sarah, a police officer, explained that she becomes quite frustrated when medical staff refuse to share their observations (i.e., alcohol on breath) touting *hospital policy:*

> "…let's just be people here, we are all trying to do the same thing. We are in the hospital trying to assist them, in a different way I just think the communication is so important. I just don't think that there's an SOG or a policy that can be made to help this; we just need to allow the communication to flow freely in order to get the job done".

There are times when following P&Ps can help one profession avoid a confrontation with another. Kyle, a Respiratory Therapist [RT] explained how he has used written policies to help promote patient or *public safety*:

> "I will quote my policies and procedures and tell the physician that it will not put myself at risk. If it goes fine then that's great but if it does not, and I knew that it was contraindicated, it would be very difficult to justify that action".

One of the new policies instituted at each of the hospitals in this study was the way in which paramedics give report on their patients. In the recent past (less than one year ago), the paramedic crew would share a brief report with the Charge Nurse (responsible for triaging and bed assignment) and a more comprehensive report to the nurse assuming care of the patient in the ED. The new policy dictates that the paramedics should be *communicating* solely to the Charge Nurse who will share pertinent information with the nurse responsible for the patient's care. This policy is intended to decrease the amount of time that the paramedics are delayed in the ED, and improve efficiencies in the department. The ED director of one hospital admitted that this policy will take some time as it "will require a culture shift in the department… the goal is to decrease redundancies and decrease the amount of time that the paramedics are held up in the emerge [ED]. As with all change, there is some resistance" [Susan]. Certainly some of the nurses and paramedics had concerns about this new policy:

> "I really believe that the nurse looking after the patient, the one with primary responsibility... um... that should be the person receiving report. If the primary nurse is receiving report from the charge nurse who is receiving report from the paramedic you are playing the telephone game and something is going to get dropped from that conversation. The charge nurse may not ask the same questions [as] the primary care nurse" [Betty, ED nurse].

Participants acknowledged that sharing P&Ps or SOGs with other services may help ensure that all first-responders are common knowledge that could positively affect working and interacting together. Some also recognized the difficulties in organizing such policies given the number of agencies involved, "fire have maintained their distinct and separate services and EMS is now one regional service so I do see that that has had an effect. So really we have like seven fire services and one EMS" [Les, firefighter]. Study participants, while acknowledging the difficulties associated with coordinating multiple services, indicated that *coming together for public safety* would be enhanced by developing and sharing P&Ps aimed at directing interactions between professions.

4.4.2 Ensuring patient movement. The ultimate goal of first-responders and ED healthcare providers is to ensure that loss of life are minimized. *Coming together for public safety* is enhanced with faster response times of all first-responders, appropriate interventions at the scene, and negotiating the safe, efficient transportation to the hospital with services that will meet patients' needs. *Ensuring patient movement* from the scene to a more controlled environment in an efficient manner requires the coordination of paramedics, fire and police when *Responding* to emergencies:

> "when things are fluid and the patient gets sent to the hospital really, really quickly. That is pretty much it. When we worked together, we get them out quicker, those are the easiest; many hands make light work. I would say the ambulance gets to the hospital much quicker when we all work together" [Sam, firefighter].

Ensuring patient movement from the scenes of emergencies often requires effective *Communicating* between and among first-responders. On my first ride-along with a paramedic crew, I witnessed exemplary teamwork leading to the timely transfer of a patient to the hospital for care:

> 'VSA (vital signs absent) call. Fire doing compressions when arrived. Gave report, fire gave advanced care paramedic paper with information that he had collected from family member. Fire Captain took over, great teamwork. While at the scene, the ACP intubated the patient (successfully, quickly) and delivered O_2. Also got IV access and gave Epinephrine and Lidocaine. Everyone was very helpful to get the patient quickly treated, on the stretcher and into the ambulance for quick transport to hospital' [field note, paramedic ride-along, 1].

Study participants indicated that several factors impact *ensuring patient movement.* First, paying attention to the physical location of vehicles responding to calls is important. It is important that the ambulance is not blocked at the scene; this can be especially challenging in locations like a highway accident. The presence of competent first-responders and ED healthcare providers who have demonstrated *Learning* in their respective fields and on-the-job training is vital. Efficient care, including transfer of accountability, coordinating the lifting of patients onto the stretcher, and *Communicating* clearly also contribute to *coming together for public safety* while *negotiating ensuring patient movement.*

4.4.3 Managing chaos. When paramedics, firefighters, and police officers attend tiered response calls, it is quite likely that they will be *Responding* to a chaotic environment. When an environment is wrought with chaos, whether in the field or within the ED, this can certainly impact *Responding*, which in turn, impacts *coming together for public safety*. The presence of multiple agencies all trying to manage a chaotic situation can sometimes lead to difficulties in the *Positioning* of each first-responder. "When you start pulling in multiple resources…ugh… sometimes you have Peter and Paul doing similar things so…the more there are, the more difficult it can become for that span of control and understanding [of] who is doing what…" [Jessica, firefighter]. All participants agreed that the environment has the potential to negatively impact the ability by first-responders to Communicating effectively with one another:

> "absolutely these environments are very chaotic…often it is uncontrolled, it can be very noisy…there are people screaming in the background, like a mom or other upset family members. Very often the environment is uncontrolled from a noise perspective as well as the people perspective, and yes that has a big effect on communication…often things are misunderstood either between two partners or even between myself and my patient." [Charlie, paramedic].

On the other hand, according to Sarah, paramedics and police officers seem to work most effectively together when the acuity of the situation is at its highest:

> "I used to work for the [city] police service and there would be a call and something horrendous may have happened, but all of the different agencies come together, work professionally and get the job done. Yes, everybody just comes together and gets it done; I don't think it is necessarily something we need to think about, I don't need to speak to

> the paramedic and say can we just get through this… It just happens, we just put our hats on and we go to work".

Firefighters share this sentiment:

> "…honestly, I think it is just the serious nature of the call. We are not talking about your typical shortness of breath or even chest pain; even though I do know that those can be quite serious. I just think that when we all know that the patient is VSA everybody kicks it into high gear" [Sam, firefighter].

While *Responding* to the urgent calls seemed to foster the best collaboration in the prehospital environment, each of the first-responders spoke of these situations as highly chaotic and intense. High acuity patient situations seem to be viewed a bit differently in the ED. Even when patients required resuscitation in the ED, experienced personnel felt that the environment itself was fairly controlled:

> "We have adapted; the room is small, we are in each other's space, there's beeps and monitors, ventilators and those kinds of things… but it is kind of in a controlled way. I think that we have become used to it…it is all just somehow a part of that kind of case… Now, if you had asked me 10 years ago, I would probably say, yeah, absolutely there is chaos" [Kim, ED nurse].

Managing chaos is context specific, reflecting the setting, the *Positioning* of profession *Responding*, and experience (*Learning*) of the professionals.

4.4.4 Establishing command. *Establishing command* when *Responding* to emergency situations necessitates strong leadership. Strong leadership is considered by most to be an essential element in the positive resolution of emergency situations and helps to guide the

interactions between and among first-responders and ED healthcare providers. One of the ED nurses interviewed indicated:

> "having that leadership is just so important when so many things need to get done. Having one person that is not touching anything, looking at the landscape and delegating tasks… or saying 'everybody stop we need to look at this as a whole'. You need somebody who isn't focused on a task, but instead looking at the global landscape" [Betty, ED nurse].

A paramedic supervisor agreed, "…leadership is key. When somebody is there directing care providers to their patients, we are able to get in and get our patients stabilized and then get out" [Kelly, paramedic]. Each of the participants indicated that the type of situation they are *Responding* to would dictate which profession would be in a leadership position:

> "…so somebody would assume area command. At that point, the paramedic would be taking orders from the most appropriate person in control, or command. So if it was a fire, they would be the one to take major command of the scene. If it was a situation that had hostages, then obviously the police would be the one to take on major command of the scene" [Charlie, firefighter].

All first-responders and ED healthcare providers in this study agreed that the *establishing command* is one of the most important elements involved in successfully *coming together for public safety.* Leadership ensures that nothing is missed, that one person is directing care, *Communicating* clearly, and providing direction for all those involved.

4.4.5 Traversing through time. An element of *Responding* that seems to have an impact on the interactions between and among first-responders and ED healthcare providers is *traversing through time*. In emergency situations, the time that it takes for first-responders to get to the

scene, to treat the patient, transport the patient to the hospital and transfer care to ED healthcare providers, is carefully monitored:

> "Everything is time stamped… so when they go back to look at statistics they can identify clearly when the call went out, when the vehicle arrived, and when the person was given treatment... They are always looking at the flow of the call and looking at whether or not it met the expectations or standards that have been pre-set" [Cory, paramedic].

Efficiencies, in terms of *responding* to patients promptly and transporting them to the appropriate care facility can often have a direct impact on patient outcomes. Thus, *traversing through time* impacts how first-responders and ED healthcare providers *come together for public safety.* The time it takes for each of the first-responders to approach a scene can sometimes cause conflict:

> "…another thing that can cause strife between paramedics and firefighters is on scene arrival. There have been lots of times when fire have approached the scene before we have and we are blocked from entrance into the building or into the driveway because of where they have parked their truck, that can cause a lot of frustration" [Kelly, paramedic].

When questioned about response times, Joe, a firefighter, suggested that one thing that would help to promote public safety and decrease tensions between groups would be the simultaneous notification of paramedic, fire, and police on all tiered calls. "There are times that we are called late… like even minutes later than the others. We are usually able to get to the calls faster because of the locations of our stations… one huge improvement might be earlier notification." Circumstances outside of the control of first-responders, such as peak traffic times, can negatively impact *Responding* at the scene of emergencies promptly:

> "we just had a call the other evening, one of the worst ones in the city and again, you are talking peek time hours, it was 20, 25 minutes before the police arrived, and a bit before the paramedics got there" [Jessica, firefighter].

Delays such as this requires one of the professions to take on multiple roles (such as directing traffic, managing the scene, and providing first-aid), thereby stretching resources.

Traversing through time is just as relevant once the ambulance arrives at the ED. Once the patient has arrived at the hospital by ambulance, "the goal for ambulance stretchers is 30 minutes maximum from door to TOA" [Susan, ED nurse]. It was clear to me that one of the ultimate goals of the EDs was the efficient movement of patients:

> 'one thing that is immediately apparent is that the focus is patient flow… the geography of the department and set-up has been specifically designed to promote flow: for example, less urgent patients do not necessarily need a stretcher, and areas of chairs are set-up so that if patients require minor procedures or need 'watching' after a procedure they can wait in one area within eyesight of nursing staff' [field note, hospital 1, day 1].

While it is clear that patient flow is a priority for paramedics and ED healthcare providers, it is not unusual for the ED to be at full capacity when ambulances arrive with patients requiring care. In these instances, paramedics are lined up in the hallway on offload delay. Once a pair of paramedics are placed on offload delay, this means that they are required to wait with their patient until a nurse is available to assume care for the patient on the stretcher:

> '…while on night shift following a paramedic crew we were called to the side of a busy road for an individual that was clearly intoxicated (difficult to rouse). Police handed him over to the paramedic crew for transport to the hospital… 2 other crews waiting in the hall… ED was full; meant three crews with six paramedics (3 ACPs) stood in the hall for

> more than 2 hours… that is a lot of ambulances off the road- is there not a better way?' [fieldnote, ride-along paramedic, 4].

Clearly this may have a negative impact on public safety if ambulances are parked in hospital bays and unavailable to respond to emergencies within the community. In times of diminished resources, first-responders and ED healthcare providers use *Positioning* to advocate on behalf of their own profession. ED healthcare providers cite staff and bed shortages as reasons for offload delays, where first-responders such as paramedics and police officers share concerns of impaired *Responding* and influences on *public safety* when they are sitting in the hospital for multiple hours with patients. Some institutions have recognized this as a problem and have negotiated with paramedic services to hire an 'offload delay' nurse in order to get ambulances back onto the road in a timely manner:

> "having offload nurses can be really helpful and get the paramedic on the road quickly and I think this is something that we really need to continue to look at. Now I'm not saying that we should hire more nurses necessarily, even paramedics, but somebody needs to be responsible for looking after these people when there are offload delays" [Jody, nurse manager].

Many paramedics and nurses working in the ED shared this perspective and all seem to view the offload delay nurse as a positive role in efficiently managing care in the ED and ensuring that first-responders are released, *Responding* to other calls. I observed that managing offload delay times continue to be a priority in the EDs. Tracking this time can sometimes cause friction between administrators of paramedics and ED healthcare providers:

> "the times that it seems to be a little bit more negative is when it is something that is maybe a bit more unusual that comes in and the medics just want to hang around. I

> understand that they want to get some learning but it just gets too crowded. You need to get back on the road and do what it is you're supposed to be doing. Once they have off-loaded the patient, it looks like we're delaying them here and that's just not in the case" [Jody, nurse manager].

Paramedics are not the only first-responders that may be delayed in the ED. Police officers often are required to stay in the ED with patients apprehended under the Mental Health Act (MHA) for extended periods of time:

> "it is very frustrating to be sitting in there for 2 to 3 hours, I understand sometimes it is a matter of change over, that is a lot of high priced help, two of us sitting there, and there are officers outside that don't have backup" [Sarah].

A recent report by the Provincial Human Services and Justice Coordinating Committee (2013) had this to say:

> 'The sheer high volume of cases in the ED in both urban and rural settings in Ontario results in countless delays in the ED, ranging from wait-times of 2-8 hours for police accompanied visits. One police officer from a rural northern community stated, "I have personally had to wait in the ER for as long as 34 hours before the hospital would admit the patient"' (p. 5).

Sarah (police officer) stated that while the delays in the ED cause frustrations, this is further exacerbated by the refusal of ED healthcare staff from openly *Communicating* throughout the process. She suggested that if nurses would update police officers regularly about how long the delay was anticipated to be, tensions would diminish. Delays such as described above have potential negative consequences to *coming together for public safety,*

> "we may have only had three officers working on a night shift. So if we got an MHA, now two officers have to deal with that MHA. That was probably the biggest issue, now we only have one officer out in the community by themselves. Our mandate is that everybody goes home safe. In these situations, we would have two people just sitting in the hospital with an MHA waiting, waiting, waiting, waiting… [Sarah, police officer].

Sarah wasn't sure how to resolve this issue, but suggested that open communication with the ED nurses regarding expected wait times would be very helpful.

4.5 Communicating

Communication between and among first-responders and ED healthcare providers takes place by virtue of face-to-face conversations, through the use of radios, by using gestures, and finally, through sharing documentation. The mode of communication used, and the context surrounding this communication, has an impact on whether the interactions between professions are positive, or more negative, in nature. The sub-categories of this domain are *communicating within and between professions, managing conflict, dismissing, getting to know one another*, and *information sharing* (Figure 7).

Figure 7. Communicating Domain

4.5.1 Communicating within and between professions. When an emergency call is initiated by a community member, the way in which this information is relayed to first-responders differs by region. In the region where this research was conducted, all calls are initially handled by police dispatch and medical calls are then forwarded to a separate call centre managed by dispatchers under the umbrella of the Ministry of Health and Long-Term Care. Enroute to emergency calls, first-responders such as paramedics, firefighters, and police are unable to communicate directly with one another. If firefighters wish to communicate with another profession, such as paramedics, this must be done through each of the dispatch centres. Often this way of *Communicating* is effective and ensures that all relevant first-responders are well-informed. At times, however, incidences of miscommunication occur, "there is always room for error in those situations. I cannot think of a specific time when there has been an error when something was informed from fire through dispatch but I know that they do occur" [Charlie, firefighter]. Joe, another firefighter, suggested that clearly *Communicating* oneself is absolutely essential when using dispatchers to relay information to other professions:

> "…because we cannot communicate directly through our radio. We have to relay everything through dispatch. So, unless it is face-to-face, it can be very difficult sometimes; you have to go through the phone game and make sure that you relay your message very clearly so that nothing gets lost in translation… so yes I would say that that happens in every environment so if it is not face-to-face it can get difficult".

In the event that the situation has changed, (such as a change in patient condition) this information would also be provided by the responsible dispatch personnel. At times, not all first-responders are updated on changes, and this can have an impact on the way in which they *come together for public safety*:

> "we have two different dispatch centres, we may get a call that this is a very serious call for example the patient is choking, and then they [paramedics] will get the update that the patient is no longer choking, just has difficulty breathing. In fact, they [the patient] may not even fit the criteria [for a tiered response] anymore and they [paramedics] come to the call no lights, no sirens and saunter in" [Les, firefighter].

During emergency situations in the ED, communication occurs between nurses, physicians, the allied health team (such as social work or respiratory therapy) and paramedics; most of this is done verbally. I noted that at times these exchanges were informal and jovial, and at other times more professional and formal:

> 'in the interactions that I witnessed here, the players (charge nurse and paramedics) are very professional with one another, this is quite different than what I saw at the other hospital where staff from the ED were very informal and seemed more like friends' [field note, hospital 2, day 1].

While the policy of the ED may be that paramedics are directed to provide TOA only to the charge nurse, this is not what I observed. In one situation, a patient was brought into the ED not breathing and with a barely perceptible pulse. The healthcare staff were alerted in advance that this patient would be arriving and were present upon arrival. In this case 'paramedics first gave their story to the MD, a nurse was writing things down. The MD seemed to listen as he was doing assessments, very respectful. Later the RT asked for the story, they [the paramedics] repeated it [field note, hospital 3, day 2]. I also observed that while the paramedics always provided a verbal report to the Charge Nurse upon their arrival, in each instance observed, they also gave this same report to the nurse assuming care of the patient. *Communicating* in this way was not consistent with the policies identified by each of the respective hospitals.

4.5.2 Managing Conflict. There are challenges to *Communicating* whenever people are brought together in times of conflict. How this conflict is managed between professions has an impact on the interactions between and among first-responders and ED healthcare providers. In this study, avoidance was a strategy that many participants utilized during confrontations. Jessica, a firefighter indicated that in order to facilitate patient movement to the hospital, avoiding confrontations was important, "honestly a lot of times it is really about biting your tongue… you know that you just step back". Sarah, a police officer, admitted that she often avoided confrontations with ED staff when sitting in the department for several hours to ensure that she did not overreact, "I would go home grumpy because I didn't want to deal with that at that point, I don't want to say something that may not be fair". Kyle (Respiratory Therapist) shared an example of when he avoided a confrontation with a medical resident, acknowledging that, in retrospect, open communication would have been better for the patient:

> "I was able to intubate and get an airway so I guess from the patient perspective that was a positive outcome, but I truly believe that situation should have been dealt with differently. Now, perhaps it was my communication, maybe I wasn't assertive enough, perhaps it was the resident's feeling uncomfortable; I don't remember what my communication was with the nurse at that particular point …it is fair to say that our communication was ineffective in this instance" [Kyle, RT].

It seems that, depending on the circumstance, avoidance can have either a positive or negative impact on *Responding* to emergency situations. Not all study participants chose to avoid conflicts when *coming together for public safety.* Susan, an ED director, shared a story about a situation in which she openly confronted a paramedic in the ED:

> "A patient was brought in by EMS, it was a mental health call. This patient's medications had not been secured. This patient was able to consume all of these medications while in the hospital setting. At the time, I was job shadowing and dressed very much like a nurse... I asked the paramedic to please explain why the patient was able to access the drugs…this was not at all well received. Now in hindsight, a few things could have been done differently. First, the paramedic did not know who I was… and maybe she thought that I was blaming her, but I was simply trying to understand the situation."

Ultimately, each of the first-responders and ED healthcare providers interviewed in this study indicated that conflicts between and among professions are rare and that all of the groups got along well. Each participant also indicated that conflict management was a topic visited regularly in their respective educational programs while *Learning* to become first-responders or ED healthcare providers.

4.5.3 Dismissing. Participants indicated that Communicating between professions is typically very positive; when things do go wrong it is often because one profession dismisses another. Some of the paramedics recalled situations where they treated a patient in the field and the ED staff questioned their actions and dismissed the report they were trying to deliver. Charlie (paramedic) remembered situations in the ED when she arrived with a patient whose condition had changed dramatically from the report called in to the hospital:

> "I have dealt with croup in the prehospital environment. You get a very sick kid, then you give our nebulized epi [epinephrine] to our patient as per our medical directive, then we get to the hospital at all the staff are like 'what did you give him epi for?' Not being out

> in the environment really makes a very big difference in not seeing the initial appearance of the patient… they sometimes don't hear the report I am trying to give them."

Several firefighters recalled incidences of being dismissed prematurely when *Responding* to emergency calls:

> "there are a few times, …that they… when we might arrive together and they would actually wave us off before we even see the patient… or they see the patient… without really knowing the condition of the patient… they really might need a hand but they will say basically we don't like you and we don't want you here" [Joe, firefighter].

Les (firefighter) agreed, "I know we had one situation when we were approaching a car accident and a paramedic waved us off, we call that *the wave of disgust*, you know, they see you and, like, shoo you away". *Dismissing* can include a negative non-verbal form of *Communicating.* In some instances, paramedics have been guilty of 'waving off' firefighters before assessing the situation and have found that they must call them back to the scene for their assistance.

> "Sometimes paramedics will get frustrated and dismiss fire before they should, sometimes they even do that before they even make contact. They may call dispatch and say we are on scene we do not need fire. So then fire gets dismissed, and sometimes they need to call them back later" [Charlie, firefighter].

During ride-along opportunities, I did see paramedics *dismissing* firefighters, but in those instances I viewed their behaviour as respectful, 'this time the paramedics were at the scene first, they clearly had things under control and waved off fire indicating that 'we got this guys'' [field note, ride-along firefighter, 2]. It is likely that premature dismissing of one profession by another is related to *Positioning* and the need to *protect one's perceived turf.* Each participant acknowledged that *dismissing* one another may negatively impact interactions and this practice is

much less prominent than they remember from the past. While I heard many stories of *dismissing,* I didn't observe any incidents of prematurely or inappropriately *dismissing* during her ride-alongs and observations in the ED. It is clear that prematurely *dismissing* any of the first-responders or ED healthcare providers when they are required would negatively affect *coming together for public safety.*

4.5.4 Getting to know one another. Familiarity between first-responders and ED healthcare providers has been cited by participants in this study as having a positive impact on interactions and is an important aspect of *Communicating* effectively between the groups. Participants in every group (paramedic, firefighting, police, ED healthcare providers) indicated that when they know the people that they are working with at an emergency, this familiarity allows them to work together more cohesively and has a positive impact on patient outcomes in nearly every instance. Ultimately, first-responders and ED healthcare providers in this study indicated a direct relationship between familiarity and *coming together for public safety.* Many first-responders and ED healthcare providers indicated that socializing enhanced working relationships:

> "police officers spend a lot of time in the ED, staying with their prisoners so we will sit and have coffee with them, and chat with them, and this leads to a really nice relationship because you knew that if something ever went wrong, you knew that they would always come and get you" [Betty, ED nurse].

It was widely acknowledged by study participants that relationships were enhanced when first-responders and ED care providers went to multiple calls together:

> "If I see this crew all the time we might develop a relationship and then I might be more willing to listen and they may be more willing to share and give a good report…I saw

> that a lot, when we started to talk on a personal level….you just know that things are going to go better [Cory, paramedic].

This same sentiment seemed relevant in the ED. Sarah, an OPP officer, suggested that her familiarity with nursing staff allowed her to share the perspectives of police officers with them after particularly difficult interactions:

> "now, I have often gone back to talk to the staff so that they could understand where we were coming from. Now the only reason that I would do that was because I had developed quite a rapport with some of the nurses working in the emergency department because when we are there, sometimes it can be for many hours" (Sarah, police officer).

During ride-alongs with police, I experienced the effects of familiarity first hand:

> '… an interesting call… we went to a watering hole [bar] for a call…patron had lost consciousness, we were first on scene. When paramedics arrived, they told the officer that I was riding with that they could manage… the officer and I stood off to the side- he wanted me to get the experience… soon afterwards it was clear that one of the paramedics were becoming annoyed… partner looked up and recognized me (had done a ride-along with him)… changed everything… very welcoming and communicative" [field note, ride-along, police 2].

Extending this idea, it would seem that IPE would promote familiarity in *Learning* and promote effective working relationships. In addition, familiarity between groups might help to diminish stereotypes and dispel misunderstandings between professions. This could, in turn, affect *Positioning,* in that groups might feel that they have less to fear from one another. If familiarity between first-responders and ED healthcare providers has a positive impact on *Responding*, emergencies which involve individuals who are unacquainted with one another, might lead to

negative outcomes. During one ED observational experience the Charge Nurse on duty told me that she found it problematic that the paramedics did not wear name tags displaying their first names. She admitted that she had forgotten the names of some of the paramedics that she saw regularly and was too embarrassed to ask them after so much time had passed. Admittedly, a small thing, it did have an impact on how she interacted with the paramedics.

During ride-along and ED observational opportunities, I noted that often first-responders and ED healthcare providers 'spoke about traveling together and planning weekend activities. The healthcare providers often joked with one another and seemed to be very familiar with one another' [field note, hospital 2, day 1]. During a ride-along with police, an officer 'indicated that he and his colleagues often socialize with paramedics outside of work and that allows them to manage situations together during the most difficult calls' [field note, ride-along police, 4].

Firefighters strongly support the idea of familiarity enhancing relationships and many feel that they should be geographically linked together:

> "if this were up to me I would say put paramedics in the fire stations. Why can't we just dispatch them out of here? It seems to be working for a lot of other regions. It is working really well in the states. Then we would become really tightly knit with them, and it would make us all one big family; that just has to stimulate teamwork. I believe that would be a drastic change if you did that" [Sam, firefighter].

While many of the firefighters interviewed in this study agreed with the sentiment of bringing paramedics into fire stations, paramedic participants did not agree. Paramedics suggested that there are several shared stations in this region, but even when the two groups share a building they remain very separate. I was able to tour some of these buildings and noted that the paramedics had a separate entrance, kitchen, and lounge. 'It is interesting that while they

[paramedics and firefighters] share the building, they don't share the space. It is like two separate entities… doesn't seem to bring them together at all' [field note, ride-along paramedic, 3]. It didn't appear as though any of the firefighters or paramedics came together in these settings beyond saying hello; *Communicating* between professions was not enabled by this structure. Geographically locating these professions in the same building did not promote the *coming together* of these two groups.

4.5.5 Information Sharing. Dispatchers are the first to begin the process of *Communicating* by providing information to first-responders such as paramedics, firefighters, and police regarding emergency calls requiring tiered responses. If firefighters arrive on the scene of a medical call before paramedics, they will be responsible for *Communicating* and sharing information about the person once the paramedic crew arrives. Paramedics have their own set of priorities, and so firefighters must quickly provide information. Many firefighters indicated that paramedics were generally not interested in receiving information from them when they arrived at a scene:

> "… so I have been out to about 100 medical calls. I can say that not once have I felt that I was able to give a full report. I think if you don't know how to give the information they way they want to receive it, the paramedics just move on and do their own assessments" [Joe, firefighter].

Kelly (paramedic) suggests that this is a common misunderstanding between firefighters and paramedics:

> "when you have a patient that needed care or help you need to gather your own information. Very often firefighters are trying to give us information as we are communicating with the patient. It isn't that I am not listening, instead I am multitasking. I think that sometimes firefighters get frustrated when I do my own vitals."

Once a patient is transported to the hospital the paramedic must give a report, or TOA, to the Charge Nurse. In the region studied, the three hospitals had slightly different processes for admitting patients brought in by paramedics. Each had different admission forms (one electronic, two paper) which required paramedics to alter the way in which they provided TOA at each of the institutions. Ultimately, each of the professionals interviewed would like others to share information in the way that best reflects the needs of the report recipient, as opposed to the needs of the one delivering information.

> "the best reports are when the paramedic gives information, nurses ask questions, paramedics give information, nurses ask questions… ultimately the nurse is getting information in the order that nursing needs it or wants it; rather than the paramedic forcing their structure on us because we have our own paper work that needs to be done…I understand that they have their paper work too, but if I am receiving, I need things in my order" [Betty, ED nurse].

ED nurses acknowledged that at times paramedics were unable to gather all of the pertinent patient information because of the nature of the call:

> "I can't imagine what it must be like outside where there are people and family and things in the way; and I think that this is why sometimes the report isn't so clear, but this is really because of all of the things that are going on and all of the chaos" [Kim, ED nurse].

At times, paramedics are unable to gather information from patients because of things like level of consciousness, or language barriers and there doesn't seem to be anyone else around to tell the story. I was surprised to learn that this is especially problematic in calls originating from long-term care facilities:

> ‘when the paramedics arrived and started asking questions about the patient, the nurse didn't seem to know much about the patient at all; almost nothing about the patient’s medical history, history of hospital admissions, or even information surrounding the reason for the call. When I asked the paramedics about this, they just laughed and said that this is ‘pretty much the norm’’ [field note, paramedic ride-along, 4].

This observation was confirmed by paramedics, police officers, and nurses interviewed in this study. One paramedic admitted that this sometimes contributes to negative attitudes toward all calls at long-term care facilities:

> “perhaps because of that recurring type of thing where there seems to be very little expertise, maybe now the paramedics are going in kind of with like a stereotype. So we might go in and not even ask the questions now, not rely on what they have to say and do our own thing. So then it kind of goes both ways” [Cory, paramedic].

The ED manager suggested that one solution to this problem may be to use a standardized form that provides information to the paramedic. Jody (nurse manager) suggested that a standard form would solve a lot of these problems:

> “Nobody uses a standard form; EMS tries to get us a report about what the patient is supposed to be having, but it almost becomes like a mixed message… You know like that telephone game that you can play at parties? So I think one thing that would be a very positive change would be the use of the standard form, one everybody knew they had to use, knew how to fill out, and knew where to find information. That would make things a lot easier for us here”.

As noted earlier, paramedics are expected to deliver TOA once to the Charge Nurse in the ED. This method of information sharing causes some concerns for paramedics interviewed in this

study. From a *Positioning* perspective, paramedics reported feeling as though the story that they were *Communicating* was not valued by ED healthcare providers and information was lost:

> "It concerns me when I only give report to the triage nurse because ultimately she is looking to assign beds and nurses. I am very worried that a very big part of the picture may be lost by the time the patient gets to the nurse who will be caring for him or her. I would be willing to give report twice in order to ensure that the right person has the right information [Kelly, paramedic].

When patients are apprehended under the Mental Health Act and brought to the hospital, police officers provide an oral report to nurses (and sometimes psychiatrists). Sarah admitted that the way that nurses gather information is very different than the way that police officers do:

> "nurses must just have a different brain that they can suck all this information in and spit it out again for the doctor; or maybe they just take pieces that they need. So, I don't really know what it is they are looking for, but I guess the report process is fine".

Study participants agreed that along with *Learning* how to perform in their respective professions, they also learn using different jargon. *Learning* how to share information with others is not standardized in the training of first-responders and ED healthcare providers. Paramedics are also responsible for documentation in the form of a 'call report'. Often they do not have the time to complete this paperwork until many hours have past following specific calls. According to Jody (nurse manager), this can have an impact on *responding* in the department:

> "there is always a delay from the time they come in and the time they [call report] are available, this is really a problem because sometimes we need it in the moment, we really kind of need to know what happened and they just don't have that when we need it".

In the data illustrated above, the lack of available information may have a direct impact within the hospital setting for ED healthcare providers to *come together for public safety* once the paramedics have left the department. ED healthcare providers have indicated that there have been instances when they have needed information to make care decisions that would be included in these call reports.

4.6 Summary

The Interactional Theory of Emergency Response and Care (ITERC) was developed as an initial way to explain the interactions between and among first-responders and ED healthcare providers during emergency situations. The research question that initially guided this study was: *how do first-responders and ED healthcare providers interact during emergency situations?* The answer to this question is found within the core process of this theory, *coming together for public safety*. This core process suggests that regardless of the many challenges inherent in the interactions, firs-responders and ED healthcare providers are able to set aside these challenges to 'get the job done'. First-responders and ED healthcare providers focus on emergency response and care placing the interests and needs of the public above their own. The four domains of *Learning, Positioning, Communicating* and *Responding* reflect micro, meso, and macro factors that influence the interactions between and among first-responders and ED healthcare providers in their *coming together for public safety* inherent in emergency response and care. The ITERC was presented using the metaphor of a kaleidoscope with shifts in the sub-categories from one domain to the next illustrating the interconnectedness of these categories to each of the four domains.

In Chapter 5, the significance and implications of the findings of this model to interactions between and among first-responders and ED healthcare providers during emergency

situations incorporating relevant literature pertinent to the topic will be discussed. I will also offer recommendations that may be considered by educators, administrators, and policy makers. Finally, a discussion of the study's limitations will be provided as well as potential topics for future research consideration.

5 Chapter 5: Discussion and Implications

The purpose of this chapter is to provide a brief overview of the study along with key findings. This chapter will begin with a discussion of the research findings, in particular, the core category of the theory, *coming together for public safety*, and the four domains that directly impact this social phenomenon. The four domains, *Learning, Positioning, Responding,* and *Communicating* include additional inter-related sub-categories that will also be discussed, paying particular attention to how the Interactional Theory of Emergency Response and Care (ITERC) extends theoretical understandings about interactions between and among groups responding to emergencies. After a theory has been described, critical questions should be addressed to determine how well developed the theory is, and its adequacy related to the intended purpose (Chinn & Kramer, 2011). As such, I will engage in a critical reflection of the ITERC according to the framework offered by Chinn and Kramer (2011). Also discussed are implications for nursing and interprofessional education, policy, and future research. This chapter closes with an acknowledgement of study limitations and final thoughts and conclusions.

5.1 Overview of Study

The aim of this study was to develop a grounded theory to explain the interactional processes that exist between and among first-responders and ED healthcare providers during emergency situations. The research question was: *How do first-responders and emergency department healthcare providers interact during emergency situations?* Individual (micro), organizational (meso), and systemic (macro) factors were relevant to consider in the development of this grounded theory in order to explain these interactional processes. As researcher, I engaged in 256 hours of ride-alongs and ED observations as well as 15 additional interviews with first-responders and ED healthcare providers. The analysis of these data from

micro, meso, and macro perspectives led to the development of the *Interactional Theory of Emergency Response and Care (ITERC)* (Figure 8). This proposed theory extends existing theories such as the Social Identity Theory (SIT), Intergroup Contact Theory, and Realistic Group Conflict Theory (RGCT) and illuminates the multiple contextual factors surrounding interactions. It illustrates how these contextual factors influence the interactions between and among first-responders and ED healthcare providers in emergencies. The ITERC also demonstrates how the multifaceted, interrelated domains and sub-categories interact to explain how first-responders and ED healthcare providers *come together for public safety*.

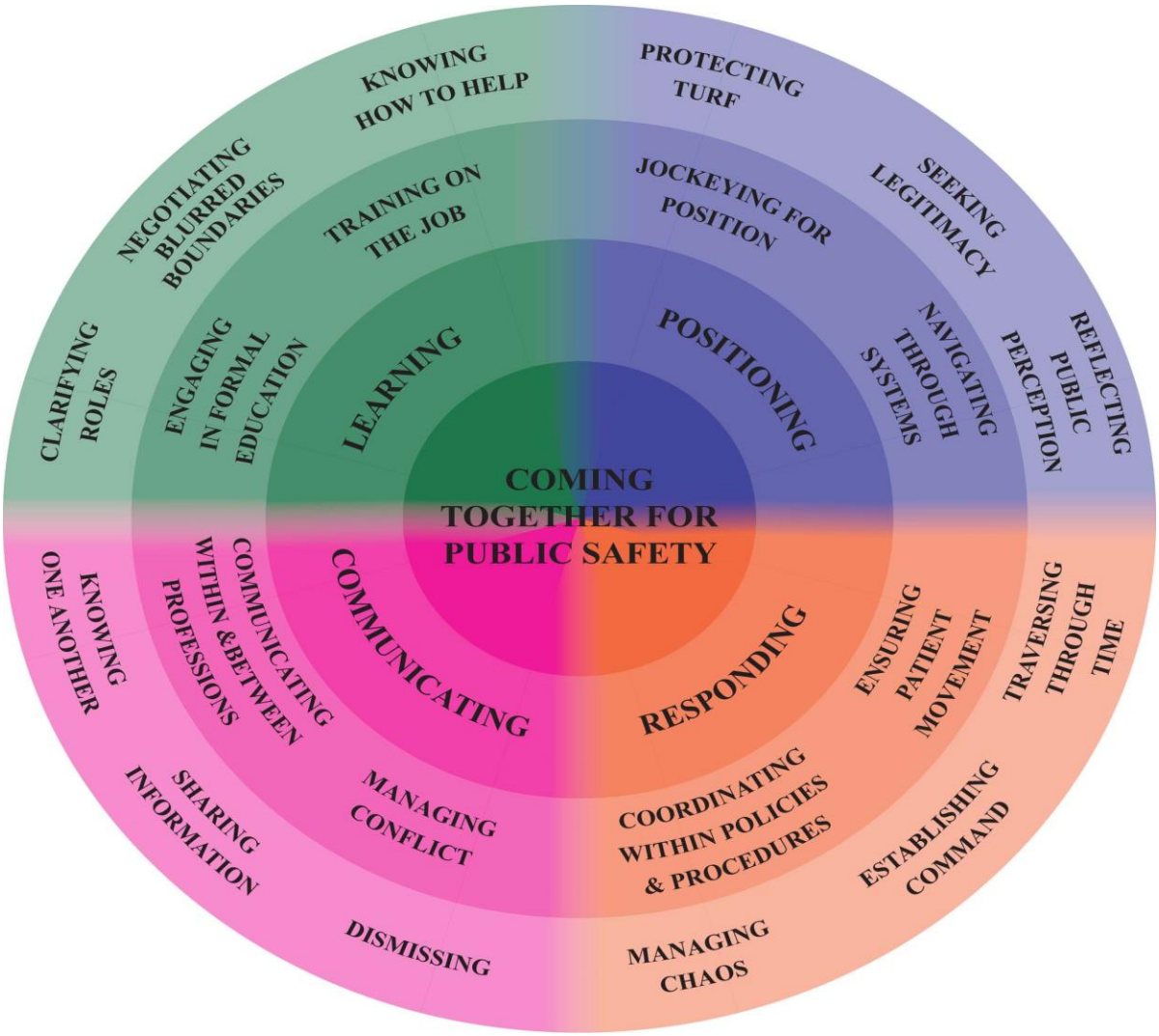

Figure 8. Interactional Theory of Emergency Response and Care (ITERC)

The core category, or reason why first-responders and ED healthcare providers interact, is *coming together for public safety.* In this study, *coming together* is directly influenced by four domains, namely: *Learning, Positioning, Responding, and Communicating.* This theory is intentionally designed to illustrate the interconnectedness of the education (*Learning*), the political landscape (*Positioning*), action (*Responding*), and communication (Communicating) between and amongst first-responders and ED healthcare providers who come together as a team during emergency response and care. There are sub-categories that are contained within each of the four domains. The kaleidoscope metaphor helps to illustrate the fluidity of this interconnectivity.

5.1.1 Coming Together and the ITERC. The role of teamwork was discussed in regards to effective emergency response and care. The four domains and multiple sub-categories included with the ITERC have each been identified as being related to coming together and working as a team in emergency response and care. In order for patients to receive healthcare, first-responders must work together to promptly arrive at the scene, extract and care for patients, manage the chaos inherent at the scene, and efficiently and safely transport the sick or injured to the appropriate ED. The interdependent nature of the actions required of first-responders and ED healthcare providers during emergency situations to enhance safety and care quality aligns with the definition of interprofessional teamwork (Reeves, Lewin, Espin, & Zwarenstein, 2010). Additionally, the ITERC identifies micro *(establishing command, communicating within and between professions, sharing information, managing conflict, clarifying roles, negotiating blurred boundaries, knowing how to help),* meso *(coordinating within policies and procedures, ensuring patient movement, protecting turf, seeking legitimacy),* and macro *(traversing through*

time, navigating through systems, reflecting public perception, jockeying for position) contexts important and integral to the concept of teamwork.

The ITERC provides an explanation for *coming together for public safety* across multiple professions, contexts, and across various agencies. Researchers agree that in order to deliver care that is valued by communities, healthcare organizations need to support the development of teamwork at multiple levels, and across professional and organizational siloes (Gittel, Beswick, Goldmann, Wallack, 2015). In a review of 22 studies of teamwork, Schmutz & Manser (2013) found that clinical competence, timely decision making, team monitoring, leadership, situational awareness, and communication were the most relevant elements impacting the delivery of care. However, their study, as well as others (Cathpole et al., 2007; Sexton, Thomas & Helmreich, 2000; Westli, Johnsen, Eid, Rasten & Brattegꝏ, 2010), have focused entirely on hospital healthcare providers. The ITERC identifies many of the interactive elements that have previously been identified as important to teamwork and broadens our understanding of IP working during emergency situations.

5.1.2 Public Safety. In order for any team to come together effectively, they must share clear goals (Adams et al., 2014; Xyrichis & Ream, 2008). In the current study, participants unanimously identified *public safety* as the ultimate goal for *coming together*. In healthcare, this is closely linked to 'patient safety' in which the goal is the prevention of harm to patients through a culture of safety that involves healthcare providers, organizations, and patients (Aspden, Corrigan, Wolcott, & Erickson, 2004). This was articulated in a different ways according to which profession in this study was describing the phenomenon. For example, while healthcare providers used the language "patient safety", police officers described public safety as "protecting the person and property of citizens", or "protecting the public interest", while

firefighters spoke about "rescuing victims from harm". These sentiments are echoed in the literature and articulated explicitly in profession-specific practice standards (Epstein & Street, 2011; Ontario Association of Fire Chiefs & Ontario Professional Fire Fighters Association, 2006; Paramedic Association of Canada, 2011; Police Services Act, 1990).

Orchard (2012) suggests that the goal of interprofessional teamwork should be patient-centred collaborative practice where patients are intimately involved in all care decisions. During emergencies, this is difficult to achieve. In acute situations, patients might be unconscious or otherwise unable to participate in their own care decisions. Thus, patient-centred practice must by necessity, be enacted differently in emergency situations. By naming *public safety* as the goal of *coming together,* first-responders and ED healthcare providers, place the patient at the centre or focus of their practice. The ITERC provides a new and different way of describing patient-centred collaborative practice in the context of healthcare emergencies, both within, and outside of, hospital settings. As the patient may not be able to direct care decisions, first-responders and ED healthcare providers must act for the patient until she or he can participate.

5.2 Critical Reflection of ITERC

Corbin and Strauss (1998) do not specify how to demonstrate quality in grounded theory. I decided to incorporate Chinn and Kramer's (2011) framework for critical reflection as I considered the proposed ITERC. This framework has been applied to several theories successfully in the past (Elo, Kääriäinen, Isola, & Hyngäs, 2013; Liehr & Smith, 1999). According to Chinn and Kramer (2011) the questions that one must ask while determining the merit of a theory are as follows:

How clear is this theory?

How simple is this theory?

How general is this theory?

How accessible is this theory?

How important is this theory?

The following section will act as a critical reflection of the ITERC by attempting to answer each of the preceding questions.

5.2.1 How clear is this theory? When determining how clear a theory is, Chinn and Kramer (2011) suggest considering "semantic clarity, semantic consistency, structural clarity, and structural consistency" (p. 198). Semantic clarity is enhanced by the definitions of the concepts included within the theory (Chinn and Kramer, 2011). Concepts in the ITERC were included within the core category, domains and interconnected sub-categories. Each of the concepts were described through the use of judicious examples of interview data, field notes and excerpts of relevant documents. I avoided the use of excessive verbiage and the use of synonyms to describe concepts. Chinn and Kramer (2011) suggest that "varying the word for an important concept interjects subtly different meanings" (p. 199). In addition to the language chosen, I attempted to promote clarity through the use of diagrams. When discussing each of the domains, providing the fragmented section of the theory was designed to enhance clarity for the reader.

Semantic consistency is an important feature when considering clarity (Chinn and Kramer, 2011). Semantic consistency dictates that the concepts of the theory used throughout explanations remain consistent with their identified definition. I tried to ensure that as I became aware of inconsistencies in meaning, I carefully explored the identified definitions and considered other components of the theory to reconcile differences. This may have meant discarding concepts or reflecting on definitions to ensure a consistent message.

Structural clarity is closely linked to semantic clarity and refers to how identifiable and apparent the connections are within the theory. In Chapter 4 I tried to ensure that the kaleidoscope metaphor of the interconnectedness of each of the sub-categories within the four domains was made explicitly clear.

Structural consistency is related to the harmonious use of structural form within a theory (Chinn & Kramer, 2011). Chinn and Kramer (2011) warn that sometimes "one structural form provides an overall general profile for major relationships within theory, and more minor components of the theory take a different structural form" (p. 201). I attempted to circumvent this issue through the use of the pictorial diagram illustrating the ITERC and remaining consistent in my explanatory approach. In choosing the diagram demonstrating the interconnectedness and linkages of the core category, domains and sub-categories, I attempted to choose a structure that clearly demonstrated these relationships yet was simple and easily understood.

5.2.2 How simple is this theory? Chinn and Kramer (2011) suggest that simplicity is achieved when the number of elements within each category and the number of interrelationships are minimal. Complexity increases with each additional concept included within a theory. This may be a weakness of the ITERC; there are several sub-categories within each of the four domains, and each of these are interconnected with one another. While it may be that extremely complex interactions (such as those encountered by first-responders and ED healthcare providers during emergencies) require a more complex theory, the ITERC has not yet stood the test of time. It may be that with repeated applications some of the relationships and concepts will begin to coalesce and any number of sub-categories may be removed as this theory is refined.

5.2.3 How general is the theory? The generality of a theory refers to the range of scope and its intended purpose. The more general a theory, the more broadly it can be applied to a host of situations. While my choice in language for the core category, domains and sub-categories was intentionally broad, it is unknown how applicable this theory is beyond explaining the interactions of first-responders and ED healthcare providers. Given that the purpose of this theory was explicitly identified as answering the question, *"how do first-responders and ED healthcare providers interact during emergencies?"* this specificity may be acceptable, perhaps even useful, for guiding these interactions. Admittedly, this theory is in its infancy, and depending on how it is applied in the future, may increase in generality and scope.

5.2.4 How accessible is this theory? Accessibility tackles "the extent to which empiric indicators for the concepts can be identified and to what extent the purposes of the theory can be attained" (Chinn & Kramer, 2011, p. 203). The theoretical meanings applied to concepts within a theory aide in the accessibility of the theory. Just as numerous sub-categories can increase the complexity of a theory (and diminish simplicity), more concepts are likely to provide comprehensive information about observable behaviours enhancing accessibility in a given context. The core category, four domains and multiple sub-categories of the ITERC are described using empiric indicators extracted from the data. Using the constant-comparative method dictated by Strauss and Corbin (1998) I remained vigilant to testing the empiric accessibility of concepts. As the core category, domains and sub-categories were developed, I intentionally looked for the consistent emergence of these relationships in subsequent interviews and observational experiences as I refined these elements within the ITERC.

5.2.5 How important is this theory? Chinn and Kramer (2011) suggest that the importance of a theory is directly linked to its practical applicability and clinical significance. "An important

theory is forward looking; usable in practice, education, and research; and valuable for creating a desired future" (Chinn and Kramer, 2011, p. 204). It is my assertion that the ITERC has the potential to be important, an examination of the implications of this theory will help support this claim (see 5.5). Given the preliminary nature to the results provided in this dissertation work, it is likely true that practical applicability and clinical significance would be enhanced by applying this theory to a range of emergency situations across time and locales.

5.3 Discussion of Findings

In order to develop a comprehensive theory to explain the interactions between and among first-responders and ED healthcare providers, micro, meso and macro level issues were important to consider. As such, this portion of the chapter is divided into sections to discuss these multiple dimensions. In the first section, micro-level factors, I discuss the findings related to individuals coming together during emergency response and care. In particular, I will discuss how contexts such as *sharing information*, *managing conflict* and *knowing how to help* impacts the interactions between and among individuals during emergency situations. Next, I will discuss many of these same sub-categories and their impact on how agencies (meso-level) come together during emergency situations. In addition to *sharing information* and *managing conflicts*, sub-categories such as *traversing through time* and *establishing command*, and their relationships to the four domains, will be discussed. This section with conclude with a discussion of the macro-level factors associated with professions coming together. Sub-categories such as *sharing information*, *clarifying roles* and *negotiating blurred boundaries* are salient topics when considering interactions between and among professions associated with emergency response and care. The literature surrounding the sociology of professions is particularly relevant to this section and is included in this discussion.

5.3.1 Micro-level factors.

5.4.1.1 Individuals in professions coming together. Findings from this study suggest that *sharing information* between and among first-responders and ED healthcare providers is an important activity during emergency response and care. *Sharing information* can be multi-faceted. It occurs at the micro, meso, and macro levels during emergency situations. *Sharing information* during the transfer of accountability begins in the prehospital environment (at the scene of emergencies) and extends into the ED. During handover, *sharing information* best affects interactions during emergency response and care when the content of what is shared is comprehensive, yet delivered efficiently. First-responders in this study identified some challenges in *sharing information* in the prehospital environment. Firefighters have indicated that it can be difficult to share information with paramedics at the scenes of medical emergencies. In these instances, *sharing information* is viewed as a *dismissive* activity when individuals feel that other professions do not actively listen to their report when *Responding* to emergencies. Paramedics view these interactions differently. From their perspective, *sharing information* is a time of multi-tasking when one individual listens to another while simultaneously performing other care duties. The differing perspectives held by first-responders and ED healthcare providers where one individual views these interactions as examples of *protecting turfs* while simultaneously diminishing *legitimacy* during *dismissing* has an impact on *coming together*. Other researchers have found that paramedics often do not have a good understanding about what has occurred before their arrival at the scenes of emergencies (Cottrell et al., 2014); the ITERC may provide opportunities to address this phenomenon and enhance this handover process by highlighting the act of *dismissing*. Acknowledging the challenges

associated with *Communicating* between individuals is the first step in developing strategies to enhance this process.

In order to remain focused on the goal of *public safety*, first-responders and ED healthcare providers must be able to *manage conflicts* with one another (Adams et al., 2014). Issues between individuals of professions can impact the way that first-responders and ED healthcare providers come together during emergencies. Participants indicated that conflicts arose between and among first-responders and ED healthcare providers often because of individual personality differences, the lack of *information sharing*, feeling the need for *protecting turfs*, and systems issues such as offload delays. The ITERC makes evident that sources of conflicts extend from the micro, meso and macro contexts. Regardless of the source of conflict, participants acknowledged the need to resolve these issues between individuals in order to promote *coming together for public safety*. This finding aligns with other studies that suggest conflict amongst group members is one of the biggest challenges to effective teamwork (Baldwin & Daugherty, 2008; Canadian Interprofessional Health Collaborative (CIHC), 2010; Girod & Beckman, 2005; MacRae, 2012; Manojlovich et al., 2014; Maung, Toevs, & Kaplan, 2015). The ITERC extends our understanding of conflict amongst team members. At the individual level, the predominant method identified by first-responders and ED healthcare providers to manage conflicts was the use of avoidance, "I guess it could have been[a] confrontation, but I just kept my mouth shut and held my tongue" [Sam, firefighter]. Understanding the modes by which individuals manage conflict may have implications for organizational administrators as they develop strategies to enhance interactions between and among first-responders and ED healthcare providers (see section 5.5 for implications for organizations).

Findings from this study suggest that first-responders' and ED healthcare providers' *knowing how to help* has an influence on *coming together for public safety* that extends beyond *clarifying roles.* I was unable to locate empiric literature examining the idea of 'helping' as it relates to first-responders and ED health providers and the context surrounding these actions. The ITERC enhances our understanding of 'helping' by an individual in one profession to another during emergency situations. *Knowing how to help* has a large impact on the interactions between and among first-responders and ED healthcare providers. These helping actions may appear to be more psychomotor in nature (e.g., lifting patients, managing equipment), but the circumstances around whether or not individuals from one professional group are perceived as helping another are more complex. Giving or receiving help from another is often related to familiarity. Individuals in the current study who had worked together in the past often framed their helping behaviours around how these actions were received in the previous encounters while *Responding* to emergencies. Other researchers concur that familiarity between first-responders enhances *coming together*, ultimately increasing *public safety* (Cottrell et al., 2014). In the current study, *knowing how to help* was also affected by navigating the political arena where issues of *protecting one's turf* may have prompted or blocked participation in helping actions. Finally, some participants disclosed feeling uncertain about whether or not certain helping actions were permitted under policies governing their own profession's or others' practice. The ITERC suggests that when individuals are clear about *knowing how to help* one another, patients are more efficiently attended to and *navigating through systems* are more proficiently managed.

First-responders and ED healthcare providers identified *traversing through time* as an important factor influencing *coming together for public safety.* At the micro level, paramedics

and police officers often find themselves on 'offload delay' due to the overcrowding of EDs or the lack of available resources to assume responsibility for patients. The ITERC suggests that there are both negative and positive consequences for first-responders and ED healthcare providers of the issue of offload delays. On the one hand, offload delays can contribute to negative feelings toward ED healthcare providers. This is exacerbated when updates are not forthcoming. During ride-alongs with paramedics it was clear that when stretchers are lined up in the hallways for extended periods of time this causes frustration. Terse conversations in which paramedics ask nursing staff how much longer they can expect to be waiting was often met with shrugging shoulders; a further example of *dismissing.* On the other hand, offload delays can also contribute to first-responders and ED healthcare providers *getting to know one another* when sharing this space over time. While the issue of offload delay has been investigated in the past (Carter, et al., 2015; Kingswell, Shaban, & Crilly, 2015), the impact has not been considered from the perspective of its effect on interactions between and among firsts-responders and ED healthcare providers.

5.3.2 Meso-level factors.

5.3.2.1 Groups coming together. Information sharing at the meso level occurs when information is transmitted and received between professional groups (paramedic, fire, and ED healthcare providers) through an outside service. The most commonly seen example of this is the use of dispatchers to relay information to paramedic and fire services during emergencies. Dispatchers use triaging guidelines to determine the level and rapidity of emergency response (Neely, Norton, & Schmidt, 2000). Individuals in the dispatch role typically decide on a 3-tiered response (paramedics, fire, and police) when they perceive the situation as critical in nature. Researchers have identified that it is problematic when dispatchers misinterpret information

provided by callers (Berdowski, Beekhuis, Zwinderman, Tijssen, Koster, 2009). The impact of miscommunication between dispatchers and first-responders on patient safety and response times has been identified in the past (Berdowski, et al., 2009; Greenwood & Heninger, 2010), but the impact of these communication errors (or omissions) on first-responders' *coming together for public safety* is a new finding. Participants suggested that there are times when one service (e.g., paramedic or fire service) recognizes that elements to the emergency call have changed, or they require further assistance, and must relay this information through dispatch. Individuals from different professions are unable to communicate directly with one another unless they are communicating face-to-face at the scene of emergencies. Timely and accurate information sharing between professions has a direct impact on *coming together for public safety.* The ITERC highlights the necessity of effectively *Communicating* between and among first-responders and ED healthcare providers in order to effectively engage in emergency response and care.

In the previous section, the sub-category *managing conflict* was discussed at the micro level. Studies typically address those conflicts that arise from individual personality conflicts. The ITERC identifies a host of other causes at the meso and macro levels that cause conflict during emergency response. At the meso level, issues related to *establishing command* can cause conflict at the scene of emergencies or within the ED. This is particularly relevant in those situations that are particularly complex and multi-faceted. For example, a large accident on the highway would typically fall under the purview of police, but if patients are entrapped in vehicles in the presence of multiple hazards, it may be more appropriate to have fire in the leadership role. To further complicate this scenario, consider what might happen if there were multiple injuries and casualties; in this case, perhaps a paramedic supervisor would be most

appropriate. Leadership is key to the coordination of professionals from multiple agencies during emergency response and care. CIHC (2010) has included collaborative leadership as an essential competency to support interprofessional collaboration. While the individual assuming command varies according to the emergency, regardless of the professional in charge, this leadership impacts the *coming together during emergency situations.* This finding aligns with the research on leadership and cardio-pulmonary resuscitation (CPR) performance (Castelao, Russo, Riethműller, & Boos, 2013). Castelao et al. (2013) developed a psychological theory-based model to describe the important leadership qualities that have a positive impact on team CPR performance. The ITERC extends this knowledge in emergency situations. First, the ITERC is relevant to all emergencies rather than single activities such as CPR. In addition, since leaders are only one element of any team, the other sub-categories and domains provide new information to support an understanding of the entire team complement during emergency response and care. There is additional literature that suggests that leadership should be based on the context and competencies required of the situation (Vroom & Jago, 2007). However, there is other evidence suggesting that some professions (such as physicians) struggle to relinquish control, regardless of who is best situated to assume leadership (McInnes, Peters, Bonney, & Halcomb, 2015). While there is a paucity of evidence examining first-responders and leadership, the ITERC does help to explain the contextual factors that might affect *establishing command* in tiered-response emergencies. It is clear that at times *establishing command* may be complicated and could lead to *jockeying for position* when it is not clear how to best proceed with *coordinating within policies and procedures.*

In order for groups to come together effectively during emergency situations, they must be available to attend tiered response calls. At the meso level, the findings of this study confirm

that resolving the issue of offload delays in order to get ambulances back on the road while ensuring that ED healthcare providers are equipped to manage patient loads is complicated (Schwartz, 2015). Utilizing creative resources, such as the development of an 'offload nurse' to manage these patients is a popular solution, and one where the efficacy, cost, and other factors such as impact on patient flow and care should be further explored.

5.3.3 Macro level factors.

5.3.3.1 Professions coming together, emergencies. In order for first-responders and ED healthcare providers to come together for public safety, they will need to develop competencies for interprofessional collaboration. CIHC (2010) has developed a set of competency domains that are closely aligned with the domains and sub-categories included within the ITERC. Specifically, the six domains of interprofessional communication, team functioning, patient/client/family/community-centred care, role clarification, collaborative leadership, and interprofessional conflict resolution have been identified as essential competencies to promote interprofessional collaborative practice (CIHC, 2010). Participants in this study agree that role clarity is an essential element of both formal education and training on the job. *Clarifying roles* was an important sub-category influencing *coming together for public safety*. Emergency situations are optimally managed when first-responders and ED healthcare providers are able to clearly articulate their roles and the roles of other team members. When individuals are uncertain about their own roles, or perceived as over-stepping their roles and infringing on others' responsibilities, interactions between first-responders and ED healthcare providers are negatively affected. The ways in which professionals understand their own roles and those of others are affected by each of the four domains. For example, the educational preparation of each group helps them to form opinions of their own profession as well as others. While the

importance of clarifying roles in interprofessional working has been cited by many other researchers (Adams, Orchard, Houghton, & Ogrin, 2014; Orchard, King, Khalili, & Bezzina, 2012; Sargeant, Loney, & Murphy, 2008), the ITERC extends our understanding of this phenomenon. Specifically, none of the existing studies examined the myriad of providers involved in emergency events and the impact of role clarity on the interactions between and among first-responders and ED healthcare providers.

Many of the macro-level factors that impact first-responders and ED healthcare providers align with the literature on the sociology of professions. Differentiating between professions and nonprofessions is not a simple task. The quest to define what constitutes a profession spans many decades. Beginning in the 1950's those that adopted a taxonomic approach developed 'ad hoc' lists of attributes that an occupation must possess in order to be a profession (Saks, 2012). Abbott (2001) indicated that professions are typically characterized by a combination of the following attributes; specialized education, examination or licensure, service fees and some form of autonomous discipline. Other taxonomies include attributes such codes of ethics and altruism as necessary inclusions in defining a profession (Saks, 2012). In fact, the 'attributes' of a profession are difficult to apply and inconsistent (Klegon, 1978). For instance, nurses fit some of the typological model (education and licensing), but not others (independent practice). In the current study, paramedic participants shared the current goal of becoming self-regulated under the Regulated Health Professions Act (RHPA). Authors have suggested that the act of seeking the title of profession is more about acquiring power and prestige, "power and persuasive rhetoric are of greater importance than the objective character of knowledge, training, and work" (Friedson, 1970, p.79). Demand theories indicate that a group seeks to become a profession in order to protect its own interest with 'rhetoric of protecting the public' (Timmons, 2010). Abbott

(1988) says that professions are seeking to carve out a distinctive jurisdiction in the presence of competition for occupational boundaries. The increase in attendance to medical calls (calls requiring healthcare or first aide) by firefighters contributes to the *blurring of boundaries* between their work and the work of paramedics. Thus, paramedics may be *seeking legitimacy* as a means of *jockeying for position* while simultaneously *protecting turfs* from other first-responders and ED healthcare providers that share some of their competencies. A further complication in delineating between professions and nonprofessions in emergency response and care is the interprofessional nature required while *Responding* to emergencies. The distinction between professions and nonprofessions can be viewed as elitist, potentially contributing to unnecessary tensions between and among first-responders and ED healthcare providers. Furthermore, those seeking professionalization may encounter challenges that were not anticipated. Timmons (2010) indicates that becoming a profession can be a double-edged sword where professional accountability can be reworked by the 'state' so that the group is not accountable to the profession, but rather the state acting on behalf of the public. Paramedics may find that rather than having more control over their profession, they may, in fact, end up with less.

Rather than concern themselves with jurisdictional boundaries, it is essential that first-responders and ED healthcare providers learn to share ownership of common skills. While others have addressed this phenomenon in relation to regulated healthcare providers (Orchard, 2010), this has not been done from the perspective of first-responders such as paramedics, firefighters and police. While regulated healthcare professions have legislation guiding the shared controlled acts, first-responders do not have this legislative framework. These differences may have an impact on *coming together for public safety.* A strength of the ITERC is the

inclusion of interrelated sub-categories and domains that help to explain each of the phenomena related to *coming together for public safety* such as *clarifying roles* and *negotiating blurred boundaries.* This theory lends credence to the fact that issues such as *clarifying roles* and *negotiating blurred boundaries* are not simple and demand attention from the educational, political, action, and communication perspectives.

Beyond professionalization, there are other differences that are apparent between first-responders and ED healthcare providers. Specifically, the way in which professions engage in *sharing information* varies. Some professions identify that they would prefer that others simply answer their questions, or provide information solely to the person in charge. In the hospital setting, this would mean that paramedics would give a report to the Charge Nurse in triage, rather than the nurse who will be providing care to the patient. *Sharing information* in this way (where paramedics answer questions of the Charge Nurse) is consistent with the literature (Waldron & Sixsmith, 2014). Researchers agree that one strategy to enhance sharing information would be to discuss only relevant information (Bedwell, Ramsay, & Salas, 2012). Others have suggested that paramedic reports during patient handover often lack structure and communication breakdowns are common (Zhang, 2013). *Sharing information* guided by one profession may not be best practice, however. Each of the professions may view a similar situation from a different lens and prioritize issues differently. An openness to all perspectives would lead to a more robust and comprehensive report. Given that the written call report is often unavailable to care providers in the hospital setting for several hours, fully understanding the transfer of accountability (TOA) may be essential to directing patient care in the ED after the paramedics leave. Researchers suggest exercising caution when attempting to move patients quickly through the ED as this could lead to rushed or incomplete reports resulting in vital

information loss that may be critical for patient care decisions (Bagnasco et al., 2013). Strategies to better capture TOA in the hospital setting are warranted, though specific approaches are not yet clear. This seems to be an area ripe for further exploration. The preceding section clearly outlines how the ITERC expands our understanding of the micro, meso and macro contextual factors influencing the interactions between and among first-responders and ED healthcare providers during emergencies.

5.4 Implications

Theories are important because the insights gained through a broader understanding of situations faced in daily working lives may aid in the development of health policy and patient care strategies (Reeves, Albert, Kuper, & Hodges, 2008). One important implication of the ITERC is how it expands our theoretical understanding of IP interactions during emergency situations. This section will begin with an exploration of how the ITERC affirms, and expands on, other theories situated in social psychology. The ITERC is particularly relevant to educators, administrators, and policy makers as they develop curricular, organizational, and strategic plans. Consequently, a discussion of implications of the ITERC and recommendations resulting from this study for nursing education, interprofessional education, agency training, and policy development will follow.

5.4.1 Extending Social Theories. Recognizing the impact that contextual factors such as the political landscape (*Positioning*) has on interactions between professions is explicitly illustrated in the ITERC. For example, issues related to competing for government funding between first-responders is specifically related to *jockeying for position,* and *protecting turfs.* In addition, *seeking legitimacy* with one another, and the public, impact the way in which these groups *come together for public safety.* In this way, the ITERC aligns with RGCT's premise that competition

between groups over resources (Whitley & Kite, 2005) contributes to prejudice and stereotyping (Sherif & Sherif, 1979). However, the ITERC extends Whitley's and Kite's (2005) work by acknowledging that while the political landscape is one factor that affects *coming together,* there are three additional important domains that also impact these interactions.

Each of the four domains in the ITERC intersect to impact first-responders and ED healthcare providers' *coming together for public safety.* Participants in this study identified that *Communicating* between professions can sometimes be affected when individuals don't 'speak the same language'. This idea of 'speaking the same language' aligns with the philosophy of SIT in which communication between groups is affected because the way in which information is transmitted and received varies between these groups (Burford, 2012). However, a limitation of SIT is that this theoretical perspective neglects making evident the contextual factors surrounding interactions, a gap filled by the current study. Specifically, the environment (*managing chaos*); political landscape (*jockeying for position, seeking legitimacy, coordinating within policies and procedures*); educational preparation (*clarifying roles, knowing how to help, negotiating blurred boundaries*); and individual factors (*establishing command, dismissing, knowing one another*) are important contextual factors that interact to affect *coming together for public safety*.

The ITERC highlights the multiple contextual factors that impact emergency response and care. The core category and many of the sub-categories of the ITERC also align with the conditions dictated by intergroup conflict theory (Allport, 1954) such as common goals *(public safety),* cooperation *(coming together),* equality *(jockeying for position)* and authority support *(navigating through systems, reflecting public perception).* Again, the environment, political landscape, educational preparation, and individual factors were observed to influence the

interactions of participants during emergencies; elements which are not considered within Intergroup Contact Theory.

5.4.2 Nursing Education. In order for registered nurses to work effectively on an emergency team, a focus on roles is essential. Nurses must learn to be able to articulate what they can contribute during emergency response and care. Efforts should be made to educate nurses about the roles of other team members including first-responders. While a great deal of research has been conducted examining IPE with various healthcare providers, little work has been done that includes first-responders. Nurses working in both the community and the ED need to know how to work with paramedics, firefighters, and police officers. Others have noted that in order to work cohesively, team members must understand and respect the roles of others (Adams, Orchard, Houghton, & Ogrin, 2014; Orchard, King, Khalili, & Bezzina, 2012; Sargeant, Loney & Murphy, 2008). It is time to expand understandings about how team members such as paramedics, firefighters, and police officers come together with nurses and other health care providers to contribute to public safety and care.

The ITERC highlights the importance of *sharing information.* Those involved in emergency response and care (including nursing) will need to learn how to both receive information from, and provide information to, a host of other professions. For example, one area that has been identified as a concern in this study is the provision of verbal reports from individuals in long-term care facilities to paramedics. This issue has been raised by first-responders, ED healthcare providers, and nursing managers. Educators should consider developing strategies to assist students in each of the professions to learn best practices in communicating with one another during emergencies.

While this study focused on the ED, there are implications for nurses working in other settings. Given the focus on care delivered in the home, nurses will find themselves in various situations where they may be working in the community and have the occasion to participate in responding to emergencies outside of the confines of a hospital (The Joint Commission, 2011). When educators attempt to help nursing students understand the role of first-responders, it may not be enough to provide a list of duties performed by each of these professions. The ITERC may be useful education tool in that it provides a comprehensive illustration of the four domains that impact interactions between and among first-responders and ED healthcare providers during emergency response and care. In order to gain a complete picture of all professionals working the team, nursing students should learn about the education, political arena, professional competencies, and communication patterns of various members who comprise a team responsible for emergency response and care.

5.4.3 Interprofessional Education. One of the implications of this research is the need for considering how first-responders and ED healthcare providers may engage in IPE. Most of the participants in the study indicated that while they felt that learning with other first-responders and ED healthcare providers would be both welcome and beneficial, they had not received those opportunities in their formal education. The few participants that did engage in IPE suggested that these activities occurred infrequently and were volunteer in nature. The four domains of the ITERC (*Positioning, Learning, Responding, and Communicating*) can be influenced by a variety of factors, one of which is familiarity amongst team members. Those first-responders and ED healthcare providers who are more familiar with one another work cohesively and have open communication. Trust is essential for the acceptance of others (Rasmussen et al., 2014) and can be built or destroyed through personal experiences (Hurlock-Chorostecki, Forchuk, Orchard,

Reeves, & van Soeren, 2013). Providing opportunities for first-responders and ED healthcare providers (as students or professionals) to learn together would provide opportunities for individuals to get to know one another. Interprofessional education (IPE) where individuals from a variety of programs come together to 'learn with, from, and about one another' has been identified as having an important impact on learners' attitudes, knowledge, and skills of collaboration (Campion-Smith, Austin, Criswick, Dowling, & Francis, 2011; Makowsky et al., 2009). It is important for educators (both within educational institutions and those planning on-the-job training) to pay particular attention to providing a climate that sensitively considers the four domains. Langton (2009) suggests there are five types of IPE formats; modules inserted in existing curricula, clinical practice as an element, common curriculum across all professions, eLearning and work-based. Specific strategies that have been commonly used in IPE include simulation training (Decker et al., 2015; Mohaupt et al., 2012; Zhang & Thompson, 2011), shared course work (Bromage, Clouder, Thistlethwaite, & Gordon, 2010), and interprofessional clinical training (Ericson, Masiello, & Bolinder, 2012). In planning IPE activities it will be important to clearly consider the goals of these encounters. Once the goals have been determined, a critical examination of whether or not such goals may be achieved in a uni-professional context is vital to ensure sustainability and financial responsibility. An appreciation of key elements of the ITERC such as the political climate, communication patterns, and professional competencies enacted during emergency response and care should help to guide IPE activities. Beyond guiding these activities, the sub-categories including within the ITERC are useful to consider as topics for IPE events to promote *coming together for public safety*. A concrete example might be *communicating within and between professions* while *sharing information.* Often non-technical skills such as developing skills associated with teamwork,

understanding professional boundaries, learning of other professionals' language patterns, identifying one' s own role within a team and reflecting on attitudes towards self and others are broad themes guiding IPE (Thistlethwaite, 2012). Ultimately, IPE should aim to include knowledge (about different roles), skills (in communication) and attitudes (mutual respect) as process outcomes (D'Amour & Oandasan, 2004). One advantage of moving beyond the siloed approach of uni-professional learning is the potential for interprofessional socialization where participants can develop a sense of belonging to their own profession (such as 'paramedic', 'fire-fighter', 'police officer' and 'nurse') as well as a member of the larger IP community team responsible for emergency response and care. As students and professionals begin to *negotiate blurred boundaries* by learning about the roles they share, educators should expect both positive and negative reactions. As a result of their socialization, we can expect first-responders and ED healthcare providers to hold specific views about themselves and others (Oandasan & Reeves, 2005). Sharing skills and blurring professional boundaries may be met with resistance as individuals try to protect their turf. Indeed, there are likely some skills that do require specialization and it will be important to differentiate which actions are shared, at what locations and under which circumstances.

5.4.4 Strategies to manage timing. According to the ITERC, issues related to timing have an effect on the interactions between and among first-responders and ED healthcare providers at the micro, meso and macro levels. Policy makers will need to continue to examine best practices for managing offload delays in the ED in order to effectively *ensure patient movement,* and *navigate through systems.* "Ineffective procedures that are wasteful of resources cannot be retained when high public expectations combine with finite budgets and the need for economic viability" (Jones & Scannell, 2002, p. 172). While the positive (opportunities for interprofessional engagement)

and negative (frustration related to wait times) consequences of offload delays have been identified earlier in this chapter, we cannot ignore the potential hazards these delays can have on the ability for first-responders, such as paramedics and police, to respond to other 9-1-1 calls. The Provincial Human Services and Justice Coordinating Committee (2013) suggest that clear, consistent communication is key to reducing wait-times. They also recommend that strong relationships between police services and hospitals would facilitate the development of written agreements between police detachments and hospitals that set out procedures and expectations. Once these protocols are written, they should be made accessible to front-line staff and be subject to regular monitoring and evaluation. An 'Expert Working Group' was commissioned to address emergency department overcrowding and has also provided a toolkit for organizations as a strategy in decreasing offload delays (Ontario Hospital Association, Ontario Medical Association, & Ontario Ministry of Health and Long-Term Care, 2006). They confirm that agreements and protocols aimed at improving patient flow are key to decreasing offload delays. One of the strategies employed in the region in which this study was conducted was the inclusion of an 'offload delay nurse' whose time was paid for by paramedic services. The role of this nurse was to assume care for patients in the hallway at times when the ED was overcrowded and unable to accommodate these patients in the traditional manner. The inclusion of this nurse allowed paramedics to return to duty promptly while ensuring that patients were cared for in the hospital setting. Nurses working in this capacity will be in a unique position to understand the perspectives of paramedics and ensure that patient care needs are attended to in overcrowded EDs. It may be time to consider a more comprehensive and formal description of the role of this nurse, track the need for this healthcare provider across shifts, and engage in cost-benefit analyses to determine the efficacy of this role. In addition, first-responders and EDs should work

together to develop a clear definition identifying when TOA occurs in the field and within the ED. Establishing documents and protocols delineating who is accountable for patients during the various stages of emergencies is important to *clarify roles* and to avoid *turf protection.*

Cross-training across agencies should also be a consideration. This would allow different first-responders the opportunity to gain familiarity with one another, learn how to safely help one another with new equipment, and promote trust within the emergency response and care team. In addition, policy makers should develop standard operating guides (SOGs) or policy and procedure manuals that could be shared across agencies that clearly outline the roles and responsibilities of each of the professions during emergencies. Finally, the fact that first-responders cannot connect by radio is problematic when there is an important update to share from one group to another. While I acknowledge that the solution is not a simple one, it is time to investigate communication options that allow professions to interact with one another directly as they are *coming together for public safety.*

Organizational leaders should consider developing processes through which first-responders and ED healthcare providers may voice concerns and overcome conflicts. Some potential strategies might be a shared communication system where individuals can discuss events after they have had time to reflect on incidents involving conflict (through electronic means). Enforcing a climate of open dialogue, and providing venues for discussing situations that cause conflict between groups, may enhance interactions. Finally, debriefing sessions, especially following large-scale emergency situations, may allow first-responders and ED healthcare opportunities to *get to know one another.* Familiarity, especially when previous experiences have been positive, has been identified as having a positive effect on interactions between and among first-responders and ED healthcare providers.

5.5 Limitations

Like all research endeavours, this study is not without its limitations. First, given that all first-responders and ED healthcare providers were aware of my goal during ride-along opportunities, the Hawthorne effect is not only possible, but also likely. My presence not only affected those first-responders and ED healthcare providers with whom I was directly riding, I often encountered individuals at emergency calls that I had previously followed. This familiarity seemed to make first-responders (in particular) very open to granting me access to situations that would previously require more negotiation.

In addition, while administrators may have intentionally placed me with specific individuals that might paint their profession in the very best light, they could not control encounters with other individuals when I attended scenes while riding-along with different groups. As well, I was formerly employed at one of the hospitals at which fieldwork was gathered. While I rarely worked directly in the ED, I was familiar with many of the staff who may have been more or less open than they might have been given these relationships.

Finally, while I had hoped to be able to engage in interviews with all team members associated with emergency response and care, I was unable to secure an ED physician participant. Dialogue with this team member may have added important insights relevant to the ITERC.

While the goal of qualitative research is not to ensure that the findings are generalizable, it is important to note that the theory developed here was based on experiences with first-responders and ED healthcare providers in one region. Data gathered in another region may yield different findings.

5.6 Directions for future research

5.6.1 Theory development. There are several exciting research directions that are made possible through the development of the ITERC. First, testing the ITERC in a variety of regions including both large urban centres, as well as smaller rural settings, would allow further development of this theory. It may also be interesting to test this theory or parts of this theory, in other settings such as educational or organizational venues. It is possible that in this effort to refine the ITERC in the future (with or without the addition of different professions) new categories may emerge, and others may coalesce together. Ultimately it is possible that subsequent studies may lead to different findings. Future research could focus on the development of psychometric properties to test and measure the domains included within the ITERC. These proposed research endeavours would enhance the development and applicability of the ITERC across multiple contexts.

5.6.2 Education. In order to develop educational programs that prepare first-responders and ED healthcare providers to work together most effectively during emergency response and care, deliberate planning will be required to determine the content of these programs. Careful consideration of the various roles that nurses may take during emergency response and care (such as homecare, 'offload delay' nurse, ED healthcare provider) may also serve to enhance nursing curricula. In addition to investigating the topics to be covered, researchers will also need to determine the best mode of delivering this information. The ITERC may act as a blueprint for planning activities that address the educational, political, action and communication domains that guide interactions in first-responders' and ED healthcare providers' quest for public safety. Investigating the efficacy of the theory to guide curriculum planning would also be a worthwhile pursuit.

5.6.3 Organizational. One of the most common comments from participants when discussing meso-level topics was the need for cross-training between agencies. In order to consider this approach, an analysis of the costs (financial, resources, and time) and potential benefits (enhanced efficiencies, helping behaviours and improved communication) is an important first step. Another potential research study could surround alternative communication strategies and their impact on interactions between and among first-responders and ED healthcare providers during emergency situations. For instance, if firefighters made written notes about their actions and assessments during medical calls and handed these over to paramedics (rather than a verbal report) how might this affect the sub-categories *sharing information* and *dismissing?* Finally, research applying the ITERC to other regions during emergency situations will be vital to enhance this theory and improve its applicability to the Canadian context. Studying the most effective way to enhance interactions between and among first-responders and ED healthcare providers should be a priority. Given the importance of emergency response and care to the health and safety of communities, these endeavours are worth investigating.

5.6.4 Policy. There are a number of potential research directions that policy makers could consider. First, it may be time to standardize TOA both in the field and within the hospital setting. In order to arrive at a singular approach, each of the professions involved in emergency response and care should be given the opportunity to, in some way, help in its development. Standardizing other Operating Guidelines or policies and procedures will also require an investigation into the role that first-responders and ED healthcare providers have in various emergency situations. Finally, research should be conducted to consider best practices for managing offload delays in overcrowded EDs using some of the strategies that have already been developed by various governmental agencies. The cost of resources such as an ‘offload delay’

nurse should be considered from multiple perspectives such as patient outcomes, personnel satisfaction, and number of increased on-road ambulance hours.

5.7 Summary and Conclusion

The Interactional Theory of Emergency Response and Care is the first theory to begin to explain the interactions between and among first-responders and ED healthcare providers. This theory extends our theoretical understanding of these interactions beyond traditional social psychological theories such as SIT and RGCT commonly used to explain issues that groups commonly encounter as they come together. The core category, *coming together for public safety* represents the social process first-responders and ED healthcare providers engage in during emergency response and care. The four domains of *Learning, Positioning, Responding,* and *Communicating* provide further explanation of the micro, meso and macro contexts that intersect to influence interactions between and among first-responders during emergency situations.

This theory may be particularly useful to specific stakeholders in the realm of emergency response and care. IPE activities will be important to consider for both educational institutions and agencies as opportunities to promote positive interactions during emergency situations. Articulating the variety of roles that nurses may assume during emergencies, both in the community and within the emergency department, may provide nursing students in educational programs with a broader understanding of and appreciation for the scope of nurses' roles. There are a number of policy implications that evolved from this research study. In order to promote *coming together for public safety,* policy makers will need to develop standardized policies, manage offload delays and ensure that technology is put in place to promote interactions between first-responders and ED healthcare providers during emergency situations.

Perhaps the single-most important contribution of this study is the development of a 'stand-alone' theory to explain interactions that have yet to be considered in the literature. This novel theory may present research opportunities across the spectrum of education, policy and practice settings. The ITERC may support initiatives aimed at improving emergency response and care by highlighting the domains and intersecting sub-categories influencing interactions between and among first-responders and ED healthcare providers during emergency response and care. The investigation of first-responders and ED healthcare providers may be in its infancy, however the growth of this area of inquiry has the potential to directly impact public safety.

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Appendix A. Email Script for Ride-Along

Subject Line: Invitation to participate in research

You are being invited to participate in a study I, Jennifer Mohaupt, am conducting as part of my doctoral research work. My supervisors are Drs. Mary Anne Andrusyszyn, Cathy Ward-Griffin, Sandra Regan, and Scott Reeves. Briefly, this study involves, developing a theory to describe the interactional processes between and among first-responders and Emergency Department (ED) healthcare providers during emergency situations.

In this part of the research, I wish to observe the processes of interaction at the sites of emergencies in prehospital care. In order to achieve this, I am planning to *ride-along* with various professionals such as police, firefighters, and paramedics as they attend to emergency calls. These ride-along opportunities will provide me with the opportunity to observe first-responders in the field of interest, as well as engage in extended informal interviews.

If you would like more information on this study please contact me at the contact information given below.

Jennifer Mohaupt (PhD candidate
Arthur Labatt Family School of Nursing, Western University
jmohaupt[redacted]
519-[redacted]

Appendix B. Email Script for Observation in ED

Subject Line: Invitation to participate in research

You are invited to participate in a study I, Jennifer Mohaupt, am conducting as part of my doctoral research work. My supervisors are Drs. Mary Anne Andrusyszyn, Cathy Ward-Griffin, Sandra Regan, and Scott Reeves. Briefly, this study involves developing a theory to describe the interactional processes between and among first-responders and Emergency Department (ED) healthcare providers during emergency situations.

In this part of the research, I wish to observe the processes of interaction between first-responders, paramedics and other healthcare providers (such as nurses and physicians) within the Emergency Department. In order to achieve this, I am planning to observe the transfer of care that occurs as patients that have been involved in emergencies are admitted to the hospital.

If you would like more information on this study please contact me at the contact information given below.

Jennifer Mohaupt (PhD candidate)
Arthur Labatt Family School of Nursing, Western University
jmohaupt@[redacted]
519-[redacted]

Appendix C. Email Script for Interviews

Subject Line: Invitation to participate in research

You are being invited to participate in a study I, Jennifer Mohaupt, am conducting as part of my doctoral research work. My supervisors are Drs. Mary Anne Andrusyszyn, Cathy Ward-Griffin, Sandra Regan, and Scott Reeves. Briefly, this study involves developing a theory to describe the interactional processes between and among first-responders and Emergency Department (ED) healthcare providers during emergency situations.

In this part of the research, I wish to engage in interviews with key informants such as yourself. These interviews will take place at a time and location most convenient to you and will last no longer than 90 minutes. I may contact you at a later date for a brief follow-up interview to confirm details of your first interview (less than 30 minutes). Please refer to the attached Letter of Information for a full explanation.

If you would like more information on this study please contact me at the contact information given below.

Jennifer Mohaupt (PhD candidate)
Arthur Labatt Family School of Nursing,
Western University
jmohaupt[redacted]
519-[redacted]

Appendix D. Recruitment Flyer

You Are Invited!

WHAT:

To participate in a research study to explain the "interactional processes between and among first-responders and ED care providers".

WHO:

First-responders such as police, firefighters, paramedics

&

Emergency Department physicians and nurses

HOW:

Engage in interviews to share your perspectives and experiences.

Please contact: Jennifer Mohaupt, jmohaupt@[redacted] or 519-[redacted] to get involved today!!

Western University Health Science Research Ethics Board
HSREB Full Board Initial Approval Notice

Principal Investigator: Dr. Mary Anne Andrusyszyn
Department & Institution: Health Sciences\Nursing,Western University

HSREB File Number: 104340
Study Title: Interactional Processes Between and Among First-Responders and Emergency Department Healthcare Providers during Emergency Situations: A Grounded Theory Study.
Sponsor:

HSREB Initial Approval Date: May 16, 2014
HSREB Expiry Date: November 30, 2014

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	Guides for methods	2013/08/29
Other	Approval from Fire Chief	2014/01/17
Other	WSIB fire confirmation letter	2013/12/11
Other	WSIB, paramedics confirmation letter	2013/12/11
Instruments	Examples of Observational Guide, Interview Guide, Document Review Guide, Paradigm Model (received March 21/14)	
Other	Letter From EMS	2014/03/10
Letter of Information & Consent	Letter of information for observations, clean	2014/04/21
Letter of Information & Consent	Letter of information for interviews, clean version	2014/05/21
Recruitment Items	email recruitment for interviews (ride alongs,observation in the ED,interview with key informants) clean copy (received April 21/14)	
Recruitment Items	Recruitment flyer	

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review. If an Updated Approval Notice is required prior to the HSREB Expiry Date, the Principal Investigator is responsible for completing and submitting an HSREB Updated Approval Form in a timely fashion.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Ethics Officer, on behalf of Dr. Joseph Gilbert, HSREB Chair

Ethics Officer to Contact for Further Information

Erika Basile	Grace Kelly	Mina Mekhail	Vikki Tran
ebasile@uwo.ca	grace.kelly@uwo.ca	mmekhail@uwo.ca	vikki.tran@uwo.ca

This is an official document. Please retain the original in your files.

Appendix F. Letter of Information, Interview

Project Title: Interactional Processes Between and Among First-Responders and ED Healthcare Providers During Emergencies: A Grounded Theory Study

Principal Investigator: Dr. Mary Anne Andrusyszyn, Professor and Director, Arthur Labatt Family School of Nursing, Western University

Letter of Information

1. **Invitation to Participate**

   You are being invited to participate in a research study looking at the interactions between and among first-responders and Emergency Department (ED) healthcare providers during emergency situations. As a member of this team you are in a unique position to share your ideas about the nature of these interactions.

2. **Purpose of the Letter**

   The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. **Purpose of this Study**

   The purpose of this study is to develop a grounded theory describing the interactional processes between and among first-responders and ED healthcare providers during emergencies. The ultimate goal of my research is to provide insight into emergency response and care that may lead to educational and policy recommendations that will enhance patient care.

4. **Inclusion Criteria**

   Individuals aged 18 years or older than can communicate verbally in English are eligible to participate in this study.

5. **Study Procedures**

   In this part of the research, I wish to gain insight into your perspectives associated with interactions between first-responders and ED healthcare providers. To do this, I am planning to conduct interviews with a number of participants. The initial interview will

take place at a time that is most convenient to you at a location of your choosing. The interview will last no longer than 90 minutes and will be audio-taped. In addition to the tape recording, the interviewer will take notes to make a written record of the sequence of questions and answers. I would also like to engage in second interviews with participants when questions arise.

6. Possible Risks and Harms

There are no foreseeable risks in your participation in this research. Your participation is entirely voluntary. You are not obliged to answer any questions you consider inappropriate. You are free to withdraw from the study without providing reasons at any point

7. Possible Benefits

You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole.

8. Compensation

You will not be compensated with a financial reward for your participation in this research, but you will be provided with a token of appreciation in the form of a prepaid Tim Horton's card in the amount of $5.00.

9. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from this study at any time with no effect on your future employment.

10. Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. If you choose to withdraw from this study, your data will be removed and destroyed from our database. Sharing with anyone that you are or are not part of this study is entirely your decision. Your research records will be stored in the following manner: locked in a cabinet in a secure office; audio recordings will be reviewed only by members of the research team and they will be destroyed after 2 years.

11. Contacts for Further Information

If you have any questions about this study, please contact me, the Study Investigator, Jennifer Mohaupt (PhD candidate) at 519-[redacted] or jmohaupt[redacted] or my supervisor, Dr. Mary Anne Andrusyszyn at (519) 661-[redacted], or [redacted]. If you have questions about your rights as a research participant or

the conduct of this study, you may contact Dr. David Hill, Scientific Director, Lawson Health Research Institute at (519) 667-6649.

12. Publication

If the results of this study are published, your name will not be used. If you would like a copy of the study results please provide your name and contact number on a piece of paper separate from the consent form.

This letter is yours to keep for future reference

Appendix G. Letter of Information, Ride-Alongs

Project Title: Interactional Processes Between and Among First-Responders and ED Healthcare Providers During Emergencies: A Grounded Theory Study

Principal Investigator: Dr. Mary Anne Andrusyszyn, Professor and Director, Arthur Labatt Family School of Nursing, Western University

Letter of Information

1. Invitation to Participate

You are being invited to participate in a research study looking at the interactions between and among first-responders and Emergency Department (ED) healthcare providers during emergency situations. As a member of this team you are in a unique position to share your ideas about the nature of these interactions.

2. Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. Purpose of this Study

The purpose of this study is to develop a grounded theory describing the interactional processes between and among first-responders and ED healthcare providers during emergencies. The ultimate goal of my research is to provide insight into emergency response and care that may lead to educational and policy recommendations that will enhance patient care.

4. Inclusion Criteria

Individuals aged 18 years or older than can communicate verbally in English are eligible to participate in this study.

5. Study Procedures

In this part of the research, I wish to observe the interactions between first-responders and ED healthcare providers. To do this, I am planning to go on *ride-alongs* with firefighters, police officers, and paramedics, as well as attend the emergency department.

During these observational opportunities, I may ask questions to clarify my observations. During this time, I will be making notes on my observations to capture what I have seen and heard in the 'field' (site of emergency) and within the emergency department.

6. Possible Risks and Harms

There are no foreseeable risks in your participation in this research. Your participation is entirely voluntary. You are not obliged to answer any questions you consider inappropriate. You are free to withdraw from the study without providing reasons at any point

7. Possible Benefits

You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole.

8. Compensation

You will not be compensated with a financial reward for your participation in this research, but you will be provided with a token of appreciation in the form of a prepaid Tim Horton's card.

9. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from this study at any time with no effect on your future employment.

10. Confidentiality

All data collected will remain confidential and accessible only to the investigators of this study. If you choose to withdraw from this study, your data will be removed and destroyed from our database. Sharing with anyone that you are or are not part of this study is entirely your decision. Your research records will be stored in the following manner: locked in a cabinet in a secure office; audio recordings will be reviewed only by members of the research team and they will be destroyed after 2 years.

11. Contacts for Further Information

If you have any questions about this study, please contact me, the study investigator, Jennifer Mohaupt (PhD candidate) at 519-[redacted] or [redacted] or, my supervisor, Dr. Mary Anne Andrusyszyn at (519) 661[redacted], or [redacted]. If you have questions about your rights as a research participant or the conduct of this study, you may contact Dr. David Hill, Scientific Director, Lawson Health Research Institute at (519) [redacted]

12. Publication

If the results of this study are published, your name will not be used. If you would like a copy of the study results please provide your name and contact number on a piece of paper separate from the consent form.

This letter is yours to keep for future reference

Appendix H. Consent Form

Western UNIVERSITY · CANADA

Consent Form

Project Title: Interactional Processes Between and Among First-Responders and Emergency Department Healthcare Providers During Emergency Situations: A Grounded Theory

Study Investigator's Name: **Jennifer Mohaupt**

Primary Investigator's Name (supervisor): Dr. Mary Anne Andrusyszyn

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

I consent to be interviewed ☐

I consent to be audio-taped ☐

Participant's Name (please print): _____

Participant's Signature: _____

Date: _____

Consent Obtained by (please print): _____

Signature: _____

Date: _____

Appendix I. Example of Observation Guide

1. Where am I? (setting)
2. What are the conditions/constraints associated with the setting?
3. Who are the players (participants) involved?
4. What is happening?
    - Event (over-all ie car accident)
    - Activities (firefighters hosing down car, paramedics attending patient etc.)

5. What do I notice about the relationships or interactions of those involved?

6. What norms or values do I observe that may impact meaning during interactions?

7. What symbols are the participants using to understand (language, equipment etc)

8. How has my being present affected what I am seeing?

9. How has what I have seen affected me?

Appendix J. Interview Guide

Interactional Processes Between and Among First-Responders and ED Healthcare Providers During Emergencies: A Grounded Theory Study

1. Please share with me your job title?
2. How long have you been employed as a _____?
3. What is your role during emergency situations?
4. What other professions would you say you work with during emergency situations?
5. Can you share with me a story about a time when you worked with other professions during emergency situations?
6. How would you say that first-responders and healthcare providers get along during emergency situations?
7. How have you overcome or dealt with challenges that you have experienced when working with other professionals during emergency situations?
8. How do different groups of first-responders and ED staff communicate?
9. How does the environment impact on communication?
10. How do different professions coordinate care during emergency situations?
11. What do you think that the other professionals think about _____?
12. How does your work impact patient care/outcomes?
13. How do other professions involved in patient care during emergency situations impact on outcomes?
14. If I asked you to share the best thing about working alongside other professions involved in emergency situations what would that be?
15. If you could change one thing about the interactions between first-responders and ED care providers, what would that be?
16. How does policy affect the ability for first-responders and ED healthcare providers to communicate?
17. If you had the ability to make one policy recommendation regarding emergency response and care, what would that be?
18. Is there anything else you would like to tell me that you think I should know that we have not talked about?

Appendix K. Document Review Guide

Interactional Processes Between and Among First-Responders and ED Healthcare Providers during Emergency Situations: A Grounded Theory Study

Title of document:

Date of publication:

1. Who is the author of the document?
2. Who are the key players (personnel) involved?
3. What is the issue/content addressed by the document?
4. Is there any supporting data included in the document?
5. How does the information/direction./policy included in the document impact interactional processes?
6. Does what I am reading coincide with observations in the field
7. How is this document received by other groups (i.e., other responders/care providers)?
8. What are my reactions as I read this document?

Appendix L. Excerpt of Line-by-Line Coding (First Iteration)

to the station, they are on overtime that they didn't really want, and they are stuck in the hospital for whatever reason. So I think that there are a lot of external factors that affect the relationship between the hospital staff as well as the medics. Having said that, there are also personalities. In some cases I have seen that where there is that one person who is somebody that you really do not want to make a mistake with, that Dr. is very strict to see want to be very careful about how you give report, or even medics; there are medics with certain personality that they just don't jive. Or if there is a situation where medic has made an error or not given a good report, or maybe there's a habit of... I won't say slates on a personal level... But differences in approaches to things and they just don't jive. That can cause friction because you might think so here comes so and so again and that cause friction.

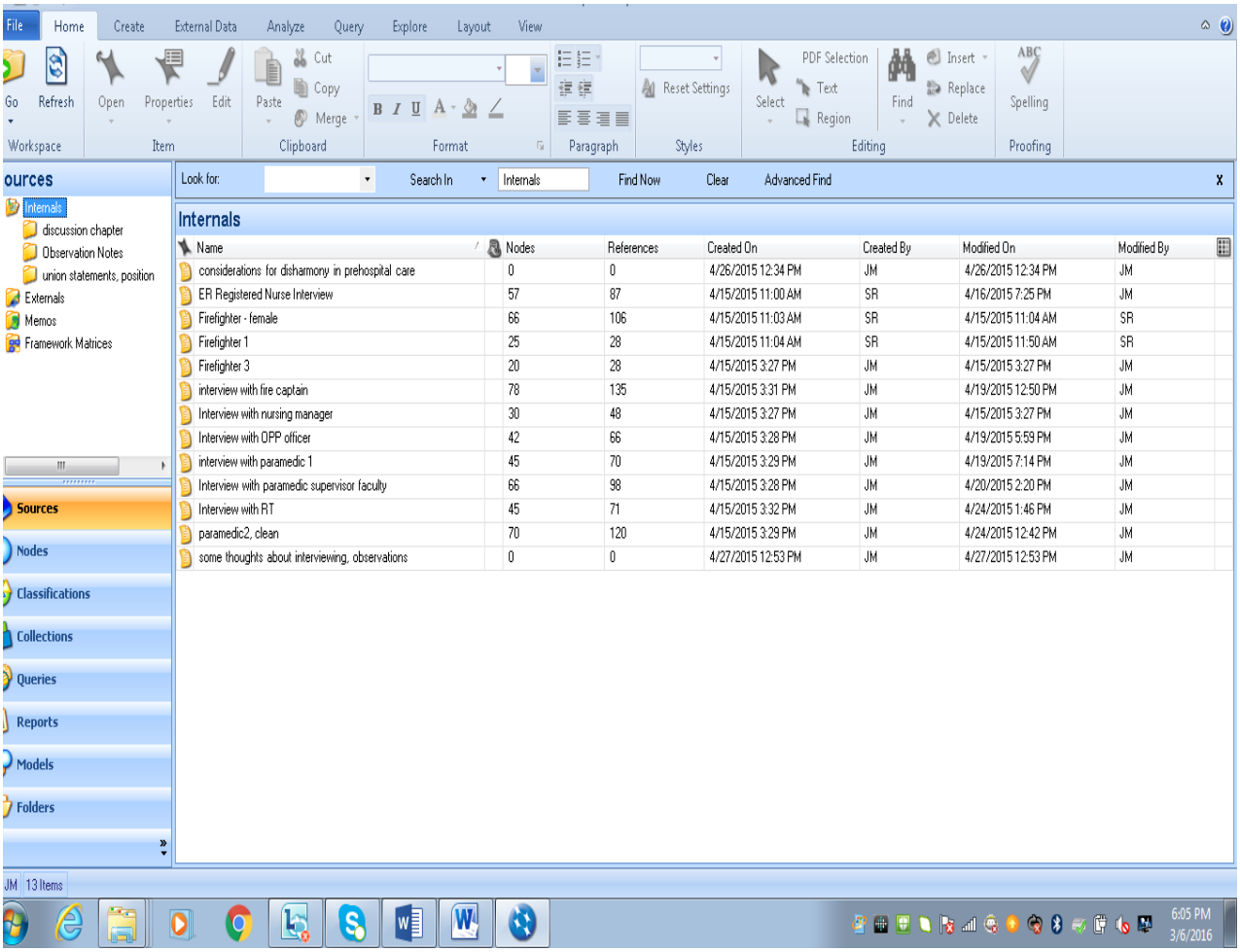
Me - can you think of a situation that involves multiple fashions were things did not go as smoothly as they could have?

A couple. One is a situation between paramedics and the police. In that case there, again I was in a larger city, and there was a street person who had obviously been under the influence of alcohol and after thing, he was sleeping in the street and somebody had called the ambulance the paramedics got there and the medic did his initial check and he suggested that the person was just drunk and told the police officer that. The police officer said that he would take them to the drunk tank, or the detox centre or whatever; the officer was reaching for the person on the ground to assist him to the police vehicle. The patient said something or made a noise that concerned the medic and the medic that wait, stop, I want to look at him again and touch the police officers arm. That was a bad thing, the police officer lost it and started swearing at the medic, threatened to arrest him; it was a very tense situation, and it went on. The paramedic backed off, and the officer was threatening this person and eventually the other medical the supervisor in who calmed the officer down and that sort of thing. That is the nature in some cases... I don't know if that officer had a really really bad day, just the nature of their sense of preservation and that situational awareness, they do not want people touching them. I guess they also don't like to be stopped from doing anything, I'm not trying to lay the blame anywhere but this was one situation where things were really really tense. Things did calmed down, and by that time the medic had changed his mind again and decided that the call was a medical call, not a legal matter.

I have been in a particular situation in the hospital where I have dropped the patient off, the patient had a history of pneumonia was living in the gay village in a large city, I guess that's not really an issue, so when I did my history and all that... This is when AIDS was a really big thing... You know, the gay disease that kind of thing and all those judgments that went with it; I didn't care, the patient is the patient and I have to ask the question. I did try to ask open-ended questions that the patient could tell me if there were any other issues; I learned that he had pneumonia and had had recurrent sicknesses. I brought them into the hospital and the receiving nurse came and asked me questions well I gave report. She started asking the patient questions about difficulty breathing, recurrent pneumonia that kind of stuff and the nurse says is there anything else you would like to tell me? And the patient says well I have aids. The nurse turned to me very sternly and said why didn't you tell me that? And it was like, well, because I didn't know. So there were several comments that went back and forth; she was telling me that I should

Comment [1]: discussing extraneous factors
Comment [2]: individuals causing trouble
Comment [3]: example of insecurity
Comment [4]: insecurity
Comment [5]: fitting with each other
Comment [6]: history
Comment [7]: considering different perspectives
Comment [8]: familiarity with others
Comment [9]: metropolis?
Comment [10]:
Comment [11]: Wellbeing of patient
Comment [12]: assessing
Comment [13]: negotiating
Comment [14]: helping
Comment [15]: patient wellbeing
Comment [16]: impeding plan
Comment [17]: reacting
Comment [18]: playing out
Comment [19]: avoiding
Comment [20]: confronting
Comment [21]: leading
Comment [22]: rationalizing, context
Comment [23]: preservation
Comment [24]: control
Comment [25]: resolution
Comment [26]: patient wellbeing
Comment [27]: transferring care
Comment [28]: stereotyping
Comment [29]: historical significance
Comment [30]: stereotyping
Comment [31]: looking for more information
Comment [32]: asking questions
Comment [33]: sharing report
Comment [34]: questioning
Comment [35]: disclosing
Comment [36]: accusing
Comment [37]: arguing

Appendix M. NVivo Coding



Appendix N. Open Coding

Initial focused Codes
policy causing conflict
confusing policies, impact on helping
disregarding policy and procedure
following procedures
policy impacting of how services are managed differently
policy impacting patient movement
policy on dealing with management
policy impact on working together
improving efficiencies
needing more policy to aid in working together
not following policies and procedures
policies don't affect working together
policies impacting work on the road
policies unclear, not updated
policy for helping
improving offload delay, need policy

Sub-category

Coordinating within policies and procedures.

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Salfi, J., Solomon, P., Mohaupt, J., Allen, D., & Patterson, C. (2012). Overcoming all obstacles:A framework for embedding interprofessional education into a large, multi-site BScN program. *Journal of Nursing Education, 51(2),* 106-110.

Salfi, J., Mohaupt, J., Patterson, C., & Allen, D. (2015). Reality check: Are we truly preparing our students for interprofessional collaborative practice? *Journal of Nursing Education, 47(2),* 41-61.