Running head: INTERACTIONAL DYNAMICS

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Interactional Dynamics of Interprofessional Collaboration

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Dedication

To my wonderful daughter, Caitlin, for her patience and love.

Abstract

The purpose of this study was to investigate the interactional dynamics that occur when health-care professionals collaborate on a medical case. Social exchange theory and the literature on collaboration and teamwork provided the theoretical basis from which interaction was investigated. The participants in the study were 13 health-care professionals and one patient. They participated in two workshops during which they collaborated on an interprofessional care plan. Their interactions were audio-and videotaped. The recordings were transcribed and analyzed using the Roter Interaction Analysis System (RIAS), a widely used method developed for analyzing the dynamics of physician-patient interactions. The data were analyzed using chi-square standardized residuals. The study concluded that while the RIAS format was useful, the original RIAS categories needed to be extensively supplemented with items that specifically addressed the interprofessional interaction. An examination of the categories with variability indicated that the majority of the interactions were task-related and that the response patterns varied depending on whether the categories were grouped according to participant, workshop group, or profession. This study demonstrated that it is possible to assess the degree of interprofessionalism in interactions using a scenario that is more ecologically valid than that offered by attitude questionnaires completed individually. The study offers a methodology by which it might be possible to chart the growth of interprofessionalism in communication among medical and other professionals in the course their work.

Sommaire

Le but de la présente thèse est d'investiguer la dynamique interactive se produisant lorsque des professionnels de la santé collaborent dans un dossier médical. La théorie de l'échange social et la littérature sur la collaboration et le travail en équipe a servi de base théorique à partir de laquelle l'interaction a été investiguée. Treize professionnels de la santé ainsi qu'un patient ont participé à cette étude. Ces participants ont collaboré à établir un programme de soins interprofessionnels durant deux séances de travail. Leur interaction a été filmée et enregistrée. Les enregistrements vidéos et audio ont été retranscrits et analysés à l'aide du système d'analyse des interactions de Roter (RIAS), une méthode très usitée afin de développer une méthode pour analyser la dynamique des relations entre patient et docteur. Les données ont été analysées grâce à la méthode standardisée khi carré. La recherche a montré que, même si le RIAS demeure utile, les catégories initiales du RIAS exigeaient de vastes suppléments avec des items répondant spécifiquement à l'interaction interprofessionnelle. Un examen des catégories comportant des variables indique que la majorité des interactions était liée aux tâches et que les schémas des réponses variaient selon que les catégories étaient groupées en fonction du participant, des ateliers de groupes, ou de la profession. Cette étude a démontré qu'il est possible de déterminer le niveau d'interprofessionnalisme dans les interactions en utilisant un scénario qui est plus valide écologiquement que celui offert dans des questionnaires d'attitude complétés individuellement. La thèse offre une méthodologie permettant de tenir compte de la croissance de l'interprofessionnalisme dans la communication entre professionnels de la santé ou d'autres secteurs dans le cadre de leur travail.

CHAPTER ONE: INTRODUCTION

Context of the Study

The future of Canada's universally accessible, publicly funded health-care system has been given great consideration in recent years. To address the issue of ensuring the long term sustainability of the health-care system, federal, provincial, and territorial governments conducted a number of inquiries and commissions. These included the Commission on the Future of Health Care in Canada, headed Roy Romanow. In the final report, *Building on Values: The Future of Health Care in Canada* (2002), Romanow stressed the importance of interprofessional education for patient-centered care in Canada by highlighting the need for new models of health-care education and training. The report stated:

in view of . . . changing trends, corresponding changes must be made in the way health care providers are educated and trained. If health care providers are expected to work together and share expertise in a team environment, it makes sense that their education and training should prepare them for this type of working arrangement. (p. 109)

Similarly, the First Minister's Accord on Health Care Renewal (Health Canada, 2003) identified the educational process undergone by health-care professionals as a key component in implementing system level change.

One response to the First Minister's Accord and the Commission on the Future of Health Care in Canada was the launching of the Pan-Canadian Health Human Resource Strategy. The strategy focused on three major areas, one of which was the Interprofessional Education for Collaborative Patient-Centred Practice (IECPCP). In IECPCP initiatives, the focus is on developing collaborative patient-centered practice, designed to promote the active participation of each discipline in patient care. It enhances patient- and family-centred goals and values, provides mechanisms for continuous communication among care givers, optimizes staff participation in clinical decision making within and across disciplines, and fosters respect for disciplinary contributions of all professionals. (Herbert, 2005, p. 2)

Health Canada commissioned a research team to investigate the status of interdisciplinary education for collaborative practice in Canada (Oandasan, et al., 2004). The team's investigations included identifying issues and trends in interdisciplinary education for collaborative patient-centered practice in Canada, a review of studies of interdisciplinary education and collaborative practice, and identifying barriers and enablers associated with implementing interdisciplinary education and collaborative practice models.

In the report's conclusion, Oandasan et al. (2004) noted "the stage is set for Canada's readiness to move IECPCP forward" (p. 265) and that "to advance IECPCP a collaborative approach must be taken amongst educators, practitioners, researchers, policymakers and clients/patients" (p. 265). It is the commitment to collaboration amongst various stakeholders that appears to separate the IECPCP initiative from undertakings in the past. Although the team concept is not a new idea for health-care reform (e.g., World Health Organization, 1988), Herbert (2005) proclaimed that a change in practice amongst health-care professionals has not been successful in the past because there was no cultural change. That is, for interprofessional practice to be a reality there must be a cultural shift away from health professionals being trained to practice in intraprofessional silos to the adoption of education and training programs that promote collaborative patient-centered practice as a practice orientation. Thus, to achieve this goal, IECPCP initiative objectives included promoting and demonstrating the benefits of interprofessional education for collaborative patient-centered care, increasing the number of health-care professionals trained for patient-centered interprofessional team practice at both the entry and practice levels, and encouraging networking and sharing of best educational practices for collaborative patient-centered care (Herbert, 2005).

Many academic and health-care institutions across Canada implemented variations of the proposed IECPCP framework and recommendations. For example, the McGill Educational Initiative on Interprofessional Collaboration: Partnerships for Patient and Family-Centred Practice (Purden et al., 2004), from which this research emerged, was launched in the Faculty of Medicine at McGill University in 2005. The goal of the project was to create an educational program that would bring together clinicians, educators, and students to build on the knowledge from various professions (e.g., medicine, nursing, physical therapy, occupational therapy, educational psychology) in order to develop the shared knowledge needed to deliver collaborative practice. Similar initiatives were undertaken at other universities (e.g., British Columbia, Queen's, and Memorial), all with the goal to advance interprofessional practice and education (IPPE). Similar undertaking are also occurring in other countries, underscoring the importance of interprofessional education in health-care as a global issue (Priest et al., 2008).

Interprofessional education, practice, and interaction. As noted, interprofessional education and practice has been deemed to be a critical component of solutions to current and emerging health-resource problems in Canada (Health Canada, 2003). An interprofessional approach to health-care "involves the continuous interaction of two or more professionals or disciplines, organised into a common effort, to solve or explore common issues with the best possible participation of the patient" (Herbert, 2005, p. 2).

The goal, to be accomplished through education and training, was to eliminate the practice of health professionals working in silos and to adopt a system in which they interact in an interprofessional, collaborative fashion. Understanding how best to educate and train professionals and students, however, requires fully understanding the processes that health professionals engage in during collaborative activities.

Purpose and Research Questions

The purpose of this study was to investigate the interactional dynamics that occur when health-care professionals collaborate on a medical case (in this instance using a virtual medical patient case). The concept of interactional dynamics is not a formal definition extracted from the research literature. Rather, it is a combination of concepts. Interactional refers to the communication between two or more people while dynamics refers to the fluid, active processes (i.e., statements and reciprocal actions) that occur within this communication.

At a very general level, the study explored the question "What does interprofessional collaboration look like"? The specific research questions were: (a) Is the RIAS coding system, a tool traditionally used to measure physician-patient interactions, sensitive to identifying evidence of interprofessionalism when health-care professionals engage in a collaborative activity, and (b) What is the nature of the interactions when health-care professionals engage in a collaborative activity?

CHAPTER TWO: LITERATURE REVIEW

The McGill Educational Initiative

This study was part of a Health Canada funded endeavor (the McGill Educational Initiative on Interprofessional Collaboration: Partnerships for Patient and Family-Centred Practice (Purden et al., 2004)), which commenced in the Faculty of Medicine at McGill University in 2005. The overall goal of the project was to create an educational program that would bring together clinicians, educators, and students to build on the knowledge from various professions in order to develop the shared knowledge needed to deliver collaborative practice. The medical professions involved in this project included the School of Medicine, the School of Nursing, the School of Physical Therapy and Occupational Therapy, and the School of Communication Sciences and Disorders. The team was also in partnership with two local hospitals, the McGill University Health Centre (MUHC) and Sir Mortimer B. Davis Jewish General Hospital (JGH). A team of educational psychologists from the Department of Educational and Counselling Psychology was also fully integrated into the project (with responsibility for evaluation) (Shore et al., 2006).

The specific goals for the project were diverse and included: (a) implementing a program for interprofessional education (IPE) in the curricula of the professional schools; (b) developing the skills of the university and clinician educators who will be implementing modalities of IPE; (c) developing learning environments that are exemplars of interprofessional practice (IPP); and (d) further understanding the role of interprofessional consultation and collaboration in the delivery of collaborative practice among the different professional groups. Although this study was aligned with the fourth objective (further understanding the nature of collaboration among health-care

professionals), it draws on other research areas from the project, in particular the development of electronic medical cases (e-cases).

Electronic cases. Electronic cases (e-cases), virtual representations of a medical case, combine technology and appropriate pedagogy to facilitate the understanding of interprofessional learning and to highlight the role of communication in interprofessional practice. Created by The McGill Educational Initiative and the Molson Medical Informatics Project at McGill University, the conceptual framework for the e-case development is based on pertinent learning principles and theories including (a) adult learning, (b) professional socialization, (c) communities of learning and practice, and (d) cognitive apprenticeship (Posel, Faremo, & Fleiszer, 2006; Posel et al., 2008).

Using multimedia imagery (including images, animations, audio, and video), clinicians and students are able view a virtual but realistic medical case. Contained within each e-case is a medical patient's information (e.g., past medical history, social history, pre-operative assessments) as well hyperlinks to reference material and associated teaching modules. For example, a breast-cancer patient e-case developed at McGill University (this website may be viewed at:

http://mmiweb.mmi.mcgill.ca/dev/Dave/MrsB-E-Case.htm) allows students to read the patient's information (e.g., blood work, chest x-rays, cardiogram, mammogram, living arrangements), view images taken pre-, during, and post-operation, and access teaching modules through hyperlinks (e.g., sentinel lymph node dissection animation is available to view).

E-cases are developed with a number of guidelines consistent with health-care case development in mind. E-cases should: (a) approximate an actual situation in a clinically meaningful environment (D'Eon, 2005), (b) be sufficiently complex that the

case cannot be done alone and will thus reinforce collaborative competencies (Steinert, 2005), and (c) allow participants to move towards interdependent collaboration using the case scenario to emphasize teamwork and communication (Barr, Koppel, Reeves, Hammick, & Freeth, 2005; Posel, Fleiszer, & Shore, in press).

Use of e-cases by clinicians. Clinicians working with an e-case engage in a threestage process. In stage 1, clinicians are presented with an electronic medical case (via email) that portrays a specific clinical problem. In stage 2, clinicians assess the clinical scenario depicted in the e-case and determine the course of action to be taken. They develop uniprofessional care plans that are consistent with their normal practice in their usual clinical setting. They are required to include their rationales and research evidence to support the actions depicted in the uniprofessional care plans as well as timeframes and initial planning for outcome measures. Because teamwork is central to interprofessional practice, e-cases also contain components that emphasize communication, group decision-making, and collaboration. These are accomplished in stage 3 during which the clinicians meet for face-to-face communication. In this off-line stage of the process, the various professionals come together to discuss the case and integrate the various uniprofessional care plans into an interprofessional care plan.

The clinicians then review and validate that the blueprint did form the basis of an interprofessional care plan (Posel et al., 2008). This final product is only attained through collaboration and consensus. Thus, the third stage is essential to facilitating the understanding of interprofessional practice as it promotes appreciation for each profession's role and contributions as well as collaboration and consensus to achieve the end result.

Defining Interprofessional Collaboration

There are myriad terms, typically drawn from the literature on collaboration and teamwork, used to describe and discuss the working relationships of health-care professionals. In what Leathard (2003), however, referred to as a "terminological quagmire" (p. 5), there is a lack of consensus as to how the various terms are defined and used.

Collaboration. Definitions of collaboration range from simplistic to complex. At a very basic level, collaboration may be defined as working together (Merriam-Webster, 2009). Other definitions incorporate the task and define collaboration as two or more people agreeing to work together and taking equal responsibility for the task at hand (Kampwirth, 2003). Disciplines may also have specific definitions that reflect the focus of their work. School psychologists and other education-based personnel, for example, approach collaboration within collaborative consultative frameworks, and define collaborative consultation as:

a process in which a trained, school-based consultant, working in an egalitarian, non-hierarchical relationship with a consultee, assists that person in her efforts to make decisions and carry out plans that will be in the best educational interests of the students. (Kampwith, 2003, p. 3)

Researchers and practitioners in health professions have a range of definitions to describe collaboration. Leathard (2003), for example, discussed Hudson's four levels of collaboration. The lowest level of collaboration, *communication*, is characterized by the exchange of information. In the second level, *coordination*, professionals remain in separate organizations but work across boundaries. In the third level, *co-location*,

members of various professions are physically together, while in the fourth level, *commissioning*, professionals develop a shared approach to the task at hand.

Collaboration conceptualized differently by different people has been reported by D'Amour, Ferrada-Videla, San Martin Rodriguez, and Beaulieu (2005). They undertook an extensive review that sought to identify conceptual frameworks associated with interprofessional collaboration. To achieve this, they overviewed the various definitions and concepts as well as the various theoretical frameworks associated with collaboration. They concluded that, although the term collaboration is used in many ways and has many meanings, there are five concepts most commonly mentioned in definitions of collaboration. These are: *sharing* (such as responsibilities, philosophies, or decision making); partnerships (i.e., collaborative undertakings that are authentic and constructive, demand open and honest communication, mutual trust and respect, pursuit of common goals and outcomes); *interdependency* (i.e., team members are interdependent, not autonomous; maximum output is achieved through this collective action); power (which is conceived as shared among team members and is based on knowledge and experience rather than on functions or titles); and *process* (i.e., which has been characterized as evolving, dynamic, interactive, and interpersonal).

Researchers and practitioners may include some or all of these concepts in their conceptualization of collaboration. For example, the McGill Educational Initiative (Purden et al., 2004) defined collaboration as follows:

a group of health professionals working together in a collegial relationship characterized by shared values, beliefs, open communication, trust and respect to enable individuals and their families to manage their illness and sustain their health. It includes the understanding of individual professional responsibility, professional interdependence and recognizes the patient and family as partners in the decisions related to their health. (p. 15)

The University of Toronto's Office of Interprofessional Education (2007), on the other hand, defined collaboration in health-care teams as "an interprofessional process of communication and decision making that enables the separate and shared knowledge and skills of health care providers to synergistically influence the client/patient care provided" (n.p.).

Teamwork. Other researchers have defined working relationships from a teamwork perspective. D'Amour et al. (2005) noted that "collaboration is essential in order to ensure quality health care and teamwork is the main context in which collaborative patient-centered care is provided." Like the term collaboration, there is little consensus on a definition of teamwork (Oandasan et al., 2006).

Many definitions of teams exist and many focus on a distinguishing factor such as the purpose or goal of the team. For example, Katzenbach and Smith (1993) defined a team as "a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they are mutually accountable" (p. 15). Similarly, Beebe and Masterson (2006) defined a team as "a coordinated group of individuals organized to work together to achieve a specific common goal" (p. 6). Teams are distinguished from small groups in that teams are typically more highly structured than small groups (Beebe & Masterson, 2006). Thus, although all teams are groups, not all groups function as a team.

Oandasan et al. (2006) took this idea a step further, noting that teamwork is one form of collaboration but that not all collaboration is done in teams, nor is the team component necessary for collaboration. For example, a number of health-care providers may engage in a collaborative effort in the care a patient but would not perceive themselves in terms of being a "team." This notion is included in the organization literature's definition of a team:

A collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, *who see themselves and who are seen by others* as an intact social entity embedded in one or more larger social systems and who manage their relationships across organizational borders. (Oandasan et al., p. 3; italics in original)

Collaboration is not intrinsic to the "team" designation, rather, collaboration is intrinsic to the relationships and interactions that occur when health-care professionals work toward a common goal. Collaboration is goal-directed, as is most expert-level performance as described in the cognitive-science literature (Ericsson, 1998; Tuffiash, Roring, & Ericsson, 2007). Thus, the health-care professionals themselves perceive and determine whether collaboration has occurred. In other words, "Collaboration is a process that requires relationships and interactions between health professionals regardless of whether or not they perceive themselves as part of a team" (Oandasan et al., 2006, p. 4).

Teamwork terminology. There have been a number of terms used to describe the teamwork associated with health-care professionals. The terms most frequently used to describe teamwork include transdisciplinary team, interdisciplinary team, and multidisciplinary team (see D'Amour et al., 2005). As noted earlier, however, there are variations in how the terms are used. Pirrie, Hamilton, and Wilson (1999), for example, have suggested that the distinction between "inter" and "multi" be based on numerical and territorial dimensions. Numerically, interdisciplinary interactions would refer to two professions working together while multidisciplinary interactions would refer to more

than two. Territorial distinctions move away from a distinction based on the number of professions involved to professionals crossing professional boundaries.

Other researchers use of terminology associated with teamwork has focused on the degree of collaboration amongst the professions. For D'Amour et al. (2005), multidisciplinary teamwork refers to different professionals working on the same project but in an independent or parallel fashion. Interdisciplinary teamwork, on the other hand, reflects a degree of collaboration. That is, interdisciplinary teams (also referred to as inclusion teams by Winzer, 2008) are structured entities with common goals and common decision making processes. The team is based on integrated knowledge and expertise from various professions. This structure allows for complex problems to be solved. The term also reflects an attempt to bring together various disciplines that have traditionally been taught and trained in silo-like modalities (D'Amour & Oandasan, 2005). Transdisciplinary teamwork denotes collaboration characterized by purposeful exchange of skills and expertise and in which traditional professional boundaries are transcended (Shaw & Swerdik, 1995; D'Amour & Oandasan, 2005).

Further, many disciplines connected, but not necessarily trained, within the healthcare realm are increasingly adopting collaborative practices. The call for interdisciplinary collaboration, for example, is also evidenced in the school-psychology literature. Not only is it becoming increasingly common for school psychologists to collaborate with other professionals outside the school system (e.g., physicians, social workers, and occupational therapists) (Saklofske et al., 2000), there are increasing discussions of the implications of recent health-care reform for psychologists (Margison & Shore, 2009; Power, 2003), and collaboration with teachers, parents, and school administrators is core to the profession. Simplifying the discussion greatly, Leathard (2003) noted "what everyone is really talking about is simply learning and working together" (p. 5). She categorized the key concepts associated with learning and working together into three categories: concept-based (e.g., interdisciplinary, multidisciplinary, multiprofessional), process-based (e.g., teamwork, collaboration, coordination), and agency-based (e.g., interagency, health alliances). She noted that any grouping of terms, however, is debatable given that different professions, as well as members within a profession (Pietroni, 1994), may define terms differently.

Interprofessional Practice

Clear definitions of teamwork and collaboration are needed, given that these concepts are fundamental to the understanding and advancing of the concept of interprofessional practice, or what D'Amour and Oandasan (2005) termed interprofessionality. They hypothesized that interprofessionality can only be accomplished by better understanding the determinants and processes associated with interprofessional education as well as those associated with interprofessional practice. It is essential, however, that the work in these areas is not undertaken separately. The paradigm shift required to realize this goal will only be achieved if interprofessionality is adopted as "an education and practice orientation, an approach to care and education where educators and practitioners collaborate synergistically" (p. 10).

Not only does this concept call for the integration of various professions, but it also requires that professionals reconcile their differences as well as engage in continuous interaction and knowledge sharing. Further, this notion does not imply the development of new professions, rather it focuses on a means through which professionals can practice in a more collaborative or integrated manner. D'Amour and Oandasan (2005) also noted that interprofessionality is both a practice and an education orientation. It is an approach to patient care and education within which practitioners and educators collaborate.

Understanding interprofessionality necessitates differentiating it from interdisciplinarity. In the latter, professionals are responsible for a particular scope of knowledge in the delivery of services to a patient. These silo-like divisions of labor, however, do not naturally or cohesively integrate in meeting the needs of the patients or the health-care professionals (D'Amour & Oandasan, 2005). Thus, the notion of cohesiveness is a critical component of this new concept as evidenced by D'Amour and Oandasan's definition:

Interprofessionality is defined as the development of a cohesive practice between professionals from different disciplines. It is the process by which professionals reflect on and develop ways of practicing that provides an integrated and cohesive answer to the needs of the client/family/population. Interprofessionality comes from the preoccupation of professionals to reconcile their differences and their sometimes opposing views and it involves continuous interaction and knowledge sharing between professionals organized, to solve or explore a variety of education and care issues all while seeking to optimize the

patient's participation. (p. 9)

Thus, understanding interprofessional collaboration requires an understanding of several previously proposed concepts such as collaboration and interdisciplinary or multidisciplinary teamwork, as well as newly proposed concepts such as interprofessionality. Interprofessional collaboration is a combination of these ideas and signifies a new way of educating students and practitioners in academic institutions and health-care setting.

To achieve these goals, D'Amour and Oandasan (2005) discussed the importance of research in developing and implementing the conceptual frameworks related to interprofessional collaboration. San Martin Rodriguez, Beaulieu, D'Amour, and Ferrada-Videla (2005) concurred, noting that the vast majority of publications discussing determinants of collaboration arise from a conceptual, rather than an empirical, orientation. Following an extensive review of the empirical research in this area, the authors concluded that more empirical research on the influence of systemic, organizational and interactional determinants on interprofessional collaboration is required.

Challenges Associated with Studying Interactions in Interprofessional Collaboration

Investigating the interactional dynamics associated with interprofessional practice is not without its challenges. As noted in the D'Amour et al. (2005) review of conceptual frameworks in the interprofessional collaboration literature, a number of factors contribute to the complexity of interactions among health-care professionals. One is the tendency for health-care professionals to be educated and trained in discipline-based environments that teach the attitudes, beliefs, and understandings of their profession. They are socialized to view patients and the services they provide to patients from the sole perspective of their discipline. Their behaviors in professional interactions are influenced by these professional cultures and the stereotypical identities these cultures may promote. In turn, the effect of the profession's socialization may have an impact on how different professionals approach interprofessional education and practice.

Oandasan and Reeves (2005) reached a similar conclusion following a systematic literature review conducted for Health Canada. They proposed that there are micro (individual level), meso (institutional-organizational level), and macro (socio-cultural and political level) factors that influence the success of an IPE initiative. Socialization, which falls within the micro level, involves developing professional attitudes and behaviors that subsequently influence professional interaction (Lockhart-Wood, 2000). Oandasan and Reeves further noted that students construct stereotypical notions of how "other" professionals will perceive and behave toward them in interprofessional situations. For example, Reeves (as cited in Oandasan & Reeves, 2005) found that nursing students perceived their profession was less "prestigious" than medicine and that medical knowledge had "higher" status.

Difficulties related to teamwork are also noted in the literature. Shaw and Swerdik (1995) noted that, despite the many benefits of effective teams (e.g., increased job satisfaction for team members, more reliable educational decisions, decreased likelihood of biased decisions), there are also difficulties associated with ineffective teams (e.g., hidden agendas, competitiveness, submissive or dominant members, role rigidity, and hierarchical structures). Combating these difficulties requires adopting best practices in facilitating team functioning: Distributing the functions among all team members, meeting regularly in person, and ensuring that the size of the teams is not too large. Smaller teams make it possible to reach consensus more and provide members more opportunities to voice their views and perspectives.

Understanding interprofessional collaborative practice is further complicated by the complexities associated with the delivery of health-care. San Martin Rodriguez et al. (2005) noted there are a number of factors, or determinants, that influence collaboration. These are: (a) systemic determinants, the social, cultural, professional, and educational systems within the organization's environment; (b) organizational determinants, the organization's structure and philosophy, as well as administrative support and team resources; and (c) interactional determinants, the processes at work in interpersonal relationships within the team such as willingness to cooperate, trust, communication, and mutual respect.

Cohen, Linker, and Stutts (2006) noted that "successful development of responsive and comprehensive systems of care requires overcoming traditional organizational and territorial barriers" (p. 420), a conclusion also reflected in the IPPE literature (e.g., San Martin Rodriguez et al., 2005). San Martin Rodriguez et al. also noted, "To our knowledge, very few studies have investigated the influence of systemic, organizational and interactional determinants on interprofessional collaboration. The vast majority of published work relies on a conceptual approach rather than on empirical data" (p. 133).

Further, D'Amour et al. (2005) observed that there is "limited understanding of the complexity of relationships between professionals (in this case health-care professionals) who, throughout their education, are socialized to adopt a discipline-based vision of their clientele and the services they offer" (p. 117). They noted that the literature has focused on identifying several concepts, determinants, and frameworks associated with collaboration, not on helping "us understand what transpires in the working lives of a group of professionals or the nature of the interactional dynamics" (D'Amour et al., 2005, p. 126). Further, the typical approach to evaluating interprofessional collaboration has been the use of rating scales designed to measure changes in knowledge, attitudes, and perceptions. The McGill Initiative, for instance, developed an instrument named the Interprofessional Reciprocity Questionnaire (IPRQ) (Birlean, Ritchie, Shore, & Margison, 2007). Few studies, however, have explored interprofessional behavior in an ecologically valid (i.e., the methods, materials, and setting approximate the real-life situation that is under study) setting. Although the medical case in this study involved a virtual patient, the professionals engaged in the type of collaborative activity (i.e., developing an interprofessional care plan) that may actually be observed and experienced in health-care settings.

Interaction Research

The above paragraphs are not intended to suggest that interactional patterns have not been investigated. Indeed, the study of medical interaction has a long history, but the majority of this work has focused on the interaction between physician and patient. In an overview of studies of physician-patient interaction, Heritage and Maynard (2006a; 2006b) differentiated between the two traditions of interaction research: microanalysis of discourse and process-analysis studies.

Microanalysis of discourse. Microanalysis of discourse is derived from anthropology and sociology. Researchers use ethnographic and interpretative methodologies to reveal background orientations, experiences, sensibilities, and understandings that occur in a medical interaction. Researchers in this tradition use film frames or elaborate transcription systems to capture the minute details of an interaction and the changes that take place as the interaction progresses. It is not uncommon for researchers in this tradition to spend enormous amounts of time analyzing very small segments of interaction. For example, Pittinger, Hockett, and Danehy (1960, as cited in Frankel, 2001) published an entire monograph based on the first five minutes of a recorded interaction.

Process-analysis. Process-analysis, on the other hand, grew out of the small-group dynamics research of Robert Bales (1950) and the sociological theory of Talcott Parsons (1951). The Bales Interaction Process Analysis (IPA) approach to identifying task and

interpersonal elements of group interaction was deemed seminal by Keyton (2003). The Bales coding system was developed to code the real-time interactional dynamics that occur in classrooms, workgroups, and other situations in which clients and professionals interact. Other coding systems, for example, the Roter Interaction Analysis System (RIAS) have evolved from Bales's early work. Process analyses are less concerned with the minute detail of the communication seen in microanalysis of discourse, and more concerned with communication in terms of speech segments (i.e., at the level of the word or sentence). Coding systems such as these have emerged from the need to develop costeffective ways of analyzing multiple interactions in real time as well as developing useful evaluation tools that would produce valid, reliable, and generalizable results (Frankel, 2003).

Thus, microanalyses of discourse and process analyses are at the ends of a continuum of methodological approaches used to study the interactional dynamics that occur when health professionals come together. Another methodology exists in the middle of this continuum, namely, conversation analysis. In conversation analysis, researchers adopt "a detailed and intricate analysis of turns, topics and patterns of a[n] interactive collaborative language" (Friedland & Penn, 2003, p. 96). In essence, it is a merger of the two traditions of interaction research.

Use of Coding Systems

Several interaction analysis systems have been developed to analyze medical interaction. Ong, De haes, Hoos, and Lammes (1995), for example, identified 12 interactional analysis systems with varying focus of measurement. In their review of these systems, they noted that coding systems could be categorized as "cure" or "care" systems by the behaviors they are meant to capture. "Cure" (i.e., serving the need to know and understand) systems are intended to capture the task instrumental, or task-focused, behaviors, whereas "care" (serving the need to feel known and understood) systems are intended to capture affective, or socioemotional, exchanges. The Bales IPA, for example, is categorized as a cure system because the focus is on information exchange. Other instruments (e.g., the RIAS) attempt to capture both types of exchanges.

In addition to the cure-care distinction, interactional analysis systems also differ in terms of clinical application (i.e., what the system is designed to measure), observational strategy (i.e., coding from video- and audiotape, direct observation, or transcripts), and reliability and validity of the instruments (Ong, De haes, Hoos, & Lammes, 1995).

Also, researchers may select an instrument and use it in its original form whereas others modify the instrument to suit their purposes. This was the case when the Bales IPA was introduced to the study of medical interaction in the late 1960s by Barbara Korsch and associates (e.g., Korsch, Gozzi, & Frances, 1968). Using a modified coding system that allowed for additional communication dimensions such as information giving and advice to be coded, Korsch et al. analyzed the verbal content of 800 audio-taped pediatric emergency waiting-room visits and compared the coded behaviors to mothers' reactions to the encounters. This classic study demonstrated that the systematic study of physicianpatient interaction was possible.

Development of the RIAS. Although the Bales IPA coding system is still used in its original form in medical interaction studies (e.g., Atwal & Caldwell, 2005), Roter further modified it to develop the RIAS (Roter, 1977). Even though many aspects of the RIAS are similar to the Bales IPA coding scheme (e.g., they are both based on pattern variables and polar typologies), the RIAS differs in that it is designed to be sensitive to unique characteristics of physician-patient interactions (e.g., dominance as measured by

who asks and who answers questions in an interaction). Another difference is that the Bales IPA system was developed to analyze small group encounters whereas the RIAS was designed for dyadic exchange in medical encounters. Coding multiple speakers, however, is possible (Roter & Larson, 2002). Also, unlike the Bales, the RIAS categories are designed to reflect the content and context of the medical dialogue between a patient and physician.

Theoretical orientation. Roter and Larson (2001) noted that the development of the RIAS has been influenced theoretically by social-exchange theories related to interpersonal influence, problem solving, and reciprocity. They also noted that the social exchange orientation is consistent with health-education and empowerment perspectives that view the medical encounter as a "meeting between experts" (Tuckett, Boulton, Olson, & Williams, 1985). That is, patient-provider partnerships are viewed from an egalitarian standpoint that rejects expert-domination and passive-patient roles.

In the RIAS, communication units are defined as "utterances" (i.e., the smallest discriminable speech segment to which a classification may be assigned). Units vary in length from a single word to a sentence. With this system, the utterances are coded as reflecting either affective, or socioemotional, behaviors, or as task-focused behaviors. The socioemotional dimension of physician behaviors refers to explicit verbal exchanges related to the building of social and emotional rapport as well as implicit exchanges conveyed through tone of voice or positive expression of emotion (e.g., friendliness or interest) or negative expression of emotion (e.g., irritation). Task-focused behaviors are defined as "technically based skills used in problem solving that comprise the base of the expertness for which a physician is consulted" (Roter & Larsen, 2001, p. 33). Examples

of task-focused behavior included discussions surrounding the choice of diagnostic tests and discussions of medical procedures.

Roter and Larson (2001) remarked that, although the theoretical structure of the instrument was drawn from the social-exchange orientation, the face validity of the RIAS was established following a meta-analysis of correlates of health providers' behavior in medical encounters (Hall, Roter, & Katz, 1988). Following a review of 61 studies that identified over 250 different elements of communication, the authors reduced this list to four primary communication categories: information giving, question asking, socioemotional behaviors, and partnership building.

These four communication categories form the basis for structuring and analyzing the elements common to most medical exchanges. In the traditional RIAS, the socioemotional and task-focused behaviors are further assigned to one of 41 categories based on set criteria (Roter, 2006). A number of the statements are characterized as *Gives Information, Asks Questions (Closed-Ended)* and *Asks Questions (Open-Ended)* (in the content areas of Medical Condition, Therapeutic Regimen, Lifestyle, Psychosocial, and Other Information). Information presented in a neutral manner as considered *Gives Information* statements. *Asks Questions (Closed-Ended)* are direct questions that ask for specific information while *Asks Questions (Open-Ended)* statements are nonspecific.

Adaptation of the RIAS. Roter (2006) noted that the RIAS is commonly adapted and modified to fit the needs of the study. For example, one adaptation may be combining coding categories. The separate categories of *Legitimizes* and *Empathy* (usually low frequency categories) are often combined into one *Legitimizes/Empathy* category when a distinction between these two kinds of socioemotional talk is not necessary. Another example would be a single category being further delineated to adequately capture the nature of the utterances in particular medical encounters. The RIAS manual (Roter, 2006) cited an example of medical exchanges during routine paediatric visits. These exchanges typically include "anticipatory guidance" talk (e.g., questions, information or counseling relating to normal growth and development issues). Thus, an adapted RIAS scheme could include a subcategory related to developmental issues.

Functional analysis. These behaviors may be further organized according the functional model of medical interviewing (Cohen-Cole, 1991), a model that Roter and Larson (2001; 2002) deemed useful for organizing and interpreting RIAS-coded communication. The model states that there are three functions to the medical interview: gathering information, educating and counseling, and building a relationship. Task-related behaviors fall within two of the medical interview functions: gathering information (to understand the patient's problem) or educating and counseling (to motivate patients to follow the treatment regimen). Socioemotional behaviors fall within the building-a-relationship category. Roter and Larson added a fourth category to the functional model, activating and partnership building, to facilitate the expression of the patient's expectations, preferences, and perspectives so they can meaningfully participate in decision making. As noted in Table 1, the functional model of medical interviewing aligns with the primary communication categories identified in Hall, Roter, and Katz (1988) meta-analysis.
Comparison of Communication Categories.

Communication Categories											
Primary Communication Categories	Functional Model Categories (Focus of Behavior)										
1. Information Giving	1. Education and Counseling (task-focused)										
2. Question Asking	2. Gathering Data (task-focused)										
3. Socioemotional Behaviors	3. Building a Relationship (socioemotional										
	focused)										
4. Partnership Building	4. Activating and Partnership (partnership										
	focused)										

Roter and Larson further delineated each main category by the nature of the communication behavior. That is, utterances in the Education and Counseling category are separated into Biomedical Topics, Psychosocial Topics, and Other Topics. Data Gathering utterances are separated into Biomedical Questions and Psychosocial Questions. Utterances categorized as Building a Relationship are separated into Positive Talk, Negative Talk, and Emotional Talk, and Partnership is separated into Participatory Facilitators (such as agreements and asking for opinion) and Procedural Talk (such as orientations and transitions) (see Table 2).

The functional model allows the researcher to develop communication patterns or profiles of the participants in the study. For example, Paasche-Orlow and Roter (2003) used the RIAS to examine the communication patterns of Internal Medicine and Family Practice physicians. Their results indicated that Internal Medicine clinicians ask more biomedical questions whereas Family Practice clinicians engage in more psychosocial discussions with their respective patients. Family Practice physicians also tended to engage in more emotionally supportive exchanges such as reassurance and empathy.

Today, the RIAS is one of the most widely used measures for assessing providerpatient communication (Roter & Larson, 2002; Sandvik et al., 2002). Roter and Larson (2001) reported that the RIAS demonstrates good reliability; Pearson correlation coefficients average over .85 for high-frequency categories and over .70 for lowfrequency categories. It has proven to be highly reliable when used by trained coders and the coding system has proven clinically meaningful in empirical studies. It is also highly adaptive and flexible (Roter & Larson, 2002). Adaptability is evident in that it has been used in a variety of medical settings including primary care, oncology, obstetrics and Table 2

F	Functional Model									
Functions	Nature of Communication Behaviors									
Education and Counseling	Biomedical Topics									
	Psychosocial Topics									
	Other Topics									
Gathering Data	Biomedical Questions									
	Psychosocial Questions									
	Other									
Building a Relationship	Positive Talk									
	Negative Talk									
	Emotional Talk									

Functional model.

Partnership

Participatory Facilitators

Procedural Talk

gynecology, and well-baby care (Roter & Larson, 2001). It is flexible in that it may be used to code the utterances of multiple speakers.

Theoretical Framework

A number of theoretical frameworks have been used to understand the collaborative process. One such theory, highlighted in a review of the interprofessional literature (D'Amour et al., 2005), is social exchange theory. This theoretical framework has been used in other studies of collaboration in interprofessional practice (e.g., Gitlin, Lyons, & Kolodner, 1994) and it has formed the basis from which the process-analysis coding system (i.e., the RIAS) has evolved. Thus, it is deemed an appropriate lens from which to examine the collaborative interactions in this study.

Social exchange theory posits that social interaction is an exchange of activity, both tangible and intangible, characterized by rewards and costs to the individuals involved. The two main concepts within this framework are exchange and reciprocity. That is, individuals in social interactions exchange benefits (i.e., giving others something more valuable than is costly to the giver, and vice versa) and the exchanges are assumed to be governed by reciprocal relations. Another key concept of social exchange theory is distributive justice, equity or fairness in noneconomic relations (Zafirovski, 2005). Social exchange theory states that social interactions will continue if reciprocity continues to occur and fair exchange is preserved (Gitlin, Lyons, & Kolodner, 1994; Zafirovski, 2005). *Historical overview.* Exchange theory has a rich developmental history that began with the works of George Homans, John Thibaut, Harold Kelley, and Peter Blau (Emerson, 1976). These early theorists held differing viewpoints on the conceptualization of exchange. Homans (1969), for example, argued that the principles of behavioral psychology were applicable to human social behavior whereas Blau emphasized technical economic analysis in his discussions of exchange. The early theorists also employed different strategies of theory construction. Thibaut and Kelley, for example, began with psychological concepts, built upward to the dyad and then to the small group. Homans, on the other hand, began his discussions from the group level, using principles of reinforcement to explain them. Although their perspectives differed greatly from one another, their central viewpoint remained constant with social exchange as the frame of reference.

Emerson (1976), however, noted that social exchange theory is not a theory, rather it is "a frame of reference within which many theories--some micro and some macro--can speak to one another" (p. 336). The scope of the frame of reference is limited to actions that are dependent on rewarding reactions from others. The actions then, according to Emerson, involve two-sided, mutually contingent, and mutually rewarding processes characterized as exchange. Social exchanges are in contrast to economic exchanges in that the latter are characterized by contractual arrangements enforceable through legal sanctions (Gould-Williams & Davies, 2005).

Emerson also noted that the scope of the frame of reference is defined by the assumption that a resource will continue to be flow only if there is a valued return contingent on it. Applied to social situations, exchange theory assumes that individuals will establish and continue social relations on the basis of their expectations that such relations will be mutually advantageous.

Exchange theory has evolved from the work of these early theorists to a modern version today that is considered "an interdisciplinary theoretical endeavor putatively spanning social-science disciplinary boundaries, especially those between sociology, economics, psychology and political science" (Zafirovski, 2005). Social exchange theory may be applied to interactions that are at the micro level (dyadic or bilateral interactions) or at the macro level (network or multilateral interactions).

Summary of Constructs Associated With Working Relationships

The literature review identified several constructs used to describe and discuss health-care professionals' working relationships. The collaboration literature identifies five constructs commonly identifies in definitions of collaboration (i.e., sharing, partnerships, interdependency, process, and power). Social exchange theory, on the other hand, discusses exchange, reciprocity, and trust as variables that are common to social exchange. The constructs with similar meaning are aligned in Table 3. For example, the concept of sharing discussed in the collaboration literature is similar to the concept of reciprocity as discussed in social exchange theory.

Summary and Research Questions

This literature review has identified several areas that require further empirical attention. Few studies have addressed the understanding of interactional dynamics that occur when health-care professional collaborate in ecologically meaningful environments. Furthermore, although the literature has identified several concepts associated with collaborative undertaking, it remains unclear what these concepts "look like" from a behavioral perspective. Also, previous research has focused on rating scales as a means of

evaluating interprofessionalism rather than evaluating interprofessionals from a process perspective.

Thus, the purpose of this study was to investigate the interactional dynamics that occur when health-care professionals collaborate on a medical case (in this instance using a virtual medical-patient case). At a very general level, the study is interested in answering the question "What does interprofessional collaboration look like?" The specific research questions were: (a) Is the RIAS coding system, a tool traditionally used to measure physician-patient interactions, sensitive to identifying evidence of interprofessionalism when health-care professionals engage in a collaborative activity, and (b) What is the nature of the interactions when health-care professionals engage in a collaborative activity?

For the first question, given the use of the RIAS in documenting interaction between physicians and patients and the use of the functional model of medical interviewing to structure and interpret data, it was anticipated that the RIAS would be sensitive to identifying evidence of interprofessionalism, and thus useful, for qualifying and quantifying the interactions engaged in by the participants.

For the second question, given that the health-care professions are engaging in a collaborative activity, it was anticipated that the characteristics of the health-care professionals interactions would be consistent with the concepts typically associated with collaboration and the concepts discussed in social exchange theory.

Table 3.

Summary of constructs.

Inte	eraction Theory	
Collaboration	Social Exchange	RIAS
Sharing (such as responsibilities,	Reciprocity (i.e.,	Education and
philosophies, or decision making)	individuals in social	Counseling (task-
	interaction expect to have	focused)
	their exchange	
	reciprocated)	
Partnerships (i.e., collaborative	Trust (i.e., that desirable	Partnership
undertakings that are authentic and	actions will be	
constructive, demand open and	reciprocated)	Gathering Data
honest communication, mutual trust		(task-focused)
and respect, pursuit of common goals		
and outcomes).		
Interdependency (i.e., team members	Exchange is a two-sided,	Building a
are interdependent, not autonomous;	mutually contingent, and	Relationship
maximum output is achieved through	mutually rewarding process	(socioemotional)
this collective action).		
Process (i.e., characterized as	Exchange is a two-sided,	
evolving, dynamic, interactive, and	mutually contingent, and	
interpersonal).	mutually rewarding process	
Power (i.e., it is shared among team	Fairness (i.e., distributive	Partnership
members and is based on knowledge	justice/ equity is necessary	Building a
and experience rather than functions	for social relations to	Relationship
or titles)	continue)	

CHAPTER THREE: METHOD

Purpose

The purpose of this study is to investigate the interactional dynamics that occur when health-care professionals collaborate on a medical case (in this instance using a virtual medical patient case also referred to as an e-case).

Interaction Medium

In this study, the e-case scenario was the medium through which collaborative interaction was viewed. Not only did the e-case scenario provide an opportunity for health-care professionals to collaborate, it also provided a standard process (utilizing uniprofessional and interprofessional contributions) and a standard product (the care plan). Also, e-case scenarios are consistent with Hudson's (as cited in Leathard, 2003) four levels of collaboration. That is, there were several levels of communication (i.e., exchange of information prior to the workshop as well as during the small-group sessions at the workshop). The coordination criteria were met in that health-care professionals typically worked in silos but when they came together to develop the care plan they worked across boundaries. This fulfills the third criterion, co-location, in that members of various professions were physically together, while in the fourth level, commissioning, professionals developed a shared approach to the task at hand.

Participants

Participant recruitment. Several workshops were organized by the McGill Educational Initiative to investigate various aspects of working with e-cases. Thus, the data collected for this study were part of a larger data-collection process. The focus of this study was the interactional dynamics that occurred when the health-care professionals come together to collaborate on the interprofessional care plan. *Participants: Workshop 1.* The first interprofessional care plan workshop was conducted in March 2007. Because the e-case used in this workshop featured a breastcancer patient, the participants represented a variety of health-care professions relevant to the diagnosis and treatment of breast-cancer patients. Potential participants (determined by members of the McGill Educational Initiative workgroup) were contacted by mail with a letter (see Appendix A for a sample of the official letter of invitation) outlining the nature of the study and the nature of the participant's involvement. This involvement included reviewing of an e-case of a breast-cancer patient, preparing, and submitting a uniprofessional care plan with an evidence-based rationale within a five-week time period, and participants. All participants were paid a stipend for their involvement.

Fifteen participants representing ten professional specializations associated with the care of a breast-cancer patient were recruited from the McGill University Health Centre (MUHC) and the Sir Mortimer B. Davis-Jewish General Hospital (JGH), two of McGill University's teaching hospitals. There were two oncologists, two surgeons, one radio-oncologist, one radiologist, six nurses (one nurse-manager, one nurse *pivot* [the French term for an interprofessional liaison nurse who coordinates the flow of information among different specializations and educates patients for each stage of their treatment], one in-patient oncology nurse, one out-patient oncology nurse, two breastcancer nurses), one psychologist, one physiotherapist, and one dietician. A former breastcancer patient also participated in this workshop. The patient was an articulate professional who was very comfortable expressing herself as needed in the situation.

Participants: Workshop 2. The second workshop was conducted in March 2008. Because the e-case used in this workshop featured an obstetrics patient, the participants represented a variety of health-care professions involved in the full labor and delivery of obstetrical patients. Potential participants (determined by members of the McGill Educational Initiative workgroup) were contacted by mail with a letter (see Appendix B for a sample of the official letter of invitation) outlining the nature of the study and the nature of the participant's involvement. This involvement included reviewing of an e-case of an obstetrical patient, addressing specific issues for the patient by answering questions associated with their areas of expertise, providing evidence to support the approach, and participating in a workshop to develop an interprofessional care plan along with the other participants.

Nine participants representing four health-care professional specializations agreed to participate in the second workshop. There were three physicians (one family medicine, one obstetrician, one obstetrical resident) and six nurses (one head nurse from the postpartum unit, one assistant head nurse from the Family Birthing Centre, two postpartum nurses, one clinical nurse specialist from the Family Birthing Centre, and one Family Birthing Centre nurse). Participants were paid a stipend for their involvement. *Procedures*

All participants were asked to sign a form consenting to participation in the study as well as audio- and video-taping the sessions (see *A Consent Form For Workshop Participants*, Appendix C).

Workshop 1 stages. To prepare for the workshop, the participants (excluding the patient) were presented with the electronic medical case (via e-mail) that portrayed a breast-cancer patient scenario. In stage 2, participants were instructed to review the case and to prepare a comprehensive, evidence-based, uniprofessional care plan for the patient and to submit the care plan (via e-mail) prior to the scheduled workshop date. The

participants were not restricted in terms of the structure, content, or length of the care plans, and at the workshop participants were permitted to review the care plans submitted by other participants.

To prepare for stage 3, members of the Informatics Task Force (i.e., the McGill Initiative workgroup charged with organizing the structure and content of the workshops) analyzed all the submitted care plans. Their analysis focused on the content of the care plans, the nature of the themes, and the range of factors involved in patient care across the disciplines. They then compiled the results of the analysis into a draft interprofessional care plan (see Appendix D) to be used by participants during the one-day workshop.

In stage 3, all participants attended a one-day (eight-hour) workshop consisting of an introductory session, two small-group work sessions, and a plenary session. For the small-group discussions, the 15 participants were divided into three groups to actively integrate the care plan. The three groups undertook the integration of the care plan in two sessions of approximately 60 minutes. The patient participant joined each of the group's first session but did not participate in the second session. The three groups developed their care plans over two sessions of approximately 60 minutes each.

Workshop 2 stages. To prepare for stage 1, the participants were presented with an electronic medical case (via e-mail) that portrayed an obstetric patient scenario. In stage 2, participants were instructed to review the case and to develop a uniprofessional care plan. These participants were provided with a number of *guiding questions* (see Appendix E) to consider when preparing their document. Similar to the previous workshop, members of the Informatics Task Force analyzed the documents and prepared a draft care plan (see Appendix F) to be used by the participants during the workshop.

In stage 3 of the workshop, all participants attended an evening (4.5 hours) workshop consisting of an introductory session, two small-group work sessions, and a plenary session. For the small-group discussions, the nine participants were divided into three groups to work on their care plans. The three groups undertook the integration of the care plan in two sessions of approximately 60 minutes each.

Final Group of Participants

The interaction of the participants in all sessions was audio- and video-taped. A number of logistic and technical difficulties arose that influenced the amount of data available for analysis. In the breast-cancer e-case workshop, only two of the three small group sessions were usable for analysis because a facilitator stayed with the group of participants during the session. Concern was raised that the discussion within the group may have been influenced by the presence of the facilitator. In the obstetrics e-case workshop, two of the small-group sessions audio-recordings were inaudible, and thus, unusable. This reduced the amount of usable data from this workshop to only one small-group session. Thus, the final group of participants was comprised of the 13 health-care professionals and one patient from two groups in workshop 1 and one group from workshop 2. The final list of participants is displayed in Table 4.

Data Analysis

Data transcription and coding. RIAS coding is typically done directly from videoor audiotapes rather than transcripts. For this study, however, the audio portion of the tape was transcribed. Transcription was completed by an individual external to the McGill Initiative. All coding was completed by the researcher. To ensure that the coding criteria (Roter, 2006; Appendix G) were consistently adhered to throughout the coding process, the transcribed data coded first were recoded.

	Group 1	Group 2	Group 3
Case	Breast Cancer	Breast Cancer	Obstetrics
Content			
Participants	1. Physician (Surgical	1. Oncology Nurse	1. Physician
	Oncologist)	2. Psychologist	(Obstetrician)
	2. Patient	3. Nurse Manager	2. Post-partum
	3. Clinic Nurse	4. Physician	Nurse
	4. Oncology Nurse	(Oncology/	3. Clinical Nurse
	5. Clinical Nurse	Geneticist)	Specialist
	Specialist/Pivot	5. Physiotherapist	
	6. Physician (Radiation		
	Oncologist)		

Details of the final sample of health-care professionals (N = 14).

Coding was undertaken by viewing the video and applying the codes to the transcribed data. This allows the coder to consider several qualities when assigning codes: the context of a response, the speaker's voice tone and emphasis, and the listener's response to the speaker's comment. Coding category assignments are determined by how the listener interprets the speaker's utterance. For example, if the listener laughs in response to the speaker's comment, the utterance would be coded a joke. Consider the following exchange:

Workgroup 2 (session 1):

Participant 2 (Psychologist): [looking at participant 4] you have a British accent

Participant 4 (Physician): yeah

Participant 2 (Psychologist): I have a French ear

Participant 4 (Physician): I have got a cold as well

Participant 2 (Psychologist): that means having to speak slowly for my French ear

Without hearing the context of the conversation, Participant 4's comment (I have a cold as well) may be coded as a personal utterance because it is social conversation. Listening to the context of the conversation, however, reveals that the utterance was intended as a joke (the participants laughed following the remark) and would be coded as such.

In accordance with RIAS protocols (Roter, 2006), a sentence was classified as one unit if it conveyed only one thought or referred to only one item of interest. A compound sentence was divided at the conjunction. If a sentence was interrupted or divided by a pause of one second or more, then each sentence fragment was coded as a separate utterance. If the first portion of the divided sentence could be categorized, the content of the second fragment was attributed to the same category as the first. If the first portion of the sentence had no content or meaning, however, it was coded as a transition word. If both fragments lacked meaning, and therefore could not be assigned to one of the other categories, they were coded as transitions.

The socioemotional and task-focused behaviors were assigned to either one of the traditional 41 categories (see Appendix H) based on set criteria (see Roter, 2006; Appendix G) or one of the categories created to reflect the needs of this study (see Appendix I and below). The latter refers to subcategories created to capture utterances

specific to the collaborative activities undertaken by the participants in this study. That is, some of the participants' utterances were a reflection of the specific task at hand, and thus, did not fit within the original RIAS categories. For example, the following categories related to the care plan were added: *Asks closed-ended questions–care plan; Asks open-ended questions–care plan;* and *Gives information–care plan.* Statements referring to medical procedures (*Asks closed-ended questions–medical procedure; Asks open-ended questions–medical procedure; Gives information–medical procedure)* were also added. Also, because most of the participants were health-care professionals, there were statements that reflected their clinical experiences and how they would approach a particular situation. The new category created to code these utterances was labelled *Gives-information–clinical experience.* The additional categories are identified in bold font in Appendix I. The added categories increased the overall number of categories used to code the utterances to 56, compared to 41 in the traditional RIAS.

Statistical analysis. The coded data were entered into SPSS Statistics 17.0 (SPSS, 2009). The chi-square test was chosen for analysis. The chi-square is a nonparametric statistical test used to determine whether data in the form of frequency counts are distributed differently within different samples (Gall, Borg, & Gall, 1996). Because there was no *a priori* basis for calculating expected values, contingency tables, which compare the observed frequency of utterances to the expected value of utterances based on marginal row and column frequencies, were used to calculate the chi-squares. Because a significant chi-square value does not specify which combination of categories contributes to statistical significance, standardized residuals for the cells were used to determine which discrepancies between observed and expected values differed than might be

expected by chance. Standardized residuals are computed by subtracting the expected value from the observed value and dividing by the square root of the expected value. When a standardized residual is greater than 2.00 in absolute value (Hinkle, Wierma, & Jurs, 1998), it can be concluded that the residual contributes to the overall significant chi-square value.

Data organization. The initial analysis involved examining the number of utterances in each of the RIAS categories across all participants (see the Results sections for detailed explanation of organization). The following chi-square analyses were undertaken: (a) all participants across all categories with variability, (b) three workshop groups (WG1, WG2, WG3) across all categories with variability, (c) three professional groups (Physicians, Nurses, Other) across all categories with variability.

The data were further organized according to the functional model of medical interviewing (Educating and Counseling, Gathering Data, Building a Relationship, or Partnership) and the following analyses undertaken: (d) three workshop groups across four functional categories, (e) three professional groups across four functional categories, (f) three workshop groups across functional subcategories, and (g) three professional groups across functional subcategories. Table 5 summarizes the various analyses performed.

Ethics

In accordance with McGill University's ethics review procedures, approval to conduct the study was granted by the McGill Institutional Review Board (REB file # 796-0507) (see Appendix J).

Analyses	Groups	Functions	Nature of Communication Behaviors	Coding Categories	r × c
1	All 14 Participants			23	14×23
2	Three Workshop Groups			23	3 × 23
3	Three Professional Groups			23	3 × 23
4 and 5	Three Workshop Groups / Three Professional Groups	Education and Counseling Data Gathering Building a Relationship Partnership			3 × 4
6 and 7	Three Workshop Groups /	Education and Counseling	Biomedical	GIMP GIMC GICE	3 × 3
	Three Professional Groups	Education and Counseling	Other	GIPS GIOther GICP	3 × 3
		Data Gathering	Biomedical	AskCEMP AskOEMP	3×2
		Data Gathering	Other	AskOECP AskCECP	3×2
		Building a Relationship	Positive talk	Personal Laughs	3×2
		Partnership	Participatory Facilitators	Partnership Ask Partner Agree BC Agree Ask Underst	3 × 6
		Partnership	Procedural	Ask Opinion Transition Orientation Ask Orient Check Confirm	3 × 5

Summary of chi-square analyses.

CHAPTER FOUR: RESULTS

Rater Reliability

An intra-rater reliability check in which the transcribed data coded first (500 utterances representing approximately 10% of the total utterances) were then recoded by the same rater with 98% agreement. This indicated that the coding criteria were consistently applied to the transcribed data.

Responding to the Research Questions

The first research question asked whether or not the Roter Interactional Analysis System was sensitive to identifying evidence of interprofessionalism when health-care professionals engage in a collaborative activity. The data that addressed this question fell into two broad categories: (a) whether or not utterances could be coded at all under particular RIAS categories and, if there were coded responses, whether or not any variability was observable across the 14 participants; and (b) when the number of coded utterances varied in the raw data, whether or not these frequencies were significantly different across individuals or among meaningful groups of individuals, both across all items and within individual items.

The second research question addressed the nature of the interactions when health-care professionals engage in a collaborative activity. Because the data needed to answer this first research question overlap substantially with the data needed to answer the second research question, the data are presented first and the responses to the two research questions extracted together and discussed in the following chapter.

Data Organization

As noted, the initial analysis involved examining the numbers of utterances in each of the RIAS categories across all participants. Table 6 identifies the three categorizations which resulted: (a) categories with no data (i.e., all data entries were zero) or no variability (i.e., all data entries were 2 or less) in the participants' utterances; (b) categories with variability (i.e., all data entries were counted as 3 or more with a range of frequencies in participants' utterances) but in only one or two of the three groups; and (c) categories with variability in all participants' utterances across all groups. The categories added for this study are indicated in bold font.

Categories with no variability. The socioemotional behavior categories with no variability were: Reassures, Approval, Gives Compliment, Empathy, Agreement, Back Channel, Partnership, and Asks for Reassurance. The task-focused behavior categories with no variability were: Asks For Permission, Asks Closed-Ended Question Medical Condition, Asks Closed-Ended Question Therapeutic Regimen, Asks Closed-Ended Question Lifestyle, Asks Closed-Ended Question Psychosocial, Asks Closed-Ended Question-Lifestyle, Open-Ended Question-Psychosocial, Asks Open-ended Question-Other, Councils-Medical Condition Therapeutic Regimen, Councils- Lifestyle/Psychosocial, and Requests for Services. Thus, the total number of categories with no variability in the three groups was 20 out of 56. Of the 41 original RIAS categories, there was no observable variability on 20 categories.

Categories with variability in one or two groups. The socioemotional categories with variability in one or two groups were: Concern, Criticism, Legitimizes, Selfdisclose, and Disapproval. The task-related categories were: **Back Channel**, Bid for Repetition, Ask Open-Ended Questions-Medical Condition, Ask Open-Ended Questions-Therapeutic Regimen, Gives Information-Therapeutic Regimen, Gives Information-Lifestyle, and **Don't Know**. Thus, the total number of categories with variability in just one or two groups was 12 out of 56. Of the 41 original RIAS categories, there was variability in just one or two groups in 10 of the categories.

Categories with variability noted in all groups. The two socioemotional categories with variability in all groups were: Personal and Laughs. The task-related categories were: Partnership, Asks Partnership Questions, Agree, Back Channel Agree, Transitions, Orientation, Ask Orientation Question, Check, Confirm, Ask for Understanding, Asks for Opinion, Ask Closed-Ended Question-Care Plan, Ask Closed-Ended Ouestion-Medical Procedure, Ask Open-Ended Ouestion Care Plan, Ask **Open-Ended Question-Medical Procedure**, Gives Information-Medical Procedure, Gives Information-Medical Condition, Gives Information Psychosocial, Gives Information-Other, Gives Information-Clinical Experience, Gives Information-Care Plan, and Unintelligible Utterances. The total number of categories with variability in the three groups was 24. Unintelligible Utterances was removed, however, because this category represented utterances that could not be coded. Therefore, the total number of coding categories used in the chi-square analyses was 23. Of the 41 original RIAS categories, there was variability in all three groups on just 11 of the categories. All Participants Across All Categories With Variability (14×23)

Crosstabs calculation. The differences in frequencies across the 14 participants were examined within each of the 23 categories with variability using crosstabs in SPSS Statistics 17.0. None of the resulting chi-squares was statistically significant. This indicated that the data set was not large enough to permit detection of response patterns when examining the categories item by item (there was not enough "power" in this test). In other words, with this sample size, single items were not sensitive to differential interprofessional communication across individual, workshop groups, and professional

groups.

Contingency table calculation. Before grouping the data into meaningful or functional divisions, the frequencies of the 14 participants' utterances across the 23 categories were examined. A contingency table was used to calculate the chi-square. The observed values, the expected values, and the squared difference between observed and expected values, divided by the expected values are presented in Appendices K, L, and M. The chi-square statistic is the sum of the squared differences between the observed and expected values, divided by the expected values.

The 14 × 23 chi-square analysis, $\chi^2(286, N = 322) = 1509$, p = 0.00, revealed that there were significant disproportionalities (i.e., differences) among the frequencies of participants' utterances across the RIAS categories. Standardized residuals in 89 of the 322 cells (see bolded residuals in Table 7) contributed to the significant chi-square statistic. The number of significant standardized residuals contributing within each RIAS category ranged from 1 (e.g., P14 responded significantly more than expected on the AskOECP category) to 8 (e.g., P1, P2, P5, and P12 responded significantly more than expected on the GIMC category while P7, P8, P9, and P11 responded significantly fewer than expected). This result indicated there were differences in the participants' responses across all the categories and there were relative differences within each category.

Categorical groupings.

Categories With No	Categories With Variability	Categories With Variability
Variability	In One Or Two Groups	In All Groups
Social-emotional related:	Social-emotional related:	Social-emotional related:
1. Reassures	1. Concern	1. Personal (Pers)
2. Approval	2. Criticism	2. Laughs (Laugh)
3. Gives Compliment	3. Legitimizes	Task related:
4. Empathy	4. Self-disclose	3. Partnership [task]
5. Agreement	5. Disapproval	(Partner)
6. Back Channel	Task related:	4. Asks Partnership
7. Partnership [soc]	6. Back Channel	Question (AskPart)
8. Asks for Reassurance	(BC)	5. Agree
Task related:	7. Bid for repetition	6. Back Channel Agree
9. Asks For Permission	(Bid)	(BC Agree)
10. Asks Closed-Ended	8. Asks Open-Ended	7. Transitions
QuestionMedical	QuestionMedical	8. Orientation
Condition	Condition	9. Asks Orientation
(AskCEMC)	(AskOEMC)	Question (AskOrient)
11. Asks Closed-Ended	9. Asks Open-Ended	10. Check
Question	Question	11. Confirm
Therapeutic Regimen	Therapeutic	12. Ask for Understanding
(AskCETR)	Regimen	13. Asks for Opinion
12. Asks Closed-Ended	(AskOETR)	14. Ask Closed-Ended
QuestionLifestyle	10. Gives Information	QuestionCare Plan
(AskCELS)	Therapeutic	(AskCECP)
13. Asks Closed-Ended	Regimen (GITR)	15. Ask Closed-Ended
Question	11. Gives Information	QuestionMedical
Psychosocial	Lifestyle (GILS)	Procedure
(AskCEPS)	12. Don't Know (DK)	(AskCEMP)

16. Ask Open-Ended
QuestionCare Plan
(AskOECP)
17. Ask Open-Ended
QuestionMedical
Procedure
(AskOEMP)
18. Gives Information
Medical Procedure
(GIMP)
19. Gives Information
Medical Condition
(GIMC)
20. Gives Information
Psychosocial (GIPS)
21. Gives Information
Other (GIOther)
22. Gives Information
Clinical Experience
(GICE)
23. Gives Information
Care Plan (GICP)
24. Unintelligible
Utterances

Standardized residuals (14×23).

											1	Residuals											
•						GI	Ask	Ask	Ask	Ask				Ask		BC	Ask	Ask			Ask		
	GIMP	GIMC	GICE	GIPS	GICP	Other	CEMP	OEMP	OECP	CECP	Pers	Laugh	Part	Part	Agree	Agree	Unde	Opin	Trans	Orient	Orie	Check	Confirm
P1 Physician	3.56	4.65	0.38	-1.04	0.67	2.58	-0.68	-0.90	0.09	1.05	-1.83	0.46	-2.41	-0.30	-2.90	-4.80	0.35	-1.00	0.71	0.42	-0.44	-0.29	-0.07
P2 Patient	-2.89	4.38	-2.33	1.24	-0.04	11.25	0.79	1.70	-0.60	-0.63	3.94	-1.05	-1.34	-0.93	-2.12	-1.87	1.23	-0.82	-0.11	-2.22	-0.96	2.80	-1.49
P3 Nurse	0.87	-1.93	-2.51	1.02	1.15	0.14	-0.63	-1.55	0.55	1.22	-0.47	1.42	-1.43	-1.80	4.20	1.69	-1.08	-0.96	-1.73	-2.04	-1.31	-0.72	3.39
P4 Nurse	-2.47	0.45	-1.16	7.16	6.09	-1.03	-1.73	1.44	0.40	2.59	-1.33	1.60	-1.99	-1.89	-1.07	-0.83	-1.14	1.91	-2.54	1.32	1.13	1.06	-1.70
P5 Nurse	0.93	4.56	0.58	4.31	-2.06	5.88	-0.93	-0.81	-1.41	0.54	-1.53	-0.84	-1.54	-2.18	0.27	-0.48	-0.55	2.22	-0.23	-3.46	-0.90	-1.17	-1.47
P6 Physician	0.28	1.32	0.64	1.38	-1.79	3.09	0.69	-1.43	-1.08	0.64	-1.17	0.26	-0.72	-1.06	-0.61	2.92	-1.00	-1.47	-0.22	-2.92	-1.12	-1.76	1.11
P7 Nurse	0.60	-2.43	0.85	3.95	2.24	-1.06	-1.13	-1.28	-0.96	-0.02	0.88	-0.48	-0.27	-0.14	-0.13	-0.32	0.22	-1.31	-0.99	-0.30	1.75	-0.46	0.58
P8 Psychologist	-1.62	-3.91	-3.19	-0.92	-2.71	-2.47	2.89	-0.80	-1.03	-0.57	7.22	-0.76	2.39	0.23	2.38	0.07	-0.21	-0.01	1.12	0.69	4.69	4.35	0.90
P9 Nurse	3.25	-2.48	-1.80	-2.24	-2.35	-1.89	-1.42	-2.27	-1.13	-0.14	-1.32	-1.98	-0.92	-1.51	2.77	1.44	-0.96	2.79	-1.49	2.35	0.96	-0.67	3.35
P10 Physician	0.37	-1.72	-0.54	-2.32	-0.52	-1.41	3.62	-1.01	-0.19	-0.96	-1.03	-0.74	1.11	1.10	2.40	2.89	-1.40	-1.09	-1.97	-1.61	0.10	0.12	1.64
P11 Physiotherapist	-1.23	-4.07	-1.40	-1.72	0.49	-3.57	1.23	3.21	-0.25	-0.44	-1.43	-1.00	1.63	-1.15	0.83	3.25	-0.45	1.23	0.14	2.61	-1.00	0.91	-1.04
P12 Physician	-1.53	5.31	7.68	-2.68	-0.81	0.91	-3.21	1.23	0.58	-1.58	-0.25	-0.50	2.74	2.25	-4.88	-6.18	3.11	-1.56	2.40	3.45	-1.51	-2.29	-2.57
P13 Nurse	-1.52	-1.40	-0.27	-0.85	-1.11	-1.17	0.03	3.35	-0.55	1.14	-0.60	5.25	-1.23	-0.85	-0.41	2.58	-0.51	-0.76	1.62	-0.71	-0.88	-1.14	0.83
P14 Nurse	-0.97	-1.38	-0.04	-1.41	2.14	-3.21	0.73	0.05	4.54	-0.93	0.86	2.41	0.01	5.96	-0.85	2.02	1.50	-1.05	2.22	-3.32	-1.10	-0.44	-2.31

Three Workshop Groups Across All Categories With Variability (3×23)

The frequencies of utterances across different categories for the three workshop groups were then examined. The contingency table for the three workshop groups is presented in Appendix N. The 3×23 chi-square analysis, $\chi^2(44, N = 69) = 525$, p = 0.00, revealed that there were significant differences among the patterns of frequencies of the three workshop groups' utterances across the RIAS categories. Standardized residuals in 35 of the 69 cells (see bolded residuals in Table 8) contributed to the significant chisquare statistic. The number of significant standardized residuals contributing within each RIAS category ranged from one (e.g., WG3 responded significantly fewer than expected on the GIMP category) to three (e.g., WG1 and WG3 responded significantly more than expected on the GIMC category while WG2 responded significantly fewer than expected). In this analysis, two of the categories (i.e., GICP and AskOEMP) did not contribute to the significant chi-square value. This result indicated there were differences in the numbers of participants' responses across most of the categories and differences within most categories.

Three Professional Groups Across All Categories With Variability (3×23)

The frequencies of utterances across different categories for the three professional groups were then examined. Appendix O presents the contingency table for the three professional groups. The 3×23 chi-square analysis, $\chi^2(44, N = 69) = 306$, p = 0.00, revealed there were significant differences in the patterns of frequencies of the three professional groups' utterances across the RIAS categories. Different patterns emerged from this analysis of the standardized residuals compared to that of the three workshop groups (see Table 9). That is, there were fewer residuals contributing to the significant

chi-square (i.e., only 21 of the 69 cells contained significant residuals), there were fewer categories with significant residuals (i.e., 14 of the 21 categories contained significant residuals) and, unlike the three workshop groups, no category contained three significant residuals. This result indicated there were differences in the participants' responses across most of the categories and differences within most categories.

Three Workshop Groups Within Four Functional Categories

The frequencies of the utterances for the three workshop groups by functional category were then examined. Table 10 presents the functional groupings, the RIAS categories used in each contingency table, and the resulting chi-square statistic.

Standardized residuals: Three workshop groups across all categories with variability.

								R	esiduals														
						GI	Ask	Ask	Ask	Ask						BC	Ask	Ask			Ask		
	GIMP	GIMC	GICE	GIPS	GICP	Other	CEMP	OEMP	OECP	CECP	pers	laugh	Part	AskPar	Agree	Agree	Unde	Opin	Trans	Orient	Orie	Check	Confi
WG1	1.3	5.5	-1.2	5.4	1.7	7.1	-1.3	-1.1	-0.7	2.4	-2.1	0.9	-3.9	-3.2	-0.9	-1.9	-1.0	0.2	-1.5	-3.1	-1.3	-0.6	0.0
WG2	0.4	-6.6	-3.1	-2.4	-1.7	-4.9	2.5	-0.3	-1.5	-1.0	1.6	-2.3	2.0	-0.9	3.8	3.7	-1.3	1.2	-1.2	2.2	2.5	2.1	2.2
WG3	-2.1	3.0	5.9	-3.1	0.4	-1.4	-2.1	1.7	3.0	-1.5	0.2	2.2	1.9	5.1	-4.4	-3.1	3.2	-2.0	3.5	0.6	-2.0	-2.3	-3.2

Table 9

Standardized residuals: Three professional groups across all categories with variability.

											F	Residuals											
						GI	Ask	Ask	Ask	Ask						BC	Ask	Ask			Ask		
	GIMP	GIMC	GICE	GIPS	GICP	Other	CEMP	OEMP	OECP	CECP	pers	laugh	Part	AskPar	Agree	Agree	Unde	Opin	Trans	Orient	Orie	Check	Confi
Physicians	1.2	5.4	4.9	-2.8	-1.0	2.3	-0.4	-0.7	0.0	-0.7	-2.0	-0.3	0.7	1.4	-3.6	-4.0	1.1	-2.5	0.8	0.6	-1.5	-2.1	-0.5
Nurses	0.9	-1.4	-1.8	4.0	2.0	-0.7	-2.0	-1.3	0.8	1.3	-1.4	1.5	-2.6	-0.5	2.1	2.0	-0.9	1.8	-1.4	-2.2	-0.1	-1.2	0.9
Other	-2.5	-4.5	-3.5	-1.6	-1.3	-1.8	2.8	2.4	-0.9	-0.8	4.1	-1.5	2.4	-1.0	1.6	2.1	-0.2	0.8	0.7	1.9	1.8	3.9	-0.6

Group	Function	RIAS Categories	$\mathbf{r} \times \mathbf{c}$	χ^2	df	р
Workshop	Education and	GIMP	3 × 6	175	10	0.00
Groups	Counseling	GIMC				
1, 2, 3		GICE				
		GICP				
		GIPS				
		GIOther				
	Data Gathering	AskCEMP	3 × 4	37.1	6	0.00
		AskOEMP				
		AskOECP				
		AskCECP				
	Building a	Personal	3×2	13.8	2	0.001
	Relationship	Laughs				
	Partnership	Partnership	3 ×	156	20	0.00
		Ask Partner	11			
		Agree				
		BC Agree				
		Ask Underst				
		Ask Opinion				
		Transition				
		Orientation				
		Ask Orient				
		Check				
		Confirm				

Three workshop groups within four functional categories.

The chi-square analyses revealed significant differences in the frequency of the three work groups' utterances within the functional categories of Education and Counseling,

 $\chi^{2}(10, N = 18) = 175, p = 0.00$, Data Gathering, $\chi^{2}(6, N = 12) = 37.1, p = 0.00$, Building a Relationship, $\chi^{2}(2, N = 6) = 13.8, p = 0.00$, and Partnership, $\chi^{2}(20, N = 33) = 156, p = 0.00$.

In the functional category of Education and Counseling, the standardized residuals in 11 of the 18 cells (see bolded residuals in Table 11) contributed to the significant chisquare statistic. WG1 and WG3 made significantly fewer GIMP utterances while WG3 made more. WG1 and WG3 made significantly more GIMC utterances while WG2 made fewer. For GICE, WG1 made significantly fewer utterances in this category while WG3 made more. For GIPS, WG1 made significantly more utterances in this category while WG3 made fewer. Finally, in GIOther, WG1 made significantly more utterances in this category.

Table 11

	Residuals													
	GIMP	GIMC	GICE	GICP	GIPS	GIOTHER								
WG1	-2.03	3.24	-3.66	-0.95	3.88	4.20								
WG2	4.42	-5.34	-0.24	1.23	-1.40	-0.97								
WG3	-2.87	2.47	5.05	-0.28	-3.26	-1.85								

Standardized residuals: Education and counseling.

In the functional category of Data Gathering, the standardized residuals in three of the 12 cells (see bolded residuals in Table 12) contributed to the significant chi-square statistic. WG2 made significantly more AskCEMP statements than would be expected while WG3 made fewer. WG3 made significantly more AskOECP utterances while WG1 made more AskCECP utterances. There were no standardized residuals in the AskOEMP category that contributed to the significant chi-square statistic.

Table 12

Standardized residuals: Data gathering.

	Residuals								
	AskCEMP	AskOEMP	AskOECP	AskCECP					
WG1	-0.9	-0.7	-0.5	2.9					
WG2	2.1	-0.6	-1.6	-1.2					
WG3	-2.1	1.7	3.0	-1.5					

In the functional category of Building a Relationship, a standardized residual in only one of the six cells (see bolded residuals in Table 13) contributed to the significant chi-square statistic. WG2 made more personal utterances than either WG1 and WG3. Table 13

Standardized residuals: Building a relationship.

	Residuals							
	Personal	Laughs						
WG1	-1.96	1.22						
WG2	2.35	-1.46						
WG3	-0.72	0.45						

In the functional category of Partnership, the standardized residuals in 10 of the 33 cells (see bolded residuals in Table 14) contributed to the significant chi-square statistic.

WG1 made significantly fewer Partnership utterances while WG3 significantly more. WG3 made significantly more AskPartnership utterances while WG1 made fewer than would be expected. WG3 made significantly more Agree, BCAgree, and Confirm utterances than WG 1 and WG2. WG3 made significantly more AskUnderstand utterances than the other workgroups. Finally, WG2 made significantly fewer Transitional statements while WG3 made significantly more than would be expected. There were no standardized residuals in the AskOpinion, Orientation, AskOrientation, or Check categories that contributed to the significant chi-square statistic.

Table 14

Standardized residuals: Partnership.

	Residuals										
		Ask		BC	Ask	Ask			Ask		
	Partner	Part	Agree	Agree	Und	Opin	Trans	Orient	Orient	Check	Confirm
WG1	-3.0	-2.6	1.0	0.7	-0.6	1.0	0.8	-0.9	-0.5	0.5	1.4
WG2	0.7	-1.6	1.7	0.9	-1.7	0.4	-3.3	-0.2	1.5	0.9	0.8
WG3	2.3	5.5	-3.9	-2.3	3.5	-1.8	4.4	1.4	-1.8	-2.0	-2.8

Three Professional Groups Within Four Functional Categories

The frequencies of the utterances for the three professional groups by functional category were then examined. Table 15 presents the functional groupings, the RIAS categories used in each contingency table, and the resulting chi-square statistics.

Group	Function	RIAS Categories	r × c	χ^2	df	р
Professional	Education and Counseling	lucation and Counseling GIMP		82.2	10	0.00
Groups		GIMC				
1, 2, 3		GICE				
		GICP				
		GIPS				
		GIOther				
	Data Gathering	AskCEMP	3×4	14.9	6	0.02
		AskOEMP				
		AskOECP				
		AskCECP				
	Building a Relationship	Personal	3×2	22.1	2	0.00
		Laughs				
	Partnership	Partnership	3 × 11	85.6	20	0.00
		Ask Partner				
		Agree				
		BC Agree				
		Ask Underst				
		Ask Opinion				
		Transition				
		Orientation				
		Ask Orient				
		Check				
		Confirm				

Three professional groups within four functional categories.

The chi-square analyses revealed significant differences in the frequency of the three professional groups' utterances within the functional categories of Education and

Counseling, $\chi^2(10, N = 18) = 82.2$, p = 0.00, Data Gathering, $\chi^2(6, N = 12) = 14.9$, p = 0.00, Building a Relationship, $\chi^2(2, N = 6) = 22.1$, p = 0.00, and Partnership, $\chi^2(20, N = 33) = 85.6$, p = 0.00.

In the functional category of Education and Counseling, the standardized residuals in seven of the 18 cells (see bolded residuals in Table 16) contributed to the significant chi-square statistic. Physicians and Other made significantly more GIMC utterances while Nurses made fewer. For GICE, Physicians made significantly more utterances in this category while Nurses made fewer than expected by "chance." For GIPS, Physicians made significantly fewer utterances in this category compared to the other professional groups. There were no standardized residuals in the GIMP or GIOther categories that contributed to the significant chi-square statistic.

Table 16

	Residuals						
	GIMP	GIMC	GICE	GICP	GIPS	GIOTHER	
Physicians	-1.21	3.73	2.63	-2.79	-3.38	0.55	
Nurses	0.55	-1.56	-2.06	1.66	3.85	-0.94	
Other	0.97	-3.15	-0.88	1.61	-0.61	0.53	

Standardized residuals: Education and counseling.

In the functional category of Data Gathering, there were no standardized residuals (see residuals in Table 17) that contributed to the significant chi-square statistic.

	Residuals								
	AskCEMP	AskOEMP	AskOECP	AskCECP					
Physicians	0.2	-0.3	0.3	-0.3					
Nurses	-1.3	-0.8	1.3	1.9					
Other	1.1	1.0	-1.6	-1.5					

Standardized residuals: Data gathering.

In the functional category of Building a Relationship, the standardized residuals in 2 of the cells (see bolded residuals in Table 18) contributed to the significant chi-square statistic. Other made more personal utterances that either Physicians or Nurses. In the Laughs category, Other (Patient, Psychologist, and Physiotherapist) made significantly fewer utterances than Physicians or Nurses.

Table 18

Standardized residuals: Building a relationship.

	Residuals					
	Personal	Laughs				
Physicians	-1.46	0.91				
Nurses	-1.65	1.02				
Other	3.33	-2.07				

In the functional category of Partnership, standardized residuals in 11 of the 33 cells (see bolded residuals in Table 19) contributed to the significant chi-square statistic.

Nurses made significantly fewer Partnership utterances than the other groups. Physicians made significantly more AskPartnership and Transition utterances than the other groups. Physicians made significantly fewer Agree and BCAgree utterances while Nurses made significantly more, respectively. Physicians made significantly fewer AskOpinion utterances. In the Orientation category, Physicians made significantly more utterances while Nurses made fewer. Finally, Other made more Check statements than the other professional groups. There were no standardized residuals in the AskUnderstanding, AskOrientation, or Confirm categories that contributed to the significant chi-square statistic.

Table 19

Standardized residuals: Partnership.

	Residuals										
		Ask		BC	Ask	Ask			Ask		
	Part	Partner	Agree	Agree	Under	Opin	Trans	Orient	Orient	Check	Conf
Physicians	1.54	2.03	-2.54	-2.48	1.50	-2.16	2.41	2.20	-1.01	-1.48	0.41
Nurses	-2.56	-0.49	2.25	2.23	-0.84	1.81	-1.28	-2.02	-0.01	-1.15	1.02
Other	1.31	-1.51	0.04	0.01	-0.57	0.15	-1.00	0.04	1.03	2.79	-1.56

Workshop Groups Across Functional Subcategories

The frequencies of the utterances for the three workshop groups organized by functional groupings and categories within these groups were then examined. Table 20 presents the functional groupings, the RIAS categories used in each contingency table, and the resulting chi-square statistics.

Groups	Functions / Nature of	RIAS	r × c	Results
	Communication Behaviors	Categories		
	Education and Counseling-	GIMP	3 × 3	$\chi^2 = 103$
Workshop	Biomedical	GIMC		df = 4
Groups		GICE		<i>p</i> = 0.00
1, 2, 3	Education and Counseling-	GICP	3×3	$\chi^2 = 42.8$
	Other	GIPS		df = 4
		GIOther		<i>p</i> = 0.00
	Data Gathering-Biomedical	AskCEMP	3×2	$\chi^2 = 10.2$
		AskOEMP		df = 2
				<i>p</i> = 0.006
	Data Gathering-Other	AskOECP	3×2	$\chi^2 = 12.3$
		AskCECP		df = 2
				<i>p</i> = 0.002
	Building a Relationship	Personal	3×2	$\chi^2 = 13.8$
	Positive talk	Laughs		df = 2
				<i>p</i> = 0.001

Workshop groups across functional subcategories.
PartnershipParticipatory	Partnership	3 × 6	$\chi^2 = 104$
Facilitators	Ask Partner		df = 10
	Agree		p = 0.00
	BC Agree		
	Ask Underst		
	Ask Opinion		
PartnershipProcedural	Transition	3×5	$\chi^2 = 48.9$
	Orientation		df = 8
	Ask Orient		<i>p</i> = 0.00
	Check		
	Confirm		

The chi-square analyses revealed significant differences in the frequency of the three work groups' utterances within the functional subcategories of: Education and Counseling--Biomedical, $\chi^2(4, N = 9) = 103$, p = 0.00; Education and Counseling--Other, $\chi^2(4, N = 9) = 42.8$, p = 0.00; Data Gathering--Biomedical, $\chi^2(2, N = 6) = 10.2$, p = 0.006; Data Gathering--Other, $\chi^2(2, N = 6) = 12.3$, p = 0.002; Building a Relationship--Positive Talk, $\chi^2(2, N = 6) = 13.8$, p = 0.001; and Partnership--Participatory Facilitators, $\chi^2(10, N = 18) = 104$, p = 0.00; and Partnership--Procedural, $\chi^2(8, N = 15) = 48.9$, p = 0.00.

In the Education and Counseling--Biomedical subcategory, standardized residuals in 6 of the 9 cells (see bolded residuals in Table 21) contributed to the significant chisquare statistic. WG2 made more GIMP utterances while WG3 made more expected. In

the GIMC category, WG2 made more utterances while WG2 made fewer. In the GICE category, WG21 made fewer utterances while WG3 made more.

Table 21

Standardized residuals: Education and counseling-biomedical.

	Residuals						
	GIMP GIMC GICE						
WG1	-0.39	4.36	-2.42				
WG2	3.63	-5.59	-0.85				
WG3	-3.95	1.70	3.76				

Education and Counseling--Other

In the Education and Counseling--Other subcategory, standardized residuals in three of the nine cells (see bolded residuals in Table 22) contributed to the significant chisquare statistic. WG1 made significantly more GICP utterances than WG2. In the GIPS category, WG1 made significantly more utterances than WG3. In the GIOther category, WG1 made significantly more utterances than WG2.

Table 22

Standardized residuals: Education and counseling-other.

		Residuals	
	GICP	GIPS	GIOther
WG1	-2.98	2.72	2.15
WG2	2.31	-1.04	-2.21
WG3	1.55	-2.82	-0.47

Data Gathering--Biomedical

In the Data Gathering--Biomedical subcategory, standardized residuals in one of the six cells (see bolded residual in Table 23) contributed to the significant chi-square statistic. WG3 made significantly more AskOEMP utterances than would be expected. Table 23

	Residuals			
	AskCEMP	AskOEMP		
WG1	0.021	-0.029		
WG2	0.96	-1.28		
WG3	-1.65	2.22		

Standardized residuals: Data gathering-biomedical

Data Gathering--Other

In the Data Gathering--Other subcategory, standardized residuals in one of the six cells (see bolded residual in Table 24) contributed to the significant chi-square statistic.

WG3 made significantly more AskOECP utterances than would be expected.

Table 24

Standardized residuals: Data gathering-other.

	Residuals			
	AskOECP	AskCECP		
WG1	-1.4	1.4		
WG2	-0.3	0.3		
WG3	2.08	-1.98		

Building a Relationship

The results in this analysis were identical to the functional category analysis because the categories were not further subdivided.

Partnership--Participatory Facilitators

In the Partnership--Participatory Facilitators subcategory, standardized residuals in seven of the 18 cells (see bolded residual in Table 25) contributed to the significant chi-square statistic. WG3 made significantly more Partnership and AskPartnership utterances than WG1. WG3 made significantly fewer Agree utterances and significantly more AskUnderstanding utterances than would be expected. In the AskOpinion category, WG2 made significantly more utterances than the other groups. There were no standardized residuals in the BCAgree category that individually contributed to the significant chi-square statistic.

Table 25

	Residuals					
	Partnership	Askpartner	Agree	BCAgree	AskUnder	AskOpin
WG1	-2.9	-2.5	1.3	1.1	-0.6	1.1
WG2	0.31	-1.84	1.06	0.16	-1.85	2.43
WG3	2.99	6.21	-3.27	-1.25	3.86	-1.60

Standardized residuals: Partnership-participatory facilitators.

Partnership--Procedural

In the Partnership--Procedural subcategory, standardized residuals in five of the 15 cells (see bolded residual in Table 26) contributed to the significant chi-square

statistic. In the Transition category, WG2 made significantly fewer utterances while WG3 made significantly more than would be expected. WG3 also made significantly fewer AskOrientation, Check, and Confirm utterances than the other workgroups. There were no standardized residuals in the Orientation category that contributed to the significant chi-square statistic.

Table 26

	Residuals				
	Trans	Orient	Ask Orient	Check	Confirm
WG1	0.52	-1.16	-0.59	0.38	1.26
WG2	-2.64	0.54	1.79	1.27	1.23
WG3	3.42	0.46	-2.06	-2.34	-3.23

Standardized residuals: Partnership-procedural.

Professional Groups Across Functional Subcategories

The frequencies of utterances for the three professional groups organized by functional groupings and categories within these groups were also examined. Table 27 presents the functional groupings, the RIAS categories used in each contingency table, and the resulting chi-square statistics.

Table 27

	Functional Grouping	Categories	r×c	Results
Professional	Education and Counseling	GIMP	3 × 3	$\chi^2 = 33.5$
Groups	Biomedical	GIMC		df = 4
(Physicians,		GICE		p = 0.000
Nurses,	Education and Counseling	GICP	3×3	$\chi^2 = 29.7$
Other)	Other	GIPS		df = 4
		GIOther		<i>p</i> = 0.011
	Data GatheringBiomedical	AskCEMP	3×2	$\chi^2 = 0.156$
		AskOEMP		df = 2
				<i>p</i> = .0925
	Data GatheringOther	AskOECP	3×2	$\chi^2 = .287$
		AskCECP		df = 2
				<i>p</i> = 0.866
	Building a Relationship	Personal	3×2	$\chi^2 = 22.1$
	Positive Talk	Laughs		df = 2
				<i>p</i> = 0.001
	Partnership	Partnership	3 × 6	$\chi^2 = 42.7$
	Participatory Facilitators	Ask Partner		df = 10
		Agree		p = 0.00
		BC Agree		
		Ask Underst		
		Ask Opinion		
	PartnershipProcedural	Transition	3×5	$\chi^2 = 24.8$
		Orientation		df = 8
		Ask Orient		<i>p</i> = 0.002
		Check		
		Confirm		

Professional groups across functional subcategories.

The chi-square analyses revealed significant differences in the frequency of the three work groups' utterances within the functional subcategories of: Education and Counseling--Biomedical, $\chi^2(4, N = 9) = 33.5$, p = 0.00; Education and Counseling--Other, $\chi^2(4, N = 9) = 29.7$, p = 0.00; Building a Relationship--Positive Talk, $\chi^2(2, N = 6) = 22.1$, p = 0.001; and Partnership--Participatory Facilitators, $\chi^2(10, N = 18) = 42.7$, p = 0.00; and Partnership--Procedural, $\chi^2(8, N = 15) = 24.8$, p = 0.002. The chi-square analyses revealed nonsignificant differences in Data Gathering--Biomedical and Data Gathering--Other.

Education and Counseling--Biomedical

In the Education and Counseling--Biomedical subcategory, standardized residuals in four of the nine cells (see bolded residuals in Table 28) contributed to the significant chi-square statistic. In the GIMC category, Physicians made more utterances while Other made fewer than would be expected. In the GICE category, Physicians made significantly more utterances while Nurses made fewer. There were no standardized residuals in the GIMP category that contributed to the significant chi-square statistic.

Table 28

Standardized residuals: Education and counseling-biomedical.

	Residuals					
	GIMP GIMC GICE					
Physicians	-1.21	3.73	2.63			
Nurses	0.55	-1.56	-2.06			
Other	0.97	-3.15	-0.88			

Education and Counseling--Other

In the Education and Counseling--Other subcategory, standardized residuals in three of the nine cells (see bolded residuals in Table 29) contributed to the significant chisquare statistic. In the GIPS category, Physicians made significantly fewer utterances than Nurses. In the GIOther category, Physicians made significantly more utterances than the other groups.

Table 29

	Residuals				
-	GICP	GIPS	GIOther		
Physicians	-0.85	-2.80	2.41		
Nurses	0.38	3.15	-1.96		
Other	0.57	-0.97	-0.27		

Standardized residuals: Education and counseling-other.

Building a Relationship

As noted in the Workshop Groups analysis, the results in this analysis were identical to the functional category analysis because the categories were not further subdivided.

Partnership--Participatory Facilitators

In the Partnership--Participatory Facilitators subcategory, standardized residuals in three of the 18 cells (see bolded residual in Table 30) contributed to the significant chisquare statistic. Physicians made significantly more Partnership utterances than Nurses. Physicians made significantly more AskPartnership utterances than would be expected. There were no standardized residuals in the Agree, BCAgree, AskUnderstand, or

AskOpinion categories that contributed to the significant chi-square statistic.

Table 30

	Residuals					
	Partnership	Askpartner	Agree	BCAgree	AskUnder	AskOpin
Physicians	2.47	2.72	-1.40	-0.88	1.94	-1.79
Nurses	-3.10	-0.91	1.14	0.71	-1.08	1.35
Other	1.29	-1.53	0.00	0.00	-0.58	0.15

Standardized residuals: Partnership-participatory facilitators.

Partnership--Procedural

In the Partnership--Procedural subcategory, standardized residuals in two of the 15 cells (see bolded residual in Table 31) contributed to the significant chi-square statistic. Physicians made significantly fewer Check utterances while Other made significantly more than would be expected. There were no standardized residuals in the Transition, Orientation, or AskOrientation categories that contributed to the significant chi-square statistic.

Table 31

	Residuals				
	Trans	Orient	Ask Orient	Check	Confirm
Physicians					
Names	0.99	0.73	-1.45	-2.04	-0.38
Nurses	-0.08	-0.80	0.47	-0.60	1.81
Other	-0.98	0.08	1.03	2.82	-1.54

Standardized residuals: Partnership-procedural.

Descriptions of the Functioning of the Workshop Groups

Workshop group 1. This workshop group was comprised of the following participants: (a) Physician (Surgical Oncologist); (b) Patient; (c) Clinic Nurse; (d) Oncology Nurse; (e) Clinical Nurse Specialist/*Pivot*; and (f) Physician (Radiation Oncologist). The participants were seated around two rectangular tables fitted together and, thus, were easily visible to each other. In each of workgroups, a copy of the care plan was available to all participants. The Surgical Oncologist spontaneously adopted the role of facilitating the progression through the care plan in this workgroup. Compared to other facilitators/record keepers, the Surgical Oncologist tended to be more directive in this role. That is, she tended to assert her position instead of asking for the other participants' input. This approach would have contributed to significantly fewer Partnership, Agree, and BC Agree utterances compared to the other participants (see Table 7).

Several extensive conversations took place during this workshop. In one, the Patient discussed her medical experiences at length. This conversation contributed to her significantly higher GIOther utterances (see Table 7). The Surgical Oncologist and the Clinical Nurse Specialist/*Pivot* addressed the majority of the Patient's questions and concerns before the Surgical Oncologist directed the conversation back to Mrs. B., the patient in the care plan. This exchange would have contributed to the Surgical Oncologist's and Clinical Nurse Specialist/*Pivot*'s significantly higher GIMC utterances (see Table 7).

A second, somewhat tense, conversation occurred between the Surgical Oncologist and the Clinical Nurse Specialist/*Pivot*. They disagreed on a number of issues surrounding the care of Mrs. B. For example, they disagreed on the research evidence supporting chemotherapy in a patient of Mrs. B.'s age (i.e., 85 years). The Clinical Nurse Specialist/*Pivot* was insistent that there was little evidence to support the use of chemotherapy for the patient and returned to this issue repeatedly throughout the session. This exchange would have contributed to the Surgical Oncologist's and Clinical Nurse Specialist/*Pivot*'s significantly higher GIOther utterances (see Table 7).

Workshop group 2. This workshop group was comprised of the following participants: (a) Oncology Nurse; (b) Psychologist; (c) Nurse Manager; (d) Physician (Oncology/Geneticist); and (e) Physiotherapist. As with Workshop Group 1, the participants were seated around two rectangular tables fitted together and were, thus, easily visible to each other. In this group, there was no one specific person facilitating the progression though the care plan. The Psychologist, however, took on the responsibility for recording information as needed on the care plan. This role is reflected in the Psychologist's significantly higher AskOrientation and Check utterances (see Table 7).

This group tended to be more collegial, engaging in more personal conversation than the other groups. The Psychologist in particular engaged in more personal utterances. This characteristic is reflected in her significantly higher Personal utterances (see Table 7).

Workshop group 3. This workshop group was comprised of the following participants: (a) Physician (Obstetrician); (b) Post-partum Nurse; and (c) Clinical Nurse Specialist. It was the smallest in number and least diverse of the three workgroups, containing only one Physician and two Nurses. The participants were seated on one side of a rectangular table with the care plan in front of them and had to turn toward each other to engage in conversation. The Physician and the Clinical Nurse Specialist dominated the conversation in this workshop. Thus, the discussion between the Physician and the Clinical Nurse Specialist was "in front of" the Post-partum Nurse. The majority of the Post-partum Nurse's contributions were Agreements and Back Channel Agreements. The Physician in this group tended to engage in lengthy descriptions of medical procedures (e.g., manually rotating a baby during delivery). This tendency is reflected in the significantly higher GIMP utterances for this workgroup. A lengthy discussion also occurred between the Physician and the Clinical Nurse Specialist surrounding the Physician's preference for leaving a Foley catheter in during delivery. These descriptions are reflected in his significantly higher GIMP and GICE standardized residuals.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Research Question 1

The first research question asked whether or not the Roter Interactional Analysis System (RIAS) was sensitive to identifying evidence of interprofessionalism when healthcare professionals engage in a collaborative activity. Several RIAS categories were not relevant to any parts of the conversational interactions and were eliminated from the analysis. Also, there were a number of categories within which no variability was noted. These situations are described in detail below.

Categories eliminated from the analysis. An examination of the categories with no variability indicated that the majority (12 out of 20) of these categories were task-related-exchanges and were eliminated from further analysis. A number (eight out of 20) of socioemotional categories were eliminated as well. The participants did not ask closed-ended questions pertaining to medical condition, therapeutic regimen, lifestyle, or psychosocial qualities. Also, the participants did not ask any open-ended questions regarding either lifestyle or psychosocial matters. It is not entirely clear why there were not more closed-ended questions related to the medical condition, given the focus of the case.

In this collaborative activity, there were no utterances that related to asking permission, requesting services, or counseling utterances concerning medical condition, therapeutic regimen, psychosocial, or lifestyle. As these latter categories are more characteristic of physician-patient dyads, it is not surprising that there were not statements of this nature among professionals. All of the categories in which no variability in responses was observed were traditional RIAS categories. Variability in participants' utterances in only one or two of the three workgroups was found in 15 categories. All but two of these categories (Back Channel Agree and Don't Know) were traditional RIAS categories. The total number of categories with little or no variability was 32 out of 56. Therefore, there was a rather large number of categories not sensitive to participants' utterances in an interprofessional discussion.

Categories with variability noted in all groups. An examination of the categories in which variability was observed across the three workshop groups indicated that few of the socioemotional categories remained. Of the 24 categories, only two (Personal and Laughs) were socioemotional in nature. One category was Unintelligible Utterances (in which the transcriber was unable to discern the nature of the utterance), leaving 21 categories related to the task. Of these 21 categories, 13 had been specially created for this study (Partnership, Asks Partnership, Agree, Back Channel Agree, Ask Orientation Question, Confirm, Ask Closed-Ended Question--Care Plan, Ask Closed-Ended Question--Medical Procedure, Ask Open-Ended Question--Care Plan, Ask Open-Ended Question--Medical Procedure, Gives Information--Medical Procedure, Gives Information--Clinical Experience, Gives Information--Care Plan). The eight traditional task-related RIAS categories which remained in the analysis were Transitions, Orientation, Check, Ask for Understanding, Asks for Opinion, Gives Information---Medical Condition, Gives Information--Psychosocial, and Gives Information--Other.

Thus, when used to document interprofessional conversations, the RIAS was sensitive only to documenting personal comments and joking across and within the groups, not to documenting exchanges in the other eight socioemotional categories. Most of the exchanges were task-related. Of the task-related categories, it was sensitive only in eight of the original RAIS categories. Documenting the nature of the interprofessional conversations required supplementation with 13 additional categories. Consequently, while the RIAS format was useful, the original RIAS categories, being oriented towards physician-patient interaction, needed to be extensively supplemented with items that specifically addressed the interprofessional interaction.

Research Question 2

The second research question addressed the nature of the interactions when health-care professionals engage in a collaborative activity. To answer this question the first level of analysis was considered.

Categories eliminated from the analysis. As noted, there was little or no variability in 32 out of 56 categories. These items were not useful in discerning the nature of the interprofessional communication. The implications of this finding are threefold. One, it indicates that interprofessional conversations possess very different qualities than may be seen in physician-patient dyadic conversations. Two, while the RIAS had some value in identifying the types of utterances undertaken in interprofessional conversations, its overall usefulness in documenting interprofessional interaction is limited. The third implication is that fully understanding these interactions requires the development of a new instrument that taps into the categories in which variability in participants' utterances was noted in the present study.

Categories with variability. The categories with variability across all participants indicated that there was a socioemotional component to the exchanges (in that the participants engaged in social conversation and joking) but the majority of the interactions were task-related. That is, the conversation centered on the medical case featured in the e-case and the development of the interprofessional care plan. Thus, although the RIAS is intended to capture both "cure" and "care" behaviors (Ong, De haes,

Hoos, & Lammes, 1995) in an interprofessional context, the focus is primarily on the "cure" dimension.

In addition to identifying the overall focus of the interprofessional conversation, an examination of the categories with variability revealed the nature of the differences amongst the participants and the groups of participants. Variability in the frequency of utterances indicated that some participants gave more utterances of a particular nature while other participants gave fewer. The implication is that these differences are the markers or behavioural indicators of the types of interprofessional conversations that occurred. Because these categories were sensitive to differences in an interprofessional conversation, they provide potential criteria for developing a scale or observational checklist to measure the degree to which professionals are engaging in interprofessional collaboration.

Functional organization. Examining these categories singularly or in groups, however, does not provide the full picture of the interactional dynamics occurring in interprofessional exchanges. The functional groupings provide two means of looking at the categories that may be useful for assessing the degree of interprofessional occurring during exchanges by health professionals. The first way is to assess the overall picture by the functional categories. In this study, organizing the categories with variability by function revealed that although many of the RIAS categories were eliminated from the analysis, some categories remained in each of the functional groupings. The participants engaged in behavior characterized as information giving (Educating and Counseling), question asking (Data Gathering), relationship building (Building a Relationship), and partnership building (Partnership). An examination of the functional subcategories revealed that the participants' communication focused on Biomedical and Other topics

but not Psychosocial topics (in both the Education and Counseling and Gathering Data functions). They engaged in Positive Talk but not Negative Talk or Emotional Talk in the Building a Relationship realm. Also, they engaged in both Participatory Facilitators and Procedural behaviors in the Partnership category. The following exchange is an example of utterances that conveyed alliance and decision making in the Partnership functional category:

Workgroup 3

Participant 3 (Clinical Nurse Specialist): [referring to the care plan] so . . . do we want to take out his manual [rotation during delivery] and put it in there and make another card? Participant 1 (Obstetrician): Yeah, let's just make another card saying "Just provide active management of labor."

Collective decision making was also noted in Workshop Group 2. In the following exchange all five participants contributed to the discussion surrounding a section of the care plan:

Participant 4 (Physician): So we think [care-plan section] six is a bit thin really, don't we? Participant 5 (Physiotherapist): Quite thin, yeah.

Participant 3 (Nurse Manager): Yeah, yeah, it is thin.

Participant 1 (Oncology Nurse): Yeah.

Participant 4 (Physician): Compared to the other section?

Participant 2 (Psychologist): Yes, yes.

The functional classifications may also be used in conjunction with an analysis of the variability in categories amongst participants or groups. For example, as indicated by the standardized residuals for the three workshop groups across all categories with variability (see Table 8), the profiles of the three groups were quite different. Workshop group one's (WG1) three highest scores were in the categories of GIOther, GIMC, and GIPS while the three highest scores in workshop group two (WG2) were Agree, BC Agree, and Orientation/Ask CEMP (two categories are indicated because their values were equal). Workshop group three's (WG3) highest scores, in comparison, where GICE, AskPartnership, and Transitions. Looking at the categories with the lowest scores reveals that WG1's lowest scores were Partnership, AskPartnership, and Orientation while the three lowest scores in WG2 were GIMC, GIOther, and GICE. For WG3, the categories with the fewest number of utterances were Agree, Confirm, and GIPS/BCAgree.

Although these differences in the numbers of utterances indicate that interprofessional conversations were undertaken (i.e., differences were noted in responses across all the categories with relative differences noted within each category), examining the categories alone does not give a full picture as to which conversations were more or less interprofessional. Thus, the functional groupings may be beneficial in this regard. Superimposing the functional organization over these profiles indicated that WG1's highest scores were from the Education and Counseling (Information Giving) category with all of the lowest scores coming from the Partnership Building category. WG2's scores, on the other hand, were highest from the Gathering Data (Question Asking) and Partnership Building categories with the lowest scores coming from the Education and Counseling (Information Giving) category. WG3's highest and lowest scores, in comparison, spanned two categories (Education and Counseling and Partnership Building). This latter finding would deem WG3 to be the most interprofessional because there were high scores in two functional categories. This is in contrast to WG2 and WG3 in which all of their high scores can from one functional category. The implication of this finding is that it is important view participants' conversations from several viewpoints in other to get a full understanding of what is taking place.

Connection to collaboration literature and social exchange theory. Thus, functional classifications provide an overall picture into the nature of the communication patterns. As noted in Table 3, the constructs used to describe and discuss the working relationships of health-care professional may be related to the constructs measured using the RIAS. Behavior characterized as Education and Counseling in the RIAS is similar to the construct of sharing (as described in the collaboration literature) and reciprocity (as described in social exchange theory). The interactions characterized as Partnership and Gathering Data in the RIAS exchanges speak to evidence of trust and exchange (as noted in the collaboration and social exchange theory). Less evidence existed for Building a Relationship (in that only two categories remained). However, this may be a consequence of the nature of the collaborative activity. The participants came together for one day or evening, thus there was little time to develop interdependency or a mutually rewarding process characteristic of this functional grouping. As noted by Gardner (2005), collaboration is an evolving relationship that requires time and effort to achieve success.

Participant and groups. While the functional groupings provided an overview of the interactional dynamics, examining the responses at the participant and group level provided more detail. At the participant level, differences were noted in responses across all the categories with relative differences noted within each category. This speaks to the

interprofessional nature of the exchanges. That is, everyone contributed to the conversation but there were substantive differences in the nature of the exchanges.

The response patterns varied when the utterances were organized by workshop group and by professional group. The number of categories with differences between the groups differed by grouping. In the workshop groups (across all categories), significant differences in responses were noted in 20 of the 23 categories (see Table 8). When the participants were grouped by profession, however, the number of categories in which significant differences were noted decreased to 13 (see Table 9). This indicated that when the participants were grouped by profession, there were fewer differences within categories than when they were grouped by workshop. For example, when grouped by profession, there were no differences in the categories related to care plan (GICP, AskOECP, AskCECP) and no differences in asking partnership questions and asking for understanding.

The grouping of category responses by profession provides a window into the nature of the conversation in this interprofessional context. On one hand, the finding that there were fewer differences within the categories when participants were grouped by profession suggests that when the professions are merged, there was uniformity in responses. That is, the participants, when grouped by their profession, tended to use common expressions and to address similar qualities of the case.

On the other hand, there were patterns of responses that appear to be consistent with research noting the influence of professional socialization on collaboration (Oandasan & Reeves, 2005), particularly the power imbalance that has been traditionally noted between physicians and nurses (see Lockhart-Wood, 2000). For example, two of the physicians (one in Workgroup 1 and one in Workgroup 3) relatively dominated the conversations in their respective groups. When compared to the other participants, they gave more information regarding the patient's medical condition (GIMC) and gave more information related to their clinical experiences (GICE). The nurses made significantly more utterances related to the psychosocial realm of the patient (GIPS). This behavior is exemplified in the following exchange:

Workgroup 1 (Session 2)

Participant 4 (Nurse): Because here [referring to the care plan] it should access psychosocial adjustment. Well, it's the adjustment but we will have to assess who is there . . . the psychosocial system.

Participant 1 (Surgical Oncologist): I agree with all this [referring to the care plan]. It is all very, very redundant. We did the pre-op assessment, we are doing the post-op assessment, we will discuss the treatment. We should know [by now] what the patient wants, what she doesn't want.

In this exchange, the Oncology Nurse stressed the need for further detail regarding psychosocial assessment in the care plan while the Surgical Oncologist chose to focus on the medical procedures already conducted that should have provided the information the Oncology Nurse sought. The Surgical Oncologist went on to downplay the need for the further assessment in this realm and the Oncology Nurse did not persist in the quest.

The exchange cited is an example of behavior that lacks characteristics important to collaborative undertakings. There was a lack of respect in terms of one participant not acknowledging the other participant's contribution. Also, the exchange may have reflected role socialization or a power imbalance between the professions (Lockhart-Wood, 2000). A similar phenomenon was evident in Workgroup 2. At the beginning of the activity, the group engaged in a dialogue to determine who would take on the "reporter" role. This role entailed summarizing the group's undertakings to the other groups at the plenary feedback session. In this exchange, one participant was asked by another if she would like to take on the role. Although the participant hedged a bit, she was encouraged by the group to do so. The following is the transcript of this exchange:

Workgroup 2 (Session 1)

Participant 3 (Nurse Manager): you want to do it? [pointing to participant 2]

Participant 2 (Psychologist): no, no I was . . .

Participant 4 (Oncology/ Geneticist): we can all

Participant 4 (Oncology/ Geneticist): we can all jump in [at the plenary feedback session]

Participant 5 (Physiotherapist): yes, of course

Participant 3 (Nurse Manager): yes

Participant 1 (Oncology Nurse): If people want to add something

Participant 1-5: ok, yes

Although this exchange contains a number of partnership and agreement statements (which are indicative of interprofessional collaboration), there was an element of deference to the physician (who was also the only male in the group) that was not evident from reading the transcript. That is, the other participants looked to and spoke to the physician during this conversation. As noted above, this is suggestive of the traditional hierarchical relationships in which the physician, especially a male physician, is in charge. Although the observed qualities of the interactions were not recorded (e.g., through interactional diagrams), it is an important element to consider when designing future research in this area. It is also interesting to note that even though the participants were informed that the workshops were designed to assess interprofessional collaboration, there was evidence of stereotypical undertakings amongst the participants. This indicates there remains room for growth and improvement in the quality of the interactions amongst participants during collaborative undertakings.

Implications for IPPE. To gain a full understanding of the interactional dynamics of interprofessional collaboration, it appears necessary to view the interactions from several standpoints. While the functional categories provide an overview of the interactional dynamics, the particulars of the interactions are evident when examined from the participant or group level, or both. Understanding differences in professional responses within and across communication categories has important implications for educators of interprofessional education and practice. In any interprofessional context, there is likely to be a range of behaviors, some of which may be less conducive to team building and collaboration than others. Thus, the categories, and the differences amongst participants in interprofessional settings, may provide the clues to determining which interventions are required in terms of interprofessional education.

Original Contributions of Research

This study offers several original contributions to the literature. First, the study of medical interaction has traditionally focused on the interactions between physician and patient. No empirical attention has previously been paid to interactional patterns and dynamics that occur within interprofessional groups or between multidisciplinary and interprofessional groups.

Second, prior research on collaborative and interprofessional practice has focused on issues such as team structure and composition, the settings of collaborative activities (D'Amour et al., 2005) as well as the knowledge, attitudes, and perceptions or roles of other professions (e.g., Birlean, Ritchie, Shore, & Margison, 2007). Studies have not examined interprofessional interaction during collaborative activities, notably in an ecologically valid setting.

Third, no study has been undertaken using a process-analysis method to understand these occurrences of collaborative behavior within and between groups of professionals. This study utilized a modified version of the *Roter Interaction Analysis System* (RIAS), a widely used approach to analyzing the dynamics of physician-patient interactions that occur during a medical visit (Roter & Larsen, 2001), but not previously used to analyze the interaction during collaborative undertakings. Given that this processanalysis technique has not previously been used in this regard, another original contribution of this study is to evaluate the potential use of the adapted RIAS for evaluating interaction (i.e., to determine the level of collaboration in interprofessional practice).

Limitations

There were several limitations to this study that affect how well the results can be generalized to the interactional dynamics of health-care professionals. First, the sampling was compromised. Originally, the design entailed recruiting two distinct groups of healthcare professions: One group of participants would be professionals who typically practiced within their uniprofessional domains rather than interprofessionally (a Non-Interprofessional Practice Group). The intent was to compare the interactional dynamics of this group to a second group (deemed the Interprofessional Practice Group) to be comprised of healthcare professionals who practice within a particular clinical site and function as a team. Unfortunately, given various time and schedule constraints (e.g., dependence on the availability of busy health professionals and the schedule of validation workshops being offered for the e-cases) it was not possible to recruit these distinct groups of participants.

Also, a number of logistic and technical difficulties arose that influenced the amount of data available for analysis. For example, only two of the three small-group sessions (in the breast-cancer e-case workshop) were usable for analysis. Data from the third session were eliminated because a facilitator stayed with the group of participants during the small-group session. Concern was raised that the discussion within the group may have been influenced by the presence of the facilitator. In the obstetrics e-case workshop, the problems were technical in nature. The audio-recording for two of the small group sessions were inaudible. This reduced the amount of available usable data from this workshop to one small group session.

Future Directions

Given the paucity of research investigating the interactional dynamics of interprofessional collaboration, numerous avenues may be explored in the future. One investigation would be to pursue the study mentioned above, that is, to compare the interactional dynamics of an interprofessional practice group to a non-interprofessional practice group. Similarly, analyzing the interactions of health-care professional who work in high functioning interprofessional teams versus low-functioning teams may further advance this area of inquiry. Future research could also involve analyzing larger number of samples and samples with more diversity of health-care professionals within the comparison groups. Investigating different kinds of interprofessional conversations (e.g., patient discharge, pediatrics, psychological/psychiatric services) to ascertain whether similar results would be obtained is a possibility. Investigating groups of students trained in IPPE programs, either upon completion of their programs or from a longitudinal perspective are also possibilities.

Another means of documenting interaction among group members is through verbal interaction analysis (Beebe & Masterson, 2006; Galanes & Adams, 2007). Using interaction diagrams as a means to describe graphically the interaction patterns of a group, such a method would enable the identification and recording the frequency, direction, and other patterns of communication by members in groups.

Connections To Other Professions

This study may be of interest to practitioners and educators in fields outside the health-care realm who are also witnessing the demand for increased interprofessional collaboration. School psychology, for example, has recently seen increased calls for collaboration as a practice orientation and for training in collaborative consultation models (Margison & Shore, 2009; Power, 2003). As this is coupled with the increased practice of school psychologists collaborating with other professionals outside the school system (e.g., physicians, social workers, and occupational therapists) (Saklofske et al., 2000), the importance of understanding the interactional dynamics that occur within these groups is underscored. This study may be useful to other researchers who are considering using process-analysis methodology to inform practice in school psychology.

Concluding Statement

There is a paucity of literature regarding the interactional dynamics of health-care professionals engaging in interprofessional collaboration. This study begins the process of documenting the interactional patterns and processes that occur in collaborative activities. Just as early studies of physician-patient interaction documented the types of communication that occurred in these medical settings, this study documented the types of communication that occur when medical professionals interact in a collaborative endeavor. This study concluded that while the RIAS format was useful, the original RIAS categories needed to be extensively supplemented with items that specifically addressed the interprofessional interaction. An examination of the categories on which there was variability indicated that the majority of the interactions were task-related and that the response patterns varied depending on whether the categories were grouped according to participant, workshop group, or profession. Perhaps most importantly, this study demonstrated that it is possible to assess the degree of interprofessionalism in interactions using a scenario that is more ecologically valid than that offered by attitude questionnaires completed individually. The study offers a methodology by which it might be possible to chart the growth of interprofessionalism in communication among medical and other professionals in the course of their work together.

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Appendix A: Sample Letter of Invitation (Second Breast Cancer E-case Workshop)



Faculty of Medicine 1110 Pine Avenue West, suite 18 Montréal, Québec, Canada H3A 1A3

February 29, 2008



Dear

As part of a grant from Health Canada, the *McGill Educational Initiative on Interprofessional Collaboration: Partnerships for Patient and Family-Centered Practice* is supporting workshops to develop and enhance interprofessional collaboration within academic and clinical settings. Important facets of the project include developing the attitudes, knowledge, and skills necessary to work with other health care professionals and offer a variety of resources and tools to facilitate interprofessional training and development. One component of this initiative is to create an interprofessional module using an e-case as a stimulus for discussion.

Your name has been put forward by leaders in your field as a possible participant in an expert interprofessional workshop.

This activity is planned for Thursday, March 13th from 5:00 to 9:30 pm at the Cedars Cancer Center Conference Room, S10, Royal Victoria Hospital and includes a \$500 stipend for your participation.

As a participant, you will be asked to:

- Review an on-line case on a patient with breast cancer. This case can be found at: http://mmiweb.mmi.mcgill.ca/ipecase// (Login: your e-mail address, Password: ipep_000)
- Plan care for this patient by answering specific questions using your area of expertise and unique professional perspective. Your approach should be supported with relevant evidence.
- Respond to an on-line questionnaire about interprofessionalism.
- Participate in this workshop.
- Consent to the taping of the workshop.
- Complete a final on-line questionnaire

The electronic case and associated material will be sent to you once you have confirmed your participation. We look forward to working with you on this activity.

Sincerely,

Margaret Purden

David Fleiszer Co-Principal Investigator

Margaret Purden Co-Principal Investigator

If you have questions, please contact: Ms. Ellen Stevenson, 514-398-2550 ellen.stevenson@mail.mcgill.ca
Appendix B: Sample Letter of Invitation (Obstetrics E-case Workshop)



Faculty of Medicine 1110 Pine Avenue West, suite 18 Montréal, Québec, Canada H3A 1A3

February 29, 2008



Dear

As part of a grant from Health Canada, the *McGill Educational Initiative on Interprofessional Collaboration: Partnerships for Patient and Family-Centered Practice* is supporting workshops to develop and enhance interprofessional collaboration within academic and clinical settings. Important facets of the project include developing the attitudes, knowledge, and skills necessary to work with other health care professionals and offer a variety of resources and tools to facilitate interprofessional training and development. One component of this initiative is to create an interprofessional module using an e-case as a stimulus for discussion.

Your name has been put forward by leaders in your field as a participant in this interprofessional workshop. This activity is planned for Thursday, March 27th from 5:00 to 9:30 pm at the Library Conference Room #2, Pavilion A, Jewish General Hospital and includes a \$500 stipend for your participation. A light dinner will be served.

As a participant, you will be asked to:

- Review an on-line case on an obstetrics patient This case can be found at: http://mmiweb.mmi.mcgill.ca/ipecase//
- (Login: your e-mail address, Password: ipep_000)
- Address specific issues for this patient by answering questions using your area of expertise and unique professional perspective. Your approach should be supported with relevant evidence.
- Respond to an on-line questionnaire about interprofessionalism.
- Participate in this workshop.
- Consent to the taping of the workshop.
- Complete a final on-line questionnaire

The electronic case and associated material will be sent to you once you have confirmed your participation. We look forward to working with you on this activity.

Sincerely,

David Fleiszer Co-Principal Investigator

Margaret Purden

Margaret Purden Co-Principal Investigator

If you have questions, please contact: Ms. Ellen Stevenson, 514-398-2550 ellen.stevenson@mail.mcgill.ca

Appendix C: A Consent Form for Workshop Participants



Faculty of Medicine 1110 Pine avenue West, Suite 18 Montréal, Québec, Canada H3A 1A3 Faculté de médecin 1110 avenue des Pins ouest, suite 18 Montréal, OC, H3A 1A3

CONSENT FORM FOR WORKSHOP PARTICIPANTS

The McGill Educational Initiative on Interprofessional Collaboration: Partnerships for Patient and Family-Centred Practice

Project Lead: Dr. Margaret Purden, N., Ph.D. Assistant Professor, School of Nursing Academic Coordinator, Ph.D. Program School of Nursing, McGill University Tel.: 514-398-2417 Project Lead: Dr. David Fleiszer, M.D., C.M., F.R.C.S.(C) Associate Professor, School of Medicine McGill University Director Breast Diagnostic Center Director McGill Molson Informatics Tel.: 514-398-1934 ext. 34014 / 398-2077

Introduction

You are invited to participate in a research project led by Dr. Margaret Purden and Dr. David Fleiszer. This project is funded by Health Canada and will take place within McGill University's Faculty of Medicine, the McGill University Health Centre, and the S.M.B.D.-Jewish General Hospital.

The main goal of this project is to develop and maintain a program that promotes *interprofessional collaborative patient and family centred practice* in both the university and health care settings. This term is defined as a group of health professionals working together in a collegial relationship characterized by shared values, beliefs, open communication, trust and respect to enable individuals and their families to manage their illness and maintain their health. It also includes the understanding of individual professional responsibility, professional interdependence, and recognizes the patient and family as partners in the decisions related to their health. In order for cultural and attitudinal changes regarding interprofessional education (IPE) and interprofessional practice (IPP) to be sustained, acceptance by a critical mass of stakeholders needs to be secured and benefits of their outcomes need to be demonstrated. These will be achieved through the incorporation of IPE and IPP activities into the mainstream of both academic and clinical environments.

Purpose

This project involves health care professionals at both clinical and university settings and students from: (a) medicine, (b) nursing, (c) physical therapy, and (d) occupational

therapy. As a health care professional, you are an important part of this project, in terms of finding effective ways to deliver interprofessional content. Your participation in this project is essential in providing your perspective on how health care professionals work together to help patients and family members manage their health problems. You may be asked to participate in a number of ways and provide verbal and/or written feedback on a number of topics. For example, you may be asked to provide an opinion on issues by taking part in discussions with the team, completing a questionnaire, or being interviewed on a one-to-one basis. The workshop you attend will also involve being audio/videotaped in order to have a record of how the interprofessional teams work. Although you are encouraged to participate and share verbal and/or written feedback whenever appropriate, you are not obliged to do so. If you have any questions during the project, you have the right to raise your questions or concerns.

Possible risk and discomfort

There is no known risk for participation in this project. Some people may find that discussing their experience raises unpleasant or upsetting feelings, thoughts, or memories. Psychological support is available for those who may experience difficult situations following an interview. If, at any time, you wish to stop the discussion, your wishes will be respected.

Potential benefits

You will not benefit directly from participation in this study. However, the verbal and/or written feedback collected will be useful in the future for assisting health care professionals and learners to work with other patients and their families in a collaborative manner.

Cost and reimbursement

You will be offered compensation for your participation in the workshop. We do not expect that your participation will create any additional costs for you.

Confidentiality

All personal information obtained during this project will be kept strictly confidential. In order to protect your identity your name will be coded and the code list, information, and interview notes will be kept locked in the McGill Molson Informatics offices. The information will be kept for five years and then destroyed. Only authorized members of the research team will have access to the documents containing your personal information. The results of the project may be published but your identity, or any other identifying information will not be revealed in any scientific publication or report. The ethics committee of McGill University may review the records containing your personal information in order to ensure the proper management of the project.

Voluntary participation and/or withdrawal

Your participation in this project is completely voluntary. You may refuse to participate or may discontinue your participation at any time without explanation, and without penalty or loss of benefits to which you are otherwise entitled. If you decide not to participate, or if you discontinue your participation you will suffer no prejudice. In the case of withdrawal, information collected to this point will be used to preserve the integrity and quality of the project. If you prefer, a French-language version of this document is also available.

Questions and contact information

This project has been approved by the McGill Institutional Review Board. If you have any questions about your rights as a project participant, you may contact Dr. Jacques Hurtubise, acting Vice-Principal (Research), at 398-3991. If you have any questions about the project, you may contact either Dr. Margaret Purden at 514-398-2417, or Dr. David Fleiszer at 514-398-2077.

Sincerely,

Marycost Purder

Dr. Margaret Purden

Dr. David Fleiszer

Declaration of Consent

I have read this consent form and have received the following information:

- My participation in this project is voluntary. I am free to withdraw my consent and to discontinue my participation in the project at any time without explanation.
- My decision regarding whether or not to participate will have no effect on my professional standing, or confidentiality of any feedback that I may have provided.
- Confidentiality of any verbal and/or written feedback I provide will be respected as all information gathered will be coded, and my name will not appear in any published documents.
- I will be invited to provide verbal and/or written feedback at different times throughout the duration of the project. This can be through discussions with learners and patients, completing questionnaires, or being interviewed on a one-to-one basis. I may choose not to participate in any of these activities, with no explanation necessary.
- My verbal and/or written feedback will be used in research publications to help health care professionals, learners, and patients and family members work together effectively to help manage their illness and sustain their health.
- I may be video/audiotaped as part of my participation in this project.
- A French-language version of this document is also available.
- I have had the opportunity to ask questions and all my questions, have been answered to my satisfaction.
- I have been given sufficient time to consider the information and seek advice should I choose to do so.
- I will be given a signed copy of this consent form.

By signing this consent form, I do not give up any of my legal rights.

Signature: _____

Print Name: _____

Date: _____

CONSENT FOR APPEARING ON AUDIO/VIDEOTAPE

I consent to being audio/videotaped as part of this project, and grant permission to use anything I say for research that is conducted as part of this project. I am free to withdraw my consent to be audio/videotaped at any time without explanation and without prejudice.

Signature: _____

ELEMENTS OF CARE 1. DIAGNOSTIC PHASE □ 1.1 Assess patient's understanding of the reason for visit/referral □ 1.2 Complete Health Assessment □ History of Present Illness □ Related questions Dest Medical History/ Review of Systems □ Physical Exam Complete Breast Exam □ Family History □ Risk Assessment □ 1.3 Assess Medications □ 1.4 Identify Special Concerns □ 1.5 Conduct routine diagnostic tests if required □ 1.6 Prepare patient for diagnostic tests, physically & emotionally □ 1.7 Conduct special diagnostic tests □ 1.8 Conduct invasive diagnostic tests if required □ 1.9 Determine presumptive prognosis □ 1.10 Identify & complete pertinent assessment tools □ 1.11 Assess Psycho-social needs □ 1.12 Initiate preparation for discharge 2. PRE-OPERATIVE/PRE-ADMINISTRATIVE PHASE □ 2.1 Refer to relevant HCP as required □ 2.2 Initiate Pre-Operative Discussion □ Encourage patient to have support person present □ Inform patient of treatment options □ Identify questions that will facilitate informed decisions regarding treatment Consider needs or issues that will result from each treatment option Encourage patient/family to ask and address any of their questions or concerns \Box 2.3 Provide patient teaching and learning material □ 2.4 Complete Pre-Admission Process 3. ADMISSION/DAY OF SURGERY \Box 3.1 Try to be available to patient/family □ 3.2 Assess physiological status using assessment tools & risk factors for surgery 4. POST-OP/ IMMEDIATELY AFTER SURGERY & DAY 1 □ 4.1 Transfer of care to primary in-patient care team 4.2 Assess physical status of patient □ 4.3 Assess Medications □ 4.4 Provide teaching to patient and family 4.5 Consult relevant health care professionals as required □ 4.6 Continue D/C planning 5. FOLLOW-UP (OUTPATIENT CLINIC) – APPROXIMATELY DAY 7 □ 5.1 Assess surgical site & wound healing □ 5.2 Remove drains &/or clips if required □ 5.3 Assess for post-operative complications \Box 5.4 Provide teaching □ 5.5 Assess for nutritional status □ 5.6 Discuss post-op treatment plan □ 5.7 Assess Psycho/social adjustment □ 5.8 Assess & Reassess need for emotional support □ 5.9 Consultation to relevant HCP as required □ 5.10 Long term follow-up 6. ONCOLOGY DAY CENTER (Approx. 2 week follow-up) □ 6.1 Determine additional and relevant medical history □ 6.2 Request additional imaging studies if required □ 6.3 Determine risk factors for treatment □ 6.4 Consult relevant HCP □ 6.5 Provide treatment □ 6.6 Assess tolerance and ability to cope with treatment and living at home 7. RADIATION THERAPY (Approx 3 week follow up) □ 7.1 Complete History

Appendix D: Draft Interprofessional Care Plan (Breast Cancer E-case Workshop)

ELEMENTS OF CARE

□ 7.2 Conduct physical exam

- □ 7.3 Revise staging work-up and Pathology Report □ 7.4 Discussion with patient
- □ 7.5 Provide treatment -Start one month after chemotherapy is offered
 □ 7.6 Consult relevant HCP
- □ 7.7 Provide information

□ 7.8 Follow-up

 \Box 7.9 Send copy of consultation to relevant HCP \Box 7.10 Screening for Recurrence

□ 7.11 Counselling session with patient and genetic counsellor

Appendix E: Guiding Questions

Intro to Case and Guiding Questions (Obstetrics E-case Workshop)

Mrs. P is a real patient. The electronic case that is being made available to you has been constructed mainly from her real experience as a patient. A few modifications have been made to promote discussion from an interprofessional perspective. Mrs. P has consented to the use of her case as an indication of her commitment to healthcare teaching and learning and to professional and interprofessional development.

The Mrs. P e-case is designed to support the development of individual or uniprofessional approaches to the same clinical scenario from different professional perspectives. We anticipate that these uni-professional and specific approaches will vary considerably by professional domain. We hope that the process of integrating these specific care plans into one interprofessional module will lead to a dialogue centered on patient care. If successful, the process will serve to improve our ability to provide quality patient care.

- 1. What was done and who was involved?
 - Identify roles and actions of individuals involved as well as any "facilitating" factors that may have helped in providing care to this patient.
- 2. What could have been done and if it wasn't, why?
 - Identify "hindering" factors/barriers in the care provided. What were some of the gaps in care?
- 3. Who should be involved, when and why?
- 4. List a minimum of 5 key things you would like to do for this patient and prioritize your actions.

Action Items	Identified by which HCP in
(In no particular order)	CNG AUN EDG N
response to tracings are documented	CNS, AHN, FBC-N
2. Prepare nursing team to assist with shoulder dystocia and PPH, especially if patient is unstable	CNS, OB
3. Monitor patient's pain experience –during contractions and during	CNS, PPN2, OB-R, FM
A Cell A postbasic for increased pair control and estive management of	EM
4. Can Anesthesia for increased pain control and active management of fluids	L MI
5. Provide basic care i.e. pericare, positioning, comfort measures, PV fluid loss, bladder monitoring	CNS, AHN
6. Inform patient of emergency procedures as required and performed	CNS, PPN1, PPHN, OB-R
7 Provide reassurance during PPH	PPN2 PPHN OB-R PPHN
8 Involve partner (if present) in care and support	CNS PPN2 PPHN
0. Initiate a Therapeutic pursing plan to address issues that need to be	CNS PDN1
5. Initiate a Therapeutic hursing plan to address issues that need to be followed after her admission to EPC i.e. symptoms post DDU	CINS, FFINI
nonowed after her admission to FBC i.e. symptoms post PPH,	
previous neck injury, pain control, risks of postpartum depression,	
signs of infection	DDN11
10. In case of emergency c/s, empower patient/couple by providing	PPNI
various strategies for postpartum care re: breastfeeding in OR, have	
father stay in nursery with baby skin to skin, support rooming in once	
mother has returned to Postpartum unit	
11. If PPH occurs, continue to monitor vital signs, O2 saturation, draw	PPN1, PPN2, OB-R, OB
12 Support couple following the DDH once patient stabilized i.e. allow	DDN1 DDUN AUN
12. Support couple following the FFH, once patient stabilized i.e. anow	rrivi, rrniv, Aniv
happened validate feelings, provide information when peeded	
12 Offer surgest with breastfasting	DDN1
13. Otter support with breastleeding	PPNI DDN1
14. Prepare report for transfer to the postpartum unit ensuring that	PPNI
information regarding PPH, shoulder dystocia, history of depression	
and coping is communicated to the team	
15. At onset of PPH, call MDs and control bleeding i.e. prepare hemabate	PPN2, FBC-N
or cytotec, increase syntocinon	
16. Ensure complete and frequent documentation	PPN2, PPHN, FBC-N
17. Ensure communication of relevant information has been shared with	FM, FBC-N
staff i.e nurses should know patient has fibroid, resident aware of	
prolonged labour	
18. Provide active management of labour i.e. augmenation of labour	OB-R, OB, FM
earlier to allow descent of fetal head, manual rotation OA done earlier	
(as patient was 9 cm for 5 hours)	
19. Screen for shoulder dystocia	OB-R
20. Plan ahead: Prepare patient for possibility of C/S, X-match	OB-R, OB
21. Debrief with entire staff of findings and identify their needs	PPHN
for support during emergency of PPH i.e. review	
documentation, provide opportunity for mock PPH to ensure	
education and training during a crisis	
22. In collaboration with Family Medicine, OBS to discuss with	OB
patient high risk factors at initial consult	
23. Consider operative vaginal delivery earlier in second stage	OB
of labour	
24. Request additional staff including Pediatrics as well as	OB
ensure senior nursing staff and Obstetrics staff are present	

Appendix F: Draft Interprofessional Care Plan (Obstetrics E-case)	Workshop
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Action Items	Identified by which HCP in
(In no particular order)	their document
at time of full dilatation and until conclusion.	
25. Ensure patient's understanding of risk factors prior to	OB,
admission of birthing center to set appropriate expectations	
of labour	
26. Conduct ultrasound for placental location and fibroid	PPHN, OB-R
27. Respond to GERD earlier and more aggressively	FM
28. Review whether shoulder screen completed at 38 weeks	PPN1
29. Consult OBS early i.e.(9 to 11 hours in the Birthing Center),	PPN1, PPN2, OB-R, OB,
when the decision to augment labor was undertaken and	AHN
when anesthesia was called to reassess the patient)	
30 Obstetrics to recommend ongoing evaluation and	OB
involvement of risk factors and possible outcomes and	
develop an appropriate plan of management.	
31. Consult OBS again when cervix 8.5 to 9 cm for 3 hours,	OB, PPN1, PPN2, OB-R
malposition, and with little descent. re: help in advent of	
shoulder dystocia, consider merits of c/s for failure to	
progress or CPD. Discuss with patient.	
32. Provide strategies for alternative pushing positions given	CNS
history of neck pain	
33. Determine necessity of prophylactic antiobiotics for manual	OB-R
revision if no evidence of endometritis	
34. Monitor patient output by keeping in-dwelling foley catheter	OB-R, OB
in place	
35. In context of PPH, inspect lower genital tract to examine for	OB-R, OB
trauma, a bleeding not amenable to uterotonics	
36. Anticipate shoulder dystocia and expect uterine atony.	OB
37. Start a second IV line	FM

CNS – Clinical Nurse Specialist PPN1-Postpartum nurse

PPN2 – Postpartum Nurse

PPHN – Postpartum Head Nurse OB-R - Obstetrical Resident

OB – Obstetrician

FM – Family Medicine

AHN – Family Birthing Center Assistant Head Nurse FBC-N – Family Birthing Center Nurse

Appendix G

Coding Instructions and Criteria

Definition of Communication Units

Communication units are defined as "utterances" (i.e., the smallest discriminable speech segment to which a classification may be assigned). Units vary in length from a single word to a sentence.

A sentence is classified as one unit if it conveys only one thought or refers to only one item of interest. A compound sentence is divided at the conjunction. If a sentence is interrupted or divided by a pause of one second or more, then each sentence fragment is coded as a separate utterance. If the first portion of the divided sentence could be categorized, the content of the second fragment was attributed to the same category as the first. If the first portion of the sentence had no content or meaning, however, it was coded as a transition word. If both fragments lacked meaning, and therefore could not be assigned to one of the other categories, they were coded as transitions.

Utterances are coded as reflecting either task-focused behaviors or as affective, or socioemotional, behaviors.

Task-Focused Behaviors

Task-focused behaviors refer to explicit verbal exchanges related to "technically based skills used in problem solving that comprise the base of the expertness for which a physician is consulted" (Roter & Larsen, 2001, p. 33). Examples include discussions surrounding choice of diagnostic tests and discussions of medical procedures *Socioemotional Behaviors*

Socioemotional behaviors refer to explicit verbal exchanges related to the building of social and emotional rapport as well as implicit exchanges conveyed through tone of

voice or positive expression of emotion (e.g., friendliness or interest) or negative expression of emotion (e.g., irritation).

Category Criterion and Examples

The socioemotional and task-focused behaviors are further assigned to one of 39

categories (in traditional RIAS coding) or, if the study is modified, additional categories

(the additional categories for this study are indicated in bold font).

The task-focused behavior categories contain a number of statements

characterized as Gives Information, Asks Questions (Closed-Ended) and Asks Questions

(Open-Ended). They are defined as:

Gives Information statements: information presented in a neutral manner

Asks Questions (Closed-Ended): direct questions asking for specific information

Asks Questions (Open-Ended): direct questions asking for nonspecific information.

Exchange Categories and Variables	Criteria	Example From Data
Personal remarks, social conversation	Greetings, nonmedical or social conversation	
Laughs, tells jokes	Jokes; laughter in response to jokes	
Shows approvaldirect	Compliments and expressions of approval (expressed to the person present)	I'm impressed.
Gives compliment general	Compliments and expressions of approval (directed to a person <u>not</u> present)	None
Shows agreement or understanding [in socialemotional related behavior context]	Signs of understanding; conceding a point. Serves to "take the floor" in the conversation.	None
Back-channel responses [in socialemotional related behavior context]	See below for description	None
Empathy	Statements recognizing the emotional state of another present	None

Shows concern or worry	Statement indicating that a condition or event is serious, worrisome, or is of particular concern at this point in time.	[Are] <i>you comfortable in doing it</i> [presenting the outcomes]?
Reassures, encourages or shows optimism Legitimizes	Statements indicating optimism, encouragement, or reassurance. Statements that indicate that the other's emotional situation, actions, or thoughts are understandable.	You are going to be super [discussing the outcomes]. I understand for you fatigue is very important
Partnership [in socialemotional related behavior context] Self-Disclosure	Statements that convey alliance with others in terms of help and support or decision making Statements that describe the	Nonewith this I find even to
Shows disapproval— Direct	personal experiences and/or emotional relevance Statements of disapproval and disagreement; criticisms, sarcasm [expressed to the person	work with, I find quite difficult to process. we don't have anything to support that [decision to give chemotherapy]; where
Shows criticism General	present] Statements conveying disapproval; criticisms, sarcasm [directed to a person <u>not</u> present]	is your evidence? and the person who examined me, despite my having a very big lump, said this might be related to your period. Come back after your period
Asks for reassurance	Questions of concern that convey the need to be reassured	None
Partnership [in task- related behavior context]	Statements that convey alliance and decision making	We should go through the black headings [of the case plan] first; we need to add another point.
Ask Partnership	Questions that convey alliance and decision making	Do you guys agree that this is a bit; Do we comment on 7.10?
Back Channel [in task- related behavior context]	Indicators of sustained interest, attentive listening or encouragement emitted by the individual not holding the speaking floor. These responses are differentiated from others in that they do not serve to "take the floor" from the speaker. Back-channel responses are a subset of the larger Agree category. When in doubt, code as Agree.	Mmm-huh.

Agree	Signs of understanding; conceding a point. Serves to "take the floor" in the conversation	Yes, that's right; I know; Okay
Back Channel Agree	Similar to Agree and BC but no attempt to "take the floor" but more involvement in conversation than sustained attention.	Yeah; Absolutely;
Transition words	Sentence fragments that indicate movement from one topic to another; place holders	
Orientation, instruction	Guiding and instructional statements	It says physical status on page; I am on page 8
Asks for orientation	Questions asking for place in place in care plan	
Check for	Clarifying statements regarding	<i>did she</i> [have a
understanding	procedures, medical history, etc.	mammogram]?
Confirm	Confirming statements in response to a posed question.	Yes, she did.
Asks for Understanding	Statements in which function is to check for understanding of information	You know what I mean?
Bid for repetition	Request to repeat statement. Indicates perceptual difficulty rather than misunderstanding.	What did you say?; Excuse me?
Asks for opinion		[p4 to p1]would you refer her to the geneticist right away after you have the past history
Asks for permission		None
Asks closed ended	Questions related to medical and	didn't she have a
questions Medical condition	family histories, previous treatments, symptoms, etc.	<i>mammogram a couple of</i> years ago?
Asks closed ended	Questions relating to past,	Is she going to get very,
questionsTherapeutic	ongoing and future drug	very bad bone metathesis if
regimen	regimens	she is not treated al all?
Asks closed ended questionsLifestyle	Questions related to lifestyle	-
Asks closed ended	Questions related to	-
questionsPsychosocial	psychosocial concerns or problems	
Asks closed ended	Questions related to topics not	-
questionsOther	covered by other categories	
Asks closed ended		Should 1-10 be put before
questionsCare plan		the Biopsy?; Is that in order?

Asks closed ended	Questions regarding standard	Was there an MRI done?;
questionsMedical	medical procedure and practice	Is it the dietician who does
procedure		that?
Asks open ended	Questions about medical and	-
questionsMedical	family histories, previous	
condition	treatments, symptoms, etc.	
Asks open ended	Questions relating to past,	What's the value in starting
questionsTherapeutic	ongoing and future drug	early?
regimen	regimens	
Asks open ended	Questions relating to lifestyle	None
questionsLife style		
Asks open ended	Questions related to	-
questionsPsychosocial	psychosocial concerns or problems	
Asks open ended	Questions regarding topics that	-
questionsOther	did not fit into other categories	
Asks open ended	Questions related to the care	but should it [the
questionsCare plan	plan	geriatric assessment tool]
		be put before this is the
		question
Asks open ended	Questions regarding standard	the nurse would see the
questionsMedical	medical procedure and practice	patient first and then the
procedure		doctor or what happens
		on day seven?
Gives information	Statements regarding standard	But the day of the surgery
Medical procedure	medical procedure and practice	or the day after they may
		not see her [the
		physiotherapist] right then;
		When she comes in she is
		assessed by nurses first.
Gives information	Statements regarding the	she's been in labor a
Medical condition	medical condition, symptoms,	very long time;
	diagnosis, etc	
Gives information	Statements regarding the	it [lymphoma] does not
Therapeutic regimen	ongoing or future treatment plan	present the same way so it
		doesn't have the same
		management
Gives information	Statements regarding lifestyle	I was tired but it wasn't
Lifestyle		stopping me from doing
		anything [p2]
Gives information	~ **	discuss how the
	Statements regarding	uiscuss now the
Psychosocial	Statements regarding psychosocial concerns or	treatment would interfere
Psychosocial	Statements regarding psychosocial concerns or problems	<i>treatment would interfere</i> <i>with her quality of life.</i>
Psychosocial Gives information—	Statements regarding psychosocial concerns or problems Statements that did not fit into	<i>treatment would interfere</i> <i>with her quality of life.</i> Discussions of research
Psychosocial Gives information— Other	Statements regarding psychosocial concerns or problems Statements that did not fit into other categories	<i>treatment would interfere</i> <i>with her quality of life.</i> Discussions of research findings

Clinical experience	experiences and approach to particular situation	[Tumour Board] <i>it's</i> part of the way we diagnose patients;
		if I feel the patient is low risk and I think that it is going to be a straight forward labor and delivery
Gives information		 so this whole section of
Care plan		Family History should be moved before the Physical
		Exam.
CounselsMedical condition/therapeutic regimen		None
Counsels		None
Lifestyle/psychosocial		
Requests for services		None
Don't know	Statements indicating that the participant did not know the answer to the question posed	-
Unintelligible utterances	1 1	-

Appendix H

Traditional RIAS Coding Categories

Socioemotional Exchange

- 1. Personal remarks, social conversation
- 2. Laughs, tells jokes
- 3. Shows approval--Direct
- 4. Gives compliment--General
- 5. Shows agreement or understanding
- 6. Back-channel responses
- 7. Empathy
- 8. Shows concern or worry
- 9. Reassures, encourages or shows optimism
- 10. Legitimizes
- 11. Partnership
- 12. Self-Disclosure
- 13. Shows disapproval--Direct
- 14. Shows criticism--General
- 15. Asks for reassurance
- Task-Focused Exchanges
 - 1. Transition words
 - 2. Gives orientation, instructions
 - 3. Paraphrase/Checks for understanding
 - 4. Bid for repetition
 - 5. Asks for understanding
 - 6. Asks for opinion
 - 7. Asks for permission
 - 8. Asks questions (Closed-ended)--Medical condition
 - 9. Asks questions (Closed-ended)--Therapeutic regimen
 - 10. Asks questions (Closed-ended)--Lifestyle
 - 11. Asks questions (Closed-ended)--Psychosocial-Feelings
 - 12. Asks questions (Closed-ended)--Other
 - 13. Asks questions (Open-ended)--Medical condition
 - 14. Asks questions (Open-ended)--Therapeutic regimen
 - 15. Asks questions (Open-ended)--Lifestyle
 - 16. Asks questions (Open-ended)--Psychosocial-Feelings
 - 17. Asks questions (Open-ended)--Other
 - 18. Gives information--Medical condition
 - 19. Gives information--Therapeutic regimen
 - 20. Gives information--Lifestyle
 - 21. Gives information--Psychosocial
 - 22. Gives information--Other
 - 23. Counsels or directs behavior--Medical condition/Therapeutic regimen
 - 24. Counsels or directs behavior--Lifestyle/Psychosocial
 - 25. Requests for services or medication
 - 26. Unintelligible utterances

Appendix I

Traditional Plus Modified RIAS Categories

Socioemotional Exchange

- 1. Personal remarks, social conversation
- 2. Laughs, tells jokes
- 3. Shows approval--Direct
- 4. Gives compliment--General
- 5. Shows agreement or understanding
- 6. Back-channel responses
- 7. Empathy
- 8. Shows concern or worry
- 9. Reassures, encourages or shows optimism
- 10. Legitimizes
- 11. Partnership
- 12. Self-Disclosure
- 13. Shows disapproval--Direct
- 14. Shows criticism--General
- 15. Asks for reassurance
- Task-Focused Exchanges
 - 1. Partnership
 - 2. Ask partnership
 - 3. Back channel
 - 4. Agree
 - 5. Back channel agree
 - 6. Transition words
 - 7. Orientation, instruction
 - 8. Asks for orientation
 - 9. Check for understanding

10. Confirm

- 11. Asks for Understanding (quest, seek info)
- 12. Bid for repetition
- 13. Asks for opinion
- 14. Asks for permission
- 15. Asks questions (closed ended)--Medical condition
- 16. Asks questions (closed ended)--Therapeutic regiment
- 17. Asks questions (closed ended)--Lifestyle
- 18. Asks questions (closed ended)--Psychosocial
- 19. Asks questions (closed ended)--Other
- 20. Asks questions (closed ended)--Care plan

21. Asks questions (closed ended)--Medical procedure

- 22. Asks questions (open ended)--Medical condition
- 23. Asks questions (open ended)--Therapeutic regimen
- 24. Asks questions (open ended)--Lifestyle
- 25. Asks questions (open ended)--Psychosocial
- 26. Asks questions (open ended)--Other
- 27. Asks questions (open ended)--Care Plan

28. Asks questions (open ended)--Medical procedure

- 29. Gives information--Medical procedure
- 30. Gives information--Medical condition
- 31. Gives information--Therapeutic regimen
- 32. Gives information--Lifestyle
- 33. Gives information--Psychosocial
- 34. Gives information--Other
- 35. Gives information--Clinical experience

36. Gives information--Care plan

- 37. Counsels--Medical condition/therapeutic regimen
- 38. Counsels--Lifestyle/psychosocial
- 39. Requests for services
- 40. Don't Know
- 41. Unintelligible utterances

Appendix J

Observed	Values	(14×23)
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Participants												Cate	egories											
							Ask	Ask	Ask	Ask			•	Ask		BC	Ask	Ask			Ask			
	GIMP	GIMC	GICE	GIPS	GICP	GIOther	CEMP	OEMP	OECP	CECP	pers	laugh	Partn	Partner	Agree	Agree	Underst	Opin	Trans	Orient	Orient	Check	Confirm	Total
P1																								
Physician	94	38	45	4	44	42	7	3	3	5	0	10	5	6	18	27	3	3	54	56	6	11	17	501
P2	_		_	_	_				_				_	_				_			_	_		
Patient	0	9	0	2	5	25	2	2	0	0	3	0	0	0	0	3	1	0	6	1	0	5	0	64
P3	24	2	0	~	24		2	0	2	2		-	2	0	24		0		1.5	1.5			10	220
Nurse	36	5	9	5	24	14	3	0	2	5	1	/	3	0	34	41	0	1	15	15	1	4	18	239
P4 Numer	20	11	17	17	40	11	1	5	2	5	0	0	2	0	14	20	0	6	12	25	6	0	4	265
INUISE D5	20	11	17	17	49	11	1	3	2	3	0	0	2	0	14	50	0	0	15	55	0	9	4	203
P5 Nurse	52	20	33	14	17	46	4	2	0	3	0	4	5	0	26	13	1	8	33	16	3	5	7	351
P6	52	2)	55	14	17	40	-	2	0	5	0	-	5	0	20	45		0	55	10	5	5	,	551
Physician	28	11	20	5	9	22	5	0	0	2	0	4	4	1	12	42	0	0	19	8	1	1	10	204
P7					-					_				-			÷				-	-		
Nurse	24	0	17	8	21	6	1	0	0	1	2	2	4	2	11	20	1	0	12	16	5	3	7	163
P8																								
Psychologist	49	1	20	4	21	14	17	3	1	2	16	6	22	7	47	63	2	5	54	55	19	26	20	474
P9																								
Nurse	94	8	32	1	26	19	5	0	1	3	1	3	11	3	53	80	1	12	40	72	10	10	32	517
P10																								
Physician	55	8	31	0	29	16	17	2	2	1	1	5	15	8	41	74	0	2	27	32	6	10	20	402
P11																								
Physiother	91	7	56	5	67	21	19	17	4	4	2	10	30	7	62	138	3	12	79	108	8	23	22	795
P12									_									_			_	_		
Physician	74	51	116	1	48	44	1	10	5	1	4	10	31	16	14	31	9	3	86	101	5	7	11	679
P13	2	0		0				2	0		0	,	0	0	2		0	0	0		0	0	2	<i></i>
Nurse	5	0	4	0	2	1	1	5	0	1	0	0	0	0	3	14	0	0	9	4	0	0	3	54
PI4 Nurse	44	0	22	2	12	7	0	4	0	1	4	12	11	10	22	66	4	2	52	20	2	0	5	201
INUISC	44	9	55	2	43	/	9	+	7	1	4	15	11	19	23	00	+	2	52	20	3	0	3	371
Total	664	185	433	68	405	288	92	51	29	32	34	88	143	69	358	672	25	54	499	539	73	122	176	5099

Appendix K

Expected	Values ($(14 \times$	23)
		`	- /

Participants												Categorie	s										
	GIMP	GIMC	GICE	GIPS	GICP	GIOther	Ask CEMP	Ask OEMP	Ask OECP	Ask CECP	Pers	Laugh	Partn	Ask Partner	Agree	BC Agree	Ask Underst	Ask Opin	Trans	Orient	Ask Orient	Check	Confirm
P1 Physician	65.2	18.2	42.5	6.7	39.8	28.3	9.0	5.0	2.8	3.1	3.3	8.6	14.1	6.8	35.2	66.0	2.5	5.3	49.0	53.0	7.2	12.0	17.3
P2 Patient	8.3	2.3	5.4	0.9	5.1	3.6	1.2	0.6	0.4	0.4	0.4	1.1	1.8	0.9	4.5	8.4	0.3	0.7	6.3	6.8	0.9	1.5	2.2
P3 Nurse	31.1	8.7	20.3	3.2	19.0	13.5	4.3	2.4	1.4	1.5	1.6	4.1	6.7	3.2	16.8	31.5	1.2	2.5	23.4	25.3	3.4	5.7	8.2
P4 Nurse	34.5	9.6	22.5	3.5	21.0	15.0	4.8	2.7	1.5	1.7	1.8	4.6	7.4	3.6	18.6	34.9	1.3	2.8	25.9	28.0	3.8	6.3	9.1
P5 Nurse	45.7	12.7	29.8	4.7	27.9	19.8	6.3	3.5	2.0	2.2	2.3	6.1	9.8	4.7	24.6	46.3	1.7	3.7	34.3	37.1	5.0	8.4	12.1
P6 Physician	26.6	7.4	17.3	2.7	16.2	11.5	3.7	2.0	1.2	1.3	1.4	3.5	5.7	2.8	14.3	26.9	1.0	2.2	20.0	21.6	2.9	4.9	7.0
P7 Nurse	21.2	5.9	13.8	2.2	12.9	9.2	2.9	1.6	0.9	1.0	1.1	2.8	4.6	2.2	11.4	21.5	0.8	1.7	16.0	17.2	2.3	3.9	5.6
P8 Psychologist	61.7	17.2	40.3	6.3	37.6	26.8	8.6	4.7	2.7	3.0	3.2	8.2	13.3	6.4	33.3	62.5	2.3	5.0	46.4	50.1	6.8	11.3	16.4
P9 Nurse	67.3	18.8	43.9	6.9	41.1	29.2	9.3	5.2	2.9	3.2	3.4	8.9	14.5	7.0	36.3	68.1	2.5	5.5	50.6	54.7	7.4	12.4	17.8
P10 Physician	52.3	14.6	34.1	5.4	31.9	22.7	7.3	4.0	2.3	2.5	2.7	6.9	11.3	5.4	28.2	53.0	2.0	4.3	39.3	42.5	5.8	9.6	13.9
P11 Physiother	103.5	28.8	67.5	10.6	63.1	44.9	14.3	8.0	4.5	5.0	5.3	13.7	22.3	10.8	55.8	104.8	3.9	8.4	77.8	84.0	11.4	19.0	27.4
P12 Physician	88.4	24.6	57.7	9.1	53.9	38.4	12.3	6.8	3.9	4.3	4.5	11.7	19.0	9.2	47.7	89.5	3.3	7.2	66.4	71.8	9.7	16.2	23.4
P13 Nurse	7.0	2.0	4.6	0.7	4.3	3.1	1.0	0.5	0.3	0.3	0.4	0.9	1.5	0.7	3.8	7.1	0.3	0.6	5.3	5.7	0.8	1.3	1.9
P14 Nurse	50.9	14.2	33.2	5.2	31.1	22.1	7.1	3.9	2.2	2.5	2.6	6.7	11.0	5.3	27.5	51.5	1.9	4.1	38.3	41.3	5.6	9.4	13.5

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Appendix L

Squared Difference Between Observed and Expected Values, Divided by the Expected Values (14×23)

Participants												Cat	tegories											
	GIMP	GIMC	GICE	GIPS	GICP	GIOther	Ask CEMP	Ask OEMP	Ask OECP	Ask CECP	Pers	Laugh	Partner	Ask Partner	Agree	BC Agree	Ask Underst	Ask Opin	Trans	Orient	Ask Orient	Check	Confirm	Total
P1 Physician	12.7	21.6	0.1	1.1	0.4	6.6	0.5	0.8	0.0	1.1	3.3	0.2	5.8	0.1	8.4	23.1	0.1	1.0	0.5	0.2	0.2	0.1	0.0	88.0
P2 Patient	8.3	19.2	5.4	1.5	0.0	126.5	0.6	2.9	0.4	0.4	15.5	1.1	1.8	0.9	4.5	3.5	1.5	0.7	0.0	4.9	0.9	7.9	2.2	210.7
P3 Nurse	0.8	3.7	6.3	1.0	1.3	0.0	0.4	2.4	0.3	1.5	0.2	2.0	2.0	3.2	17.7	2.9	1.2	0.9	3.0	4.2	1.7	0.5	11.5	68.8
P4 Nurse	6.1	0.2	1.3	51.3	37.1	1.1	3.0	2.1	0.2	6.7	1.8	2.6	4.0	3.6	1.1	0.7	1.3	3.6	6.5	1.7	1.3	1.1	2.9	141.2
P5 Nurse	0.9	20.8	0.3	18.6	4.2	34.6	0.9	0.7	2.0	0.3	2.3	0.7	2.4	4.7	0.1	0.2	0.3	4.9	0.1	12.0	0.8	1.4	2.2	115.3
P6 Physician	0.1	1.7	0.4	1.9	3.2	9.5	0.5	2.0	1.2	0.4	1.4	0.1	0.5	1.1	0.4	8.5	1.0	2.2	0.0	8.5	1.3	3.1	1.2	50.2
P7 Nurse	0.4	5.9	0.7	15.6	5.0	1.1	1.3	1.6	0.9	0.0	0.8	0.2	0.1	0.0	0.0	0.1	0.1	1.7	1.0	0.1	3.0	0.2	0.3	40.2
P8 Psychologist	2.6	15.3	10.2	0.9	7.4	6.1	8.3	0.6	1.1	0.3	52.2	0.6	5.7	0.1	5.7	0.0	0.0	0.0	1.2	0.5	22.0	18.9	0.8	160.4
P9 Nurse	10.6	6.2	3.2	5.0	5.5	3.6	2.0	5.2	1.3	0.0	1.7	3.9	0.8	2.3	7.7	2.1	0.9	7.8	2.2	5.5	0.9	0.5	11.2	90.1
P10 Physician	0.1	3.0	0.3	5.4	0.3	2.0	13.1	1.0	0.0	0.9	1.1	0.5	1.2	1.2	5.8	8.3	2.0	1.2	3.9	2.6	0.0	0.0	2.7	56.6
P11 Physiother	1.5	16.5	2.0	3.0	0.2	12.7	1.5	10.3	0.1	0.2	2.1	1.0	2.7	1.3	0.7	10.5	0.2	1.5	0.0	6.8	1.0	0.8	1.1	77.8
P12 Physician	2.4	28.2	59.0	7.2	0.7	0 .8	10.3	1.5	0.3	2.5	0.1	0.3	7.5	5.0	23.8	38.2	9.7	2.4	5.8	11.9	2.3	5.3	6.6	231.7
P13 Nurse	2.3	2.0	0.1	0.7	1.2	1.4	0.0	11.2	0.3	1.3	0.4	27.6	1.5	0.7	0.2	6.7	0.3	0.6	2.6	0.5	0.8	1.3	0.7	64.2
P14 Nurse	0.9	1.9	0.0	2.0	4.6	10.3	0.5	0.0	20.6	0.9	0.7	5.8	0.0	35.5	0.7	4.1	2.3	1.1	4.9	11.0	1.2	0.2	5.3	114.7
																								1509

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Appendix M

Contingency Table: Three Workshop Groups Across All Categories with Variability (3×23)

	GIMP	GIMC	GICE	GIPS	GICP	GIOther	Ask CEMP	Ask OEMP	Ask OECP	Ask CECP	Pers	Laugh	Partner	Ask Partner	Agree	BC Agree	Ask Underst	Ask Opin	Trans	Orient	Ask Orient	Check	Confirm	Total
Workgroup	Observed Values																							
WG1	230	101	124	47	148	160	22	12	7	18	4	33	19	7	104	186	5	18	140	131	17	35	56	1624
WG2	313	24	156	18	164	76	59	22	8	11	22	26	82	27	214	375	7	31	212	283	48	72	101	2351
WG3	121	60	153	3	93	52	11	17	14	3	8	29	42	35	40	111	13	5	147	125	8	15	19	1124
Total	664.0	185	433.0	68.0	405.0	288.0	92.0	51.0	29.0	32.0	34.0	88.0	143.0	69.0	358	672.0	25.0	54.0	499.0	539.0	73.0	122	176.0	5099.0
	Expected Values																							
WG1	211	58.9	138	21.66	129	91.7	29.3	16.2	9.2	10.2	10.8	28.0	45.5	22.0	114	214	8.0	17.2	158.9	171.7	23.3	38.9	56.1	1624
WG2	306	85.3	200	31.35	187	132.8	42.4	23.5	13.4	14.8	15.7	40.6	65.9	31.8	165	309.8	11.5	24.9	230.1	248.5	33.7	56.3	81.1	2351
WG3	146	40.8	95.4	14.99	89.3	63.5	20.3	11.2	6.4	7.1	7.49	19.4	31.5	15.2	78.9	148.1	5.5	11.9	110.0	118.8	16.1	26.9	38.8	1124
												(0	o-e)2/e											
WG1	1.6	30.1	1.4	29.7	2.8	50.8	1.8	1.1	0.5	6.0	4.3	0.9	15.5	10.2	0.9	3.7	1.1	0.0	2.3	9.6	1.7	0.4	0.0	176.3
WG2	0.2	44.1	9.5	5.7	2.8	24.3	6.5	0.1	2.2	1.0	2.6	5.2	3.9	0.7	14.5	13.7	1.8	1.5	1.4	4.8	6.1	4.4	4.9	161.7
WG3	4.4	9.1	34.7	9.6	0.2	2.1	4.2	2.9	9.1	2.3	0.0	4.8	3.5	25.7	19.2	9.3	10.2	4.0	12.4	0.3	4.1	5.3	10.1	187.5
																								525.4

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Appendix N

Contingency Table: Three Professional Groups Across All Categories with Variability (3×23)

	GIMP	GIMC	GICE	GIPS	GICP	GIOther	Ask CEMP	Ask OEMP	Ask OECP	Ask CECP	Pers	Laugh	Partner	Ask Partner	Agree	BC Agree	Ask Underst	Ask Opin	Trans	Orient	Ask Orient	Check	Confirm	Total
	Observed Values																							
Physicians	251	108	212	10	130	124	30	15	10	9	5	29	55	31	85	174	12	8	186	197	18	29	58	1786
Nurses	273	60	145	47	182	104	24	14	14	17	8	43	36	24	164	294	7	29	174	178	28	39	76	1980
Other	140	17	76	11	93	60	38	22	5	6	21	16	52	14	109	204	6	17	139	164	27	54	42	1333
Total	664	185	433	68	405	288	92	51	29	32	34	88	143	69	358	672	25	54	499	539	73	122	176	5099
	Expected Values																							
Physicians	232.6	64.8	151.7	23.8	141.9	100.9	32.2	17.9	10.2	11.2	11.9	30.8	50.1	24.2	125.4	235.4	8.8	18.9	174.8	188.8	25.6	42.7	61.6	1786.0
Nurses	257.8	71.8	168.1	26.4	157.3	111.8	35.7	19.8	11.3	12.4	13.2	34.2	55.5	26.8	139.0	260.9	9.7	21.0	193.8	209.3	28.3	47.4	68.3	1980.0
Other	173.6	48.4	113.2	17.8	105.9	75.3	24.1	13.3	7.6	8.4	8.9	23.0	37.4	18.0	93.6	175.7	6.5	14.1	130.5	140.9	19.1	31.9	46.0	1333.0
												(o-e) ² /e												
Physicians	1.5	28.8	24.0	8.0	1.0	5.3	0.2	0.5	0.0	0.4	4.0	0.1	0.5	1.9	13.0	16.0	1.2	6.3	0.7	0.4	2.2	4.4	0.2	120.6
Nurses	0.9	2.0	3.2	16.1	3.9	0.5	3.8	1.7	0.7	1.7	2.1	2.3	6.9	0.3	4.5	4.2	0.8	3.1	2.0	4.7	0.0	1.5	0.9	67.5
Other	6.5	20.3	12.2	2.6	1.6	3.1	8.1	5.6	0.9	0.7	16.5	2.1	5.7	0.9	2.5	4.6	0.0	0.6	0.6	3.8	3.3	15.3	0.3	117.9